

APPENDIX A: Petitions for Reconsideration, Oppositions and Replies**Petitions for Reconsideration**

(Filed June 24, 2002)

Pegasus Broadband Corporation (Pegasus)

MDS America, Inc. (MDS America)

(Filed July 26, 2002)

EchoStar Satellite Corporation and DIRECTV, Inc. - joint petition (EchoStar and DIRECTV)

SkyBridge L.L.C. (SkyBridge)

SES Americom, Inc. (SES Americom)

Satellite Broadcasting and Communications Association (SBCA)

Oppositions to Petitions for Reconsideration

(Filed July 12, 2002)

Satellite Receivers, Ltd. (Satellite Receivers)

(Filed September 3, 2002)

EchoStar Satellite Corporation and DIRECTV, Inc. - joint opposition (EchoStar and DIRECTV)

MDS America, Inc. (MDS America)

(MDS America filed four separate oppositions on this date, one each as to the reconsideration petitions filed by: 1) EchoStar, DIRECTV and SBCA 2) SkyBridge; 3) Pegasus and 4) SES Americom)

Replies and Comments to Petitions to for Reconsideration

(Filed September 3, 2002)

Northpoint Technology, Ltd., and Broadwave USA, Inc. - joint response (Northpoint and Broadwave)

Digital Broadband Applications Corp. (DBAC)

(Filed September 13, 2002)

MDS America, Inc. (MDS America)

(MDS America filed three separate replies on this date, one each as to the oppositions/comments filed by: 1) EchoStar and DIRECTV; 2) Northpoint; and 3) Digital Broadband Applications Corp.)

(Filed September 18, 2002)

EchoStar Satellite Corporation and DIRECTV, Inc. - joint reply (EchoStar and DIRECTV)

SkyBridge L.L.C. (SkyBridge)

SES Americom, Inc. (SES Americom)

Satellite Broadcasting and Communications Association (SBCA)

APPENDIX B: Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR Parts 25 and 101 as follows:

PART 25 - SATELLITE COMMUNICATIONS

1. The authority citation for Part 25 continues to read as follows:

AUTHORITY: 47 U.S.C. 701-744. Interprets or applies Sections 4, 301, 302, 303, 307, 309 and 332 of the Communications Act, as amended. 47 U.S.C. Sections 154, 301, 302, 303, 307, 309, and 332, unless otherwise noted.

2. Section 25.139 is amended by revising paragraph (a) to read as follows.

§ 25.139 NGSO FSS coordination and information sharing between MVDDS licensees in the 12.2 GHz to 12.7 GHz band.

(a) NGSO FSS licensees shall maintain a subscriber database in a format that can be readily shared with MVDDS licensees for the purpose of determining compliance with the MVDDS transmitting antenna spacing requirement relating to qualifying existing NGSO FSS subscriber receivers set forth in §101.129 of this chapter. This information shall not be used for purposes other than set forth in §101.129 of this chapter. Only sufficient information to determine compliance with §101.129 of this chapter is required.

3. Section 25.146 is amended by adding a new paragraph (g) and redesignating paragraphs (g) through (m) as paragraphs (h) through (n) to read as follows.

§ 25.146 Licensing and operating authorization provisions for the non-geostationary satellite orbit fixed-satellite service (NGSO FSS) in the bands 10.7 GHz to 4.5 GHz.

(g) *Operational power flux density, space-to-Earth direction, limits.* Ninety days prior to the initiation of service to the public, the NGSO FSS system licensee shall submit a technical showing for the NGSO FSS system in the band 12.2-12.7 GHz. The technical information shall demonstrate that the NGSO FSS system is capable of meeting the limits as specified in §25.205(o). Licensees may not provide service to the public if they fail to demonstrate that they are capable of complying with the PFD limits.

4. Section 25.208 is amended by amended by revising the first sentence of paragraph (o) to read as follows:

§ 25.208 Power flux density limits.

(o) In the band 12.2-12.7 GHz, for NGSO FSS space stations, the specified low-angle power flux-density at the Earth's surface produced by emissions from a space station shall not be exceeded into an operational MVDDS receiver: * * *

PART 101 - FIXED MICROWAVE SERVICES

5. The authority citation for Part 101 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 303.

6. Section 101.111 is amended by revising the footnote immediately after the definition of "B" in paragraph (a)(2)(i) to read as follows:

§ 101.111 Emission limitations.

(a) * * *

(2) * * *

(i) * * *

MVDDS operations in the 12.2-12.7 GHz bands shall use 24 megahertz for the value of B in the emission mask equation set forth in this section. The emission mask limitation shall only apply at the 12.2--12.7 GHz band edges and does not restrict MVDDS channelization bandwidth within the band.

8. Section 101.1440 is amended by revising paragraph (d) (2) and (e) to read as follows.

§ 101.1440 MVDDS protection of DBS.

(d) * * *

(2) No later than forty-five days after receipt of the MVDDS system information in (d)(1), the DBS licensee(s) shall provide the MVDDS licensee with a list of only those new DBS customer locations that have been installed in the 30-day period following the MVDDS notification and that the DBS licensee believes may receive harmful interference or where the prescribed EPFD limits may be exceeded. In addition, the DBS licensee(s) could indicate agreement with the MVDDS licensee's technical assessment, or identify DBS customer locations that the MVDDS licensee failed to consider or DBS customer locations where they believe the MVDDS licensee erred in its analysis and could exceed the prescribed EPFD limit.

(e) Beginning thirty days after the DBS licensees are notified of a potential MVDDS site under (d)(1), the DBS licensees are responsible for providing information they deem necessary for those entities who

install all future DBS receive antennas on its system to take into account the presence of MVDDS operations so that these DBS receive antennas can be located in such a way as to avoid the MVDDS signal. These later installed DBS receive antennas shall have no further rights of complaint against the notified MVDDS transmitting antenna(s).

APPENDIX C –Final Regulatory Flexibility Certification

The Regulatory Flexibility Act of 1980, as amended (RFA),²⁹⁹ requires that a regulatory flexibility analysis be prepared for notice-and-comment rule making proceedings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.”³⁰⁰ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”³⁰¹ In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.³⁰² A “small business concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).³⁰³

Under the amended rules adopted in the Fourth Memorandum Opinion and Order, as discussed above, DBS licensees are required to provide the MVDDS licensee with a list of only those new DBS customer locations that have been installed in the 30-day period following the MVDDS notification and that the DBS licensee believes may receive harmful interference or where the prescribed equivalent power flux density (EPFD) limits may be exceeded. This requirement is less burdensome than the rule adopted in the *Second Report and Order*³⁰⁴ that required disclosure of all DBS customer locations under similar circumstances. Furthermore, under the amended rules, DBS licensees are required to provide merely the information deemed necessary by DBS licensees to enable others to take into account the presence of MVDDS transmitters. This requirement is less burdensome than the rule adopted in the *Second Report and Order* that imposed direct responsibility on DBS licensees for proper siting of future DBS receivers to take into account the presence of MVDDS.

Licensees of NGSO FSS systems are required to submit, ninety days prior to the initiation of service to the public, a technical showing that demonstrates that they are capable of meeting low-angle radiation limits specified in §25.205(o) of the Commission's rules for the 12.2-12.7 GHz band. Finally, licensees of NGSO FSS systems are required under the amended rules to ensure that the PFD limit is not exceeded into an operational MVDDS receiver. Taken together, these requirements are less burdensome than those adopted in the *Second Report and Order* because they merely require a showing that the NGSO FSS system is *capable* of meeting (instead of demonstrating the system has factually met) the specified technical limits, and because the PFD limit need only be met into *operational*, rather than *all*, MVDDS receivers.

These changes are deregulatory because they lessen compliance requirements. Therefore, we certify that the requirements of the Fourth Memorandum Opinion and Order will not have a significant economic impact on a substantial number of small entities.

²⁹⁹ The RFA, see 5 U.S.C. § 601 – 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

³⁰⁰ 5 U.S.C. § 605(b).

³⁰¹ 5 U.S.C. § 601(6).

³⁰² 5 U.S.C. § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

³⁰³ 15 U.S.C. § 632.

³⁰⁴ *Second R&O*, 17 FCC Rcd 9614 (2002).

The Commission will send a copy of the Fourth Memorandum Opinion and Order, including a copy of this Final Regulatory Flexibility Certification, in a report to Congress pursuant to the Congressional Review Act.³⁰⁵ In addition, the Fourth Memorandum Opinion and Order and this final certification will be sent to the Chief Counsel for Advocacy of the SBA, and will be published in the Federal Register.³⁰⁶

³⁰⁵ See 5 U.S.C. § 801(a)(1)(A).

³⁰⁶ See 5 U.S.C. § 605(b).

APPENDIX D – Summary of Numerical Results

Tables 1-5 compare the baseline availability and unavailability (outage) due to rain only with calculated availability and outage due to rain plus MVDDS. These values are shown as a percentage over an average one-year period. For the rain plus MVDDS, we calculate the availability and outage percentages using the adopted regional EPFD values and for comparison purposes using an assumed 10% increase in minutes of unavailability over the baseline. The tables also compare the differences between the availability and unavailability percentages calculated using the regional EPFD values and the baseline. The same differences are also compared for the values calculated using the regional EPFD values and the assumed 10% increase in outage. The tables show that for the CONUS satellites the increase in outage as a percentage over an average year is less than one-tenth of one percent in all cases (except for Honolulu). Similar results are shown for the “wing” satellites.

Table 6 compares the unavailability between the old satellite at 110° West Longitude (the one used to develop the regional EPFD values) and the new spot beam satellite currently operating from that location.³⁰⁷ In all cases, the results show that the potential outages that a DBS customer may experience are less for the new satellite as compared to the old satellite.

³⁰⁷ This new satellite was launched in August 2002. For technical detail of the new satellite see *Application of EchoStar Satellite Corporation for Authority to Launch and Operate EchoStar VIII*, File No. SAT-LOA-20020329-00042; *Application of EchoStar Satellite Corporation for Minor Modification of DBS Authorization, Launch and Operating Authority EchoStar VIII*, SAT-MOD-20020329-00041; and the *Revised Technical Appendix*, SAT-AMD-20020430-00086.

Table 1: Satellite Located at 101° West Longitude – Comparison of Availability and Unavailability (Outage) Attributable to MVDDS for various criteria
 (all values are expressed as a percentage over a year)

City	Baseline (Rain Only)		Rain plus MVDDS (using regional EPFD)		Rain plus MVDDS (assuming 10% limit)		Increase in Outage (using regional EPFD) Difference Between Rain plus MVDDS and Baseline (rain only)	Rain plus MVDDS Difference between Regional EPFD and assumed 10% limit	Increase in Outage Over Baseline (using regional EPFD)
	Availability	Outage	Availability	Outage	Availability	Outage			(%)
Miami	99.673	0.327	99.644	0.356	99.640	0.360	0.029	(0.004)	8.876
Orlando	99.718	0.282	99.691	0.309	99.690	0.310	0.028	0.000	9.835
Tampa	99.729	0.271	99.702	0.298	99.701	0.299	0.027	(0.001)	9.811
Atlanta	99.835	0.165	99.819	0.181	99.819	0.181	0.016	0.000	9.931
Phoenix	99.874	0.126	99.859	0.141	99.862	0.138	0.016	0.003	12.351
Houston	99.802	0.198	99.788	0.212	99.782	0.218	0.014	(0.006)	7.023
Seattle	99.859	0.141	99.845	0.155	99.845	0.155	0.014	0.000	9.838
Sacramento	99.854	0.146	99.841	0.159	99.839	0.161	0.014	(0.001)	9.310
San Francisco	99.876	0.124	99.863	0.137	99.863	0.137	0.013	0.001	10.476
Dallas	99.844	0.156	99.833	0.167	99.828	0.172	0.011	(0.004)	7.253
Nashville	99.895	0.105	99.884	0.116	99.884	0.116	0.011	0.000	10.293
Portland	99.891	0.109	99.881	0.119	99.880	0.120	0.011	0.000	9.911
St. Louis	99.908	0.092	99.901	0.099	99.899	0.101	0.007	(0.002)	7.739
Cincinnati	99.911	0.089	99.904	0.096	99.902	0.098	0.007	(0.002)	7.823
Kansas City	99.919	0.081	99.913	0.087	99.911	0.089	0.006	(0.002)	7.786
Cleveland	99.930	0.070	99.923	0.077	99.923	0.077	0.006	(0.001)	8.759
Chicago	99.938	0.062	99.933	0.067	99.932	0.068	0.005	(0.001)	8.106
Milwaukee	99.941	0.059	99.936	0.064	99.935	0.065	0.005	(0.001)	8.159
Detroit	99.942	0.058	99.938	0.062	99.937	0.063	0.005	(0.001)	8.231
Minneapolis	99.942	0.058	99.938	0.062	99.937	0.063	0.005	(0.001)	8.210
Denver	99.972	0.028	99.967	0.033	99.969	0.031	0.004	0.002	15.478
Greenville	99.926	0.074	99.922	0.078	99.919	0.081	0.004	(0.003)	5.444
Philadelphia	99.958	0.042	99.955	0.045	99.954	0.046	0.003	(0.001)	7.724
Charlotte	99.945	0.055	99.942	0.058	99.940	0.060	0.003	(0.002)	5.544

City	Baseline (Rain Only)		Rain plus MVDDS (using regional EPFD)		Rain plus MVDDS (assuming 10% limit)		Increase in Outage (using regional EPFD) Difference Between Rain plus MVDDS and Baseline (rain only)	Rain plus MVDDS Difference between Regional EPFD and assumed 10% limit	Increase in Outage Over Baseline (using regional EPFD) (%)
	Availability	Outage	Availability	Outage	Availability	Outage			
Washington DC	99.958	0.042	99.956	0.044	99.954	0.046	0.002	(0.002)	5.762
New York	99.962	0.038	99.960	0.040	99.958	0.042	0.002	(0.002)	5.897
Boston	99.969	0.031	99.967	0.033	99.966	0.034	0.002	(0.001)	6.597
Indianapolis	99.911	0.089	99.909	0.091	99.902	0.098	0.002	(0.007)	2.249
Pittsburgh	99.968	0.032	99.966	0.034	99.965	0.035	0.002	(0.001)	5.865
San Diego	99.975	0.025	99.973	0.027	99.972	0.028	0.002	(0.001)	6.364
Columbus	99.961	0.039	99.960	0.040	99.957	0.043	0.001	(0.002)	3.791
Los Angeles	99.984	0.016	99.983	0.017	99.983	0.017	0.001	(0.001)	6.691
Baton Rouge	99.769	0.231	99.747	0.253	99.746	0.254	0.022	(0.001)	9.473
New Orleans	99.759	0.241	99.736	0.264	99.735	0.265	0.023	(0.001)	9.385
Shreveport	99.819	0.181	99.800	0.200	99.801	0.199	0.019	0.001	10.340
Billings	99.978	0.022	99.975	0.025	99.975	0.025	0.003	0.001	12.297
Fargo	99.906	0.094	99.896	0.104	99.896	0.104	0.009	0.000	9.891
Salt Lake City	99.988	0.012	99.986	0.014	99.986	0.014	0.002	0.001	15.420
Omaha	99.931	0.069	99.926	0.074	99.925	0.075	0.005	(0.001)	7.966
Oklahoma City	99.914	0.086	99.907	0.093	99.905	0.095	0.007	(0.002)	7.662
Boise	99.988	0.012	99.986	0.014	99.986	0.014	0.001	0.000	11.674
Jackson	99.802	0.198	99.782	0.218	99.782	0.218	0.020	0.001	10.279
Anchorage*	99.972	0.028	99.971	0.029	99.969	0.031	0.001	(0.002)	3.564
Honolulu**	98.334	1.666	97.946	2.054	98.167	1.833	0.388	0.221	23.270

* Based on 240 CM DBS receive antenna (See www.directv.com/DTVAPP/learn/FAQ_DTVBasics.jsp)

**Based on 90 cm DBS receive antenna

Notes:

1. The absolute value of the difference is the same whether comparing availability or outage (unavailability).
2. Cities shown in gray are additional cities analyzed in *Second Report and Order* to validate results of original 32 city sample.
3. Values shown in brackets indicate better DBS performance with regional EPFD than with an assumed 10% limit on unavailability.

Table 2: Satellite Located at 110° West Longitude – Comparison of Availability and Unavailability (Outage) Attributable to MVDDS for various criteria
(all values are expressed as a percentage over a year)

City	Baseline (Rain Only)		Rain plus MVDDS (using regional EPFD)		Rain plus MVDDS (assuming 10% limit)		Increase in Outage (using regional EPFD) Difference Between Rain plus MVDDS and Baseline (rain only)	Rain plus MVDDS Difference between Regional EPFD and assumed 10% limit	Increase in Outage Over Baseline (using regional EPFD) (%)
	Availability	Outage	Availability	Outage	Availability	Outage			
Philadelphia	99.728	0.272	99.650	0.350	99.701	0.299	0.079	0.051	28.892
Washington DC	99.736	0.264	99.664	0.336	99.709	0.291	0.072	0.045	27.121
New York	99.748	0.252	99.678	0.322	99.723	0.277	0.070	0.045	27.811
Houston	99.529	0.471	99.462	0.538	99.482	0.518	0.068	0.020	14.380
Boston	99.780	0.220	99.714	0.286	99.758	0.242	0.067	0.044	30.241
Nashville	99.714	0.286	99.648	0.352	99.685	0.315	0.066	0.037	23.007
Dallas	99.617	0.383	99.557	0.443	99.578	0.422	0.059	0.021	15.493
Pittsburgh	99.796	0.204	99.739	0.261	99.775	0.225	0.056	0.036	27.482
Columbus	99.767	0.233	99.723	0.277	99.743	0.257	0.044	0.021	18.852
Cincinnati	99.748	0.252	99.705	0.296	99.723	0.277	0.044	0.018	17.402
Cleveland	99.792	0.208	99.752	0.248	99.771	0.229	0.040	0.019	19.260
Kansas City	99.784	0.216	99.747	0.253	99.763	0.237	0.037	0.015	17.146
Miami	99.633	0.367	99.598	0.403	99.596	0.404	0.035	(0.001)	9.673
Detroit	99.829	0.171	99.796	0.204	99.812	0.188	0.033	0.016	19.532
Chicago	99.822	0.178	99.790	0.210	99.804	0.196	0.032	0.014	18.034
Orlando	99.683	0.317	99.651	0.349	99.651	0.349	0.032	0.000	10.057
Milwaukee	99.829	0.171	99.798	0.202	99.812	0.188	0.031	0.014	18.139
Minneapolis	99.838	0.162	99.808	0.192	99.821	0.179	0.029	0.013	18.176
Indianapolis	99.751	0.249	99.722	0.278	99.726	0.274	0.029	0.004	11.807
Tampa	99.696	0.304	99.668	0.332	99.666	0.334	0.029	(0.002)	9.414
St. Louis	99.751	0.249	99.729	0.271	99.726	0.274	0.022	(0.003)	8.963
Atlanta	99.814	0.186	99.794	0.206	99.796	0.204	0.020	0.001	10.830
Greenville	99.829	0.171	99.810	0.190	99.812	0.188	0.019	0.002	11.040
Charlotte	99.868	0.132	99.852	0.148	99.855	0.145	0.017	0.003	12.614

City	Baseline (Rain Only)		Rain plus MVDDS (using regional EPFD)		Rain plus MVDDS (assuming 10% limit)		Increase in Outage (using regional EPFD) Difference Between Rain plus MVDDS and Baseline (rain only)	Rain plus MVDDS Difference between Regional EPFD and assumed 10% limit	Increase in Outage Over Baseline (using regional EPFD)
	Availability	Outage	Availability	Outage	Availability	Outage			(%)
Phoenix	99.874	0.126	99.858	0.142	99.861	0.139	0.016	0.003	12.560
Seattle	99.869	0.131	99.855	0.145	99.856	0.144	0.014	0.001	11.069
Sacramento	99.863	0.138	99.848	0.152	99.849	0.151	0.014	0.001	10.473
Portland	99.899	0.101	99.888	0.112	99.889	0.111	0.011	0.001	11.100
San Francisco	99.882	0.118	99.871	0.129	99.870	0.130	0.011	(0.001)	9.500
San Diego	99.936	0.064	99.928	0.072	99.930	0.070	0.008	0.002	13.208
Los Angeles	99.959	0.041	99.953	0.047	99.955	0.045	0.006	0.002	13.902
Denver	99.970	0.030	99.966	0.034	99.967	0.033	0.004	0.001	14.527
Baton Rouge	99.752	0.248	99.726	0.274	99.727	0.273	0.025	0.001	10.260
New Orleans	99.740	0.260	99.714	0.286	99.714	0.286	0.026	0.000	10.176
Shreveport	99.805	0.195	99.786	0.214	99.786	0.214	0.019	0.000	9.873
Billings	99.977	0.023	99.975	0.025	99.975	0.025	0.003	0.001	12.532
Fargo	99.893	0.107	99.882	0.118	99.882	0.118	0.011	0.000	10.173
Salt Lake City	99.988	0.012	99.986	0.014	99.987	0.013	0.002	0.001	15.683
Omaha	99.816	0.184	99.781	0.219	99.797	0.203	0.035	0.016	18.740
Oklahoma City	99.775	0.225	99.738	0.262	99.753	0.247	0.037	0.015	16.667
Boise	99.988	0.012	99.987	0.013	99.987	0.013	0.002	0.000	13.149
Jackson	99.785	0.215	99.762	0.238	99.763	0.237	0.023	0.001	10.522
Anchorage*	99.942	0.058	99.937	0.063	99.937	0.063	0.005	(0.001)	8.929
Honolulu**	99.911	0.089	99.909	0.091	99.902	0.098	0.002	(0.007)	2.198

*Based on 180 cm DBS receive Antenna

**Based on 90 cm DBS receive Antenna

Notes:

1. The absolute value of the difference is the same whether comparing availability or outage (unavailability).
2. Cities shown in gray are additional cities analyzed in *Second Report and Order* to validate results of original 32 city sample.
3. Values shown in brackets indicate better DBS performance with regional EPFD than with an assumed 10% limit on unavailability.

Table 3: Satellite Located at 119° West Longitude – Comparison of Availability and Unavailability (Outage) Attributable to MVDDS for various criteria
(all values are expressed as a percentage over a year)

City	Baseline		Rain plus MVDDS		Rain plus MVDDS		Increase in Outage	Rain plus MVDDS	Increase in Outage
	(Rain Only)		(using regional EPFD)		(assuming 10% limit)		(using regional EPFD)	Difference between	Over Baseline
	Availability	Outage	Availability	Outage	Availability	Outage	Difference Between	Difference between	(using regional EPFD)
							Rain plus MVDDS and	Regional EPFD and	(%)
							Baseline (rain only)	assumed 10% limit	
Miami	99.503	0.497	99.449	0.551	99.453	0.547	0.054	0.004	10.905
Orlando	99.571	0.429	99.522	0.478	99.528	0.472	0.050	0.006	11.567
Tampa	99.593	0.407	99.546	0.454	99.552	0.448	0.047	0.006	11.564
Atlanta	99.747	0.253	99.713	0.287	99.721	0.279	0.034	0.008	13.389
Greenville	99.761	0.239	99.731	0.269	99.737	0.263	0.031	0.007	12.825
Philadelphia	99.834	0.166	99.807	0.193	99.817	0.183	0.027	0.010	15.986
Charlotte	99.811	0.189	99.784	0.216	99.792	0.208	0.026	0.007	13.893
New York	99.844	0.156	99.821	0.179	99.828	0.172	0.023	0.007	14.779
Houston	99.738	0.262	99.716	0.284	99.711	0.289	0.022	(0.004)	8.384
Washington DC	99.840	0.160	99.819	0.181	99.824	0.176	0.022	0.006	13.659
Boston	99.861	0.139	99.839	0.161	99.846	0.154	0.021	0.007	15.125
Nashville	99.838	0.162	99.819	0.182	99.822	0.178	0.020	0.004	12.245
Seattle	99.843	0.157	99.823	0.177	99.827	0.173	0.020	0.004	12.516
Indianapolis	99.874	0.126	99.855	0.145	99.862	0.138	0.019	0.007	15.421
Sacramento	99.835	0.165	99.816	0.184	99.819	0.181	0.019	0.003	11.658
Dallas	99.791	0.209	99.773	0.227	99.770	0.230	0.018	(0.003)	8.708
Pittsburgh	99.881	0.120	99.863	0.137	99.869	0.131	0.018	0.006	14.728
San Francisco	99.860	0.140	99.844	0.156	99.846	0.154	0.016	0.002	11.748
Portland	99.879	0.121	99.864	0.136	99.867	0.133	0.015	0.003	12.541
Cincinnati	99.857	0.144	99.843	0.157	99.842	0.158	0.014	(0.001)	9.477
Columbus	99.865	0.135	99.852	0.148	99.852	0.148	0.013	(0.001)	9.651
Cleveland	99.880	0.120	99.868	0.132	99.868	0.132	0.012	0.000	9.718
Los Angeles	99.922	0.078	99.911	0.089	99.914	0.086	0.011	0.004	14.781
Kansas City	99.885	0.115	99.875	0.125	99.874	0.126	0.011	(0.001)	9.329

City	Baseline (Rain Only)		Rain plus MVDDS (using regional EPFD)		Rain plus MVDDS (assuming 10% limit)		Increase in Outage (using regional EPFD) Difference Between Rain plus MVDDS and Baseline (rain only)	Rain plus MVDDS Difference between Regional EPFD and assumed 10% limit	Increase in Outage Over Baseline (using regional EPFD) (%)
	Availability	Outage	Availability	Outage	Availability	Outage			
San Diego	99.920	0.080	99.911	0.089	99.912	0.088	0.010	0.002	12.186
Detroit	99.903	0.097	99.893	0.107	99.893	0.107	0.010	0.000	9.866
Chicago	99.902	0.098	99.893	0.107	99.893	0.107	0.010	0.000	9.734
Milwaukee	99.907	0.093	99.898	0.102	99.897	0.103	0.009	0.000	9.871
Minneapolis	99.915	0.085	99.906	0.094	99.906	0.094	0.008	0.000	9.848
Phoenix	99.941	0.059	99.936	0.064	99.935	0.065	0.004	(0.002)	7.227
St. Louis	99.864	0.136	99.862	0.138	99.850	0.150	0.002	(0.012)	1.393
Denver	99.987	0.013	99.985	0.015	99.985	0.015	0.001	0.000	8.889
Baton Rouge	99.683	0.317	99.646	0.354	99.652	0.348	0.037	0.006	11.772
New Orleans	99.666	0.334	99.627	0.373	99.632	0.368	0.039	0.006	11.731
Shreveport	99.753	0.247	99.722	0.278	99.728	0.272	0.030	0.006	12.231
Billings	99.969	0.031	99.965	0.035	99.966	0.034	0.004	0.001	14.020
Fargo	99.846	0.154	99.824	0.176	99.830	0.170	0.022	0.007	14.365
Salt Lake City	99.984	0.016	99.981	0.019	99.982	0.018	0.003	0.001	19.199
Omaha	99.903	0.097	99.893	0.107	99.893	0.107	0.009	0.000	9.566
Oklahoma City	99.882	0.118	99.871	0.129	99.870	0.130	0.011	(0.001)	9.185
Boise	99.996	0.004	99.995	0.005	99.995	0.005	0.000	0.000	7.725
Jackson	99.710	0.281	99.685	0.315	99.691	0.309	0.034	0.006	12.193
Anchorage*	99.987	0.013	99.987	0.013	99.986	0.014	0.000	(0.001)	3.720
Honolulu**	99.635	0.365	99.602	0.398	99.599	0.401	0.033	(0.003)	9.072

*Based on 180 cm DBS receive Antenna

**Based on 90 cm DBS receive Antenna

Notes:

1. The absolute value of the difference is the same whether comparing availability or outage (unavailability).
2. Cities shown in gray are additional cities analyzed in *Second Report and Order* to validate results of original 32 city sample.
3. Values shown in brackets indicate better DBS performance with regional EPFD than with an assumed 10% limit on unavailability.

Table 4: Satellite Located at 61.5° West Longitude – Comparison of Availability and Unavailability (Outage) Attributable to MVDDS for various criteria
(all values are expressed as a percentage over a year)

City	Baseline (Rain Only)		Rain plus MVDDS (using regional EPFD)		Rain plus MVDDS (assuming 10% limit)		Increase in Outage (using regional EPFD) Difference Between Rain plus MVDDS and Baseline (rain only)	Rain plus MVDDS Difference between Regional EPFD and assumed 10% limit	Increase in Outage Over Baseline (using regional EPFD)
	Availability	Outage	Availability	Outage	Availability	Outage			(%)
Seattle*	98.282	1.718	98.108	1.892	97.756	2.244	0.525	0.352	30.563
Los Angeles	99.693	0.307	99.662	0.338	99.659	0.341	0.033	0.002	10.869
Miami	99.847	0.153	99.832	0.168	99.840	0.160	0.007	(0.009)	4.447
Kansas City	99.902	0.098	99.893	0.107	99.896	0.104	0.007	(0.003)	6.752
Detroit	99.948	0.052	99.942	0.058	99.944	0.056	0.004	(0.002)	7.048
Washington	99.966	0.034	99.963	0.037	99.965	0.035	0.002	(0.002)	5.030
New York	99.972	0.028	99.969	0.031	99.970	0.030	0.002	(0.001)	5.654

* The availability for this city is less than the desired 99.8%.

Notes:

1. The absolute value of the difference is the same whether comparing availability or outage (unavailability).
2. Values shown in brackets indicate better DBS performance with regional EPFD than with an assumed 10% limit on unavailability.

Table 5: Satellite Located at 148° West Longitude – Comparison of Availability and Unavailability (Outage) Attributable to MVDDS for various criteria
(all values are expressed as a percentage over a year)

City	Baseline (Rain Only)		Rain plus MVDDS (using regional EPFD)		Rain plus MVDDS (assuming 10% limit)		Increase in Outage (using regional EPFD) Difference Between Rain plus MVDDS and Baseline (rain only)	Rain plus MVDDS Difference between Regional EPFD and assumed 10% limit	Increase in Outage Over Baseline (using regional EPFD)
	Availability	Outage	Availability	Outage	Availability	Outage			(%)
Seattle*	98.470	1.530	98.145	1.855	98.316	1.684	0.325	0.170	21.216
San Francisco	99.502	0.498	99.374	0.626	99.452	0.548	0.128	0.078	25.763
Portland	99.610	0.391	99.498	0.502	99.570	0.430	0.111	0.072	28.553
Dallas	99.627	0.373	99.599	0.401	99.589	0.411	0.028	(0.009)	7.560
Detroit	99.681	0.319	99.653	0.347	99.649	0.351	0.028	(0.004)	8.709
Los Angeles	99.925	0.075	99.915	0.085	99.917	0.083	0.010	0.002	12.882
Phoenix	99.933	0.067	99.929	0.072	99.926	0.074	0.004	(0.003)	5.926

* The availability for this city is less than the desired 99.8%.

Notes:

1. The absolute value of the difference is the same whether comparing availability or outage (unavailability).
2. Values shown in brackets indicate better DBS performance with regional EPFD than with an assumed 10% limit on unavailability.

Table 6: Comparison of Old and New (Spot Beam) Satellite at 110° West Longitude for Selected Cities

	Baseline Outage (Rain Only)		Rain plus MVDDS Outage (using regional EPFD)		Increase in Outage			
	Minutes		Minutes		Minutes		Percent	
	Old	New	Old	New	Old	New	Old	New
Philadelphia	1429.000	204.040	1842.000	215.323	413.000	11.283	28.901	5.530
Washington DC	1388.300	203.230	1765.000	212.977	376.700	9.747	27.134	4.796
New York	1323.600	58.249	1692.000	59.127	368.400	0.878	27.833	1.507
Boston	1156.800	115.091	1506.500	119.273	349.700	4.182	30.230	3.634
Nashville	1504.400	127.989	1850.100	131.459	345.700	3.470	22.979	2.711
Kansas City	1134.800	90.464	1329.700	92.041	194.900	1.577	17.175	1.743
Oklahoma City*	1182.000	925.122	1379.000	1051.000	197.000	125.878	16.667	13.607
Charlotte	692.100	156.056	779.300	160.409	87.200	4.353	12.599	2.789
Phoenix*	661.900	514.250	744.600	565.918	82.700	51.668	12.494	10.047
Seattle	689.000	233.658	765.300	244.440	76.300	10.782	11.074	4.614
Los Angeles	215.800	172.765	245.600	186.908	29.800	14.143	13.809	8.186
Denver	155.600	33.717	178.100	35.540	22.500	1.823	14.460	5.407

Note: All calculations done using spot beam except those indicated by *. In these cases, a spot beam is not available for this city and the CONUS beam was used.

**SEPARATE STATEMENT OF COMMISSIONER
KEVIN J. MARTIN
APPROVING IN PART AND DISSENTING IN PART**

Re: 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, Fourth Memorandum Opinion and Order and Order, ET Docket No. 98-206, RM-9147, and RM-9245.

I approve in part and dissent in part for the reasons explained in my earlier separate statement on this matter. *See Separate Statement of Commissioner Kevin J. Martin, Approving in Part and Dissenting in Part, 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, ET Docket No. 98-206, RM-9147, and RM-9245 (rel. May 23, 2002).*