

licensees to exercise reasonable care to protect users and the public from radiofrequency exposure in excess of the Commission's limits.

249. As part of the NGSO FSS licensee's obligation to exercise such reasonable care, we conclude that it must ensure that subscriber antennas are labeled to give notice of the potential radiofrequency safety hazards from these antennas. We have previously adopted labeling requirements for LMDS, MDS, ITFS, and 24 GHz service antennas, which, like NGSO FSS's antennas, can be placed at a subscriber's premises.<sup>519</sup> We see no reason to make a different determination with respect to labeling for NGSO FSS's subscriber antennas than we made for these other subscriber antennas. In addition, we have recently made labeling a condition for invoking protection from restrictions that impair the installation, maintenance, or use of customer-end antennas that are used to transmit fixed wireless service, where the antenna user has a direct or indirect ownership or leasehold interest in the property.<sup>520</sup> Accordingly, we are amending Table 1 in Section 1.1307(b) of the Commission's rules to provide for labeling requirements for NGSO subscriber equipment.<sup>521</sup>

250. Labeling information should include minimum separation distances required between users and radiating antennas to meet the Commission's radiofrequency exposure guidelines. Labels should also include reference to the Commission's applicable radiofrequency exposure guidelines. In addition, the instruction manuals and other information accompanying subscriber transceivers should include a full explanation of the labels, as well as a reference to the applicable Commission radiofrequency exposure guidelines. While we will require licensees to attach labels and provide users with notice of potentially harmful exposure to radiofrequency electromagnetic fields, we will not mandate the specific language to be used. However, we will require use of the ANSI-specified warning symbol for radiofrequency exposure.<sup>522</sup>

251. It is recommended that two-way subscriber equipment, such as that used to connect to NGSO FSS systems, be installed by professional personnel, thereby minimizing the possibility that the antenna will be placed in a location that is likely to expose subscribers or other persons to the transmit

---

<sup>519</sup> See Rule Making 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 Service, CC Docket No. 92-297, *Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rule Making*, 12 FCC Rcd 12545, 12670, ¶ 295 (1997) (*LMDS Order*); Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions, MM Docket No. 97-217, *Report and Order*, 13 FCC Rcd 19112, 19129, ¶ 37 (1998) (*MDS/ITFS Order*); Amendment to Parts 1, 2, 87, and 101 of the Commission's Rules to License Fixed Services at 24 GHz, WT Docket No. 99-327, *Report and Order*, 15 FCC Rcd 16934 (2000) ("*24 GHz Report and Order*"); 47 C.F.R. § 1.1307(b)(1).

<sup>520</sup> See Promotion of Competitive Networks in Local Telecommunications Markets, *First Report and Order and Further Notice of Proposed Rule Making in WT Docket No. 99-217, Fifth Report and Order and Memorandum Opinion and Order in CC Docket No. 96-98, and Fourth Report and Order and Memorandum Opinion and Order in CC Docket No. 88-57*, FCC 00-366, at ¶¶ 117-120. (rel. October 25, 2000); 47 C.F.R. § 1.4000. We also note that local governments, associations, and property owners may require professional installation of transmitting antennas without running afoul of Section 1.4000 of our rules. *Id.* at ¶ 119.

<sup>521</sup> Table 1, 47 C.F.R. § 1.1307(b)(1).

<sup>522</sup> See *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*, FCC Office of Engineering and Technology (OET), OET Bulletin 65, August, 1997, at 53 (available at <http://www.fcc.gov/oet/info/documents/bulletins/#65>).

signal at close proximity and for an extended period of time.<sup>523</sup> We believe that professional installation, in combination with the labeling requirement, will obviate the need to adopt the proposals made by GE and Telesat Canada with respect to defining safety zones or specifying minimum antenna height. Generally, we expect subscriber antennas to be installed so that neither subscribers nor other persons are easily able to venture into and interrupt the transmit beams. Such interruptions can degrade the quality of service to the subscriber and ultimately reduce the value of the carrier's service. Thus, providers have economic and other incentives to avoid temporary interruptions of signal quality that are likely to motivate them to install antennas in locations where such interruptions are less likely to occur. In addition, we encourage the use of safety interlock features on NGSO FSS subscriber antennas that would prevent a transceiver from continuing to transmit when blocked, to the extent that such features could be made available at a reasonable cost.<sup>524</sup>

252. We also note that the Commission plans to initiate a rule making proceeding to review and, where necessary, harmonize the Commission's regulations concerning transceiver equipment approval for radiofrequency.

## 5. Emission Limits

253. *Proposal.* In the NPRM, we proposed that the aggregate power flux density from all NGSO satellites in a constellation would have to be below  $-255$  dBW/m<sup>2</sup>/Hz to protect Radio Astronomy Service ("RAS") receivers in the 10.6-10.7 GHz band from harmful interference.<sup>525</sup> We requested comment on how NGSO FSS satellite downlinks would avoid causing harmful interference to sensitive radio astronomy operations. Specifically, what additional emission standards, including filtering requirements and operational measures need to be developed to protect radio astronomy operations? We also requested comment on whether the existing emission and frequency tolerance requirements for the FSS in Section 25.202<sup>526</sup> of our rules are sufficient to protect other incumbent Ku-band operations.

254. *Comments.* Three parties filed comments concerning RAS operations. The National Academy of Sciences' Committee on Radio Frequencies ("CORF") contends that the radio emissions received by radio astronomers are extremely weak, often considered to be in the noise floor, and their equipment has been modified to detect these signals. Therefore, RAS operations are especially susceptible to interference from out-of-band users in neighboring bands, as well as harmonic emissions in the RAS band. CORF recommends the Commission make the protection of RAS observations in the 10.6-10.7 GHz band<sup>527</sup> a condition of licensing any NGSO FSS downlink operations. CORF also states

---

<sup>523</sup> See, e.g., *LMDS Order*, 12 FCC Rcd at 12670. We note that professional installation is in fact required for certain antennas used for MDS and ITFS under the Commission's rules. See 47 C.F.R. §§ 21.909(n), 74.939(p).

<sup>524</sup> See *LMDS Order*, 12 FCC Rcd at 12670, ¶ 296; *MDS/ITFS Order*, 13 FCC Rcd at 19129, ¶ 38; see also Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions, MM Docket No. 97-217, *Report and Order on Reconsideration*, 14 FCC Rcd 12764, 12779, ¶ 29 (1999) (rules amended to provide for a positive "interlock" feature that prevents inadvertent activation of a newly installed response transmitter when the response antenna is not properly installed so as to receive signals from the associated main or booster transmitters).

<sup>525</sup> See *NPRM* at ¶ 82.

<sup>526</sup> See 47 C.F.R. §25.202.

<sup>527</sup> CORF contends that the 10.6-10.7 GHz band is important to the scientific community because it provides a substantial bandwidth at a wavelength long enough to not be substantially impeded by the Earth's atmosphere. Detailed measurements of the cosmic background are conducted in this frequency band, as are (continued....)

that the Commission should require that these downlinks protect radio astronomy observations at the level required under ITU-R Recommendation RA.769-1, namely the out-of-band limit of  $-255$  dBW/m<sup>2</sup>/Hz when an NGSO transmitter is within five degrees of the main beam of a radio telescope, as proposed in the NPRM. In addition, CORF requests the Commission consider a further reduction of 10dB, reducing the values present in Table 1 of the NPRM, in the maximum flux densities allowed for gateway downlinks between 10.7-11.2 GHz. Finally, CORF also solicits a modification of Part 25 of the Rules to require NGSO downlinks to gateways use filters that can provide a minimum of 50 dB of suppression in an adjacent band.

255. SkyBridge and Boeing argue that comprehensive specific restrictions are not appropriate in this case. SkyBridge states that no specific rule should be required because the same requirement may not be appropriate for all NGSO FSS systems. In addition, SkyBridge mentions the lack of restrictions on other services in the band as basis for this belief. Boeing counters CORF's interpretation of ITU-R Recommendation RA.769-1, believing it to be a recommendation, not a requirement. In support of this, Boeing also draws attention to the unrestricted use by other services within the 10.6-10.68 GHz band, namely fixed and mobile services. Boeing would like to implement measures other than filtering and reduced in-band space-to-Earth power flux density limits. It wants the Commission to consider enforcing alternatives such as siting gateway facilities away from radio astronomy receivers, using low sidelobe satellite antennas, downlink adaptive power control and providing a wider guard band. Boeing believes the recommendations of CORF are intrusive and excessive.

256. *Decision.* Article S29 of the ITU Radio Regulations outlines general provisions for the protection of the RAS. Specifically, Article S29 acknowledges the sensitivity of RAS operations and encourages administrations to cooperate in protecting RAS operations from interference. Article S29 also identifies various techniques that administrations may use to protect RAS, such as geographic separation, frequency separation, time sharing and power limitations.<sup>528</sup> Article S29 refers to ITU-R RA.769-1, which establishes protection criteria for various radio astronomy frequency bands. ITU-R RA.769-1 also recognizes that interference to radio astronomy operations from geostationary satellites is a special interference case because the signal energy could easily be observed by the RAS receiving antenna. We find that non-geostationary satellite downlink operations also pose a significant interference risk to radio astronomy operations unless parties make an active effort to avoid interference.<sup>529</sup> The interference limits set forth in ITU-R RA.769-1 provide reasonable protection against interference to RAS operations from various operations. We note that the ITU is studying a Draft New Recommendation that would specify, for interference evaluation, a separate criterion for data loss to the RAS due to interference from any one NGSO FSS network, in any frequency band which is allocated to the Radio Astronomy Service on a primary basis.<sup>530</sup> Because the Draft New Recommendation regarding

(Continued from previous page) \_\_\_\_\_

passive radiometric measurements of the sea state and wind directions over oceans, which are important in tracking hurricanes and protecting maritime activities. CORF Comments at 3.

<sup>528</sup> See *Radio Astronomy Service*, ITU-R Article S29.

<sup>529</sup> See *Protection Criteria Used For Radioastronomical Measurements*, Recommendation ITU-R RA.769-1 at 3. Specifically, because NGSO satellites can be anywhere in the sky and have the potential to transmit directly into radio astronomy receivers as they orbit over a certain area, spectrum planning may be necessary to protect the radio astronomy receivers.

<sup>530</sup> See September 8, 2000 Letter from The National Science Foundation to Mr. Norbert Schroeder, Acting Chairman, IRAC. Specifically, the Letter indicates that the out-of-band limits of  $-255$  dBW/m<sup>2</sup>/Hz within five degrees of the main beam of a radio telescope and  $-240$  dBW/m<sup>2</sup>/Hz outside of the mainbeam of the radio telescope (ITU-R RA.769-1) could be exceeded for 2% of the time by a NGSO FSS system without being considered to cause harmful interference.

NGSO FSS/RAS sharing is still under consideration, we decline to adopt specific protection limits in our rules. Rather, we will require NGSO FSS applicants to coordinate and reach a mutually acceptable agreement with the RAS facilities that use the 10.6-10.7 GHz band to ensure that these facilities are adequately protected from interference. We find that requiring coordination between NGSO FSS and RAS operations presents both parties with the most flexibility to reach agreement on the protection of RAS.

257. We are not adopting CORF's suggestions that we establish specific filter requirements and lower NGSO FSS EPFD<sub>down</sub> parameters. We find that various techniques (*e.g.*, filters, power reduction, beam management or guard band techniques) can be identified in the coordination process by individual NGSO FSS systems to ensure they do not harm RAS operations. Accordingly, we adopt footnote US355 into our Table of Frequency Allocations for NGSO FSS downlink operations in the 10.7-11.7 GHz band to protect RAS operations in the 10.6-10.7 GHz band. US355 reads as follows:

US355 In the band 10.7-11.7 GHz, non-geostationary satellite orbit licensees in the fixed-satellite service (space-to-Earth), prior to commencing operations, shall coordinate with the following radio astronomy observatories to achieve a mutually acceptable agreement regarding the protection of the radio telescope facilities operating in the band 10.6-10.7 GHz.

Observatory	West Longitude	North Latitude	Elevation
Arecibo Obs. ....	.....66° 45' 11"	.....18° 20' 46"	.....496 m
Green Bank Telescope (GBT).....	.....79° 50' 24"	.....38° 25' 59"	.....825 m
Very Large Array (VLA).....	.....107° 37' 04"	.....34° 04' 44"	.....2126 m
Very Long Baseline Array (VLBA) Stations:			
Pie Town, NM.....	.....108° 07' 07"	.....34° 18' 04"	.....2371 m
Kitt Peak, AZ.....	.....111° 36' 42"	.....31° 57' 22"	.....1916 m
Los Alamos, NM.....	.....106° 14' 42"	.....35° 46' 30"	.....1967 m
Ft. Davis, TX.....	.....103° 56' 39"	.....30° 38' 06"	.....1615 m
N. Liberty, IA.....	.....91° 34' 26"	.....41° 46' 17"	.....241 m
Brewster, WA.....	.....119° 40' 55"	.....48° 07' 53"	.....255 m
Owens Valley, CA.....	.....118° 16' 34"	.....37° 13' 54"	.....1207 m
St. Croix, VI.....	.....64° 35' 03"	.....17° 45' 31"	.....16 m
Hancock, NH.....	.....71° 59' 12"	.....42° 56' 01"	.....309 m
Mauna Kea, HI.....	.....155° 27' 29"	.....19° 48' 16"	.....3720 m

258. In a letter dated October 20, 2000, NTIA states *inter alia* that the radio astronomy service will need to be protected from transmitting NGSO FSS space stations in the adjacent band above 10.7 GHz.<sup>531</sup> NTIA expresses concerns about our coordination requirement to protect these radio astronomy operations, but concurs based on the understanding that the NTIA and the FCC will work together during the licensing of the NGSO FSS systems to ensure that the radio astronomy service is protected. In this regard, NTIA points out that the ITU-R is developing a methodology to calculate compliance of protection criteria for the radio astronomy service. NTIA also requests that NGSO FSS applicants provide it with the necessary information that shows compliance with the ITU-R developed criteria before the FCC license is granted. We find that it is premature to commit to using the ITU-R methodology before it is finalized in the ITU process and there has been an opportunity for comments

<sup>531</sup> See Letter from William T. Hatch, Associate Administrator, Office of Spectrum Management, NTIA, to Dale Hatfield, Chief, Office of Engineering and Technology, dated October 20, 2000.

and review. Further, we note that licensing rules and procedures for NGSO FSS systems will be addressed in a later proceeding and we will work with NTIA throughout the process.

## V. FURTHER NOTICE OF PROPOSED RULE MAKING

259. The Commission has consistently supported and facilitated the emergence of innovative technologies such as those that can share spectrum with existing services.<sup>532</sup> Not all services can easily coexist in the same frequency band, and in many instances creative sharing techniques are necessary in order to accommodate mixed use of the spectrum. FS coordination has achieved spectrum reuse with techniques involving the use of spatial diversity and directional antennas in a common area using transmitting and receiving antennas that point in any direction. Northpoint proposes to share the 12.2-12.7 GHz band with DBS operations by reusing 500 megahertz of spectrum with the use of directional southward pointing transmitting antennas. DBS receiving antennas point southward and upward toward the geostationary satellite arc. Northpoint proposes to reuse the spectrum by utilizing northward pointing receiving antennas to receive its own signal. Hence, Northpoint has presented a creative mechanism by which to receive greater use of a limited amount of spectrum, thus fostering spectrum efficiency.

260. In this *Further NPRM*, we propose and seek comment on a number of issues related to licensing MVDDS in the 12.2-12.7 GHz band. In particular, we seek comment on the technical criteria needed to deploy MVDDS so that the spectrum can be shared successfully with both incumbent BSS and new NGSO FSS operations. We also propose service, licensing, and technical rules for MVDDS that promote effective and efficient licensing in this band.

## VI. BACKGROUND

261. On July 3, 1997, SkyBridge filed a Petition for Rule Making requesting modification of our Rules to permit NGSO FSS systems to operate with GSO systems (both FSS and BSS) and terrestrial systems in certain bands, including the 12.2-12.7 GHz band.<sup>533</sup> On March 6, 1998, Northpoint also filed a Petition for Rule Making with the Commission requesting permission to operate a terrestrial service in the 12.2-12.7 GHz band.<sup>534</sup> Specifically, Northpoint asked that we modify Section 101.147(p) of our Rules to authorize DBS licensees and their affiliates to obtain secondary, subsidiary terrestrial communications authorizations to use the 12.2-12.7 GHz band to provide multichannel video distribution of local television programs and broadband digital data (*e.g.*, high-speed Internet access).<sup>535</sup> Northpoint

---

<sup>532</sup> See, *e.g.*, *NPRM* in ET Docket No. 98-206, 14 FCC Rcd 1131 (1999) (proposals to allow NGSO FSS to share spectrum in a number of frequency bands with various incumbent services); *Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium, Policy Statement*, 14 FCC Rcd 19,868 (1999).

<sup>533</sup> SkyBridge Petition for Rule Making (filed July 3, 1997) ("SkyBridge Petition").

<sup>534</sup> Northpoint Petition for Rule Making (filed March 6, 1998) ("Northpoint Petition"). On March 23, 1998, the Commission invited comment on the Northpoint Petition. See *Corrected Public Notice*, Report No. 2265 (Mar. 23, 1998). Northpoint explained that the primary benefits of its proposal included reuse of existing spectrum, facilitation of localism, and more effective DBS and cable competition. *Id.*

<sup>535</sup> All private operational fixed point-to-point microwave stations in the 12.2-12.7 GHz band operate on a secondary basis to DBS. Specifically, 47 C.F.R. § 101.147(p) states: *12,000-12,700 MHz*. The Commission has allocated the 12.2-12.7 GHz band for use by the broadcasting-satellite service. Private operational fixed point-to-point microwave stations authorized after September 9, 1983, have been licensed on a non-interference basis and are required to make any and all adjustments necessary to prevent interference to operating domestic broadcasting-satellite systems. Notwithstanding any other provision, no private operational fixed point-to-point microwave (continued....)

has been testing its technology in the 12.2-12.7 GHz band under experimental authorizations and has filed progress reports asserting that the tests demonstrate that its technology can operate without causing harmful interference to incumbent DBS operations.<sup>536</sup>

262. On November 2, 1998, the International Bureau ("IB") established a final cut-off date of January 8, 1999 for applicants to file applications for NGSO FSS in the 12.2-12.7 GHz band.<sup>537</sup> On November 24, 1998, we proposed to permit NGSO FSS operations in certain segments of the Ku-band.<sup>538</sup> The SkyBridge and Northpoint Petitions were incorporated into the *NPRM*.<sup>539</sup>

263. Subsequently, on January 8, 1999, Northpoint, through its subsidiary Broadwave Albany, L.L.C., *et al.*, ("Broadwave USA"),<sup>540</sup> filed waiver requests and applications for licenses for terrestrial use of the 12.2-12.7 GHz band, in response to the *Ku Band Cut-Off Notice*.<sup>541</sup> Northpoint requested waivers of multiple provisions in Part 101 of our Rules, as well as any other rules necessary to process its applications, and asserted that its proposed service would be on a secondary, non-interfering basis to DBS services and on a co-primary basis with any new FSS, such as that proposed by SkyBridge.<sup>542</sup> Thus, in applying for licenses as a non-DBS affiliate, Northpoint shifted its stance from its earlier petition for rule making and also expanded the scope of the suggested video offerings beyond local service to supplement DBS.<sup>543</sup>

264. On October 13, 1999, Northpoint (under the name of Diversified Communications Engineering, Inc.) filed a technical report summarizing the results of its experimental tests in Washington, D.C.<sup>544</sup> On November 29, 1999, the Satellite Home Viewer Improvement Act ("SHVIA")

(Continued from previous page) \_\_\_\_\_

stations are permitted to cause interference to broadcasting-satellite stations of other countries operating in accordance with the Region 2 plan for the broadcasting-satellite service established at the 1983 WARC.

<sup>536</sup> See *supra* Section IV, B (b).

<sup>537</sup> See *Ku Band Cut-Off Notice*. See also *NPRM*, 14 FCC Rcd at 1169 ¶ 71.

<sup>538</sup> See *NPRM*, 14 FCC Rcd at 1134-42 ¶¶ 4-13.

<sup>539</sup> See *id.* We received 33 comments and 24 reply comments in response to the *NPRM*. See *infra* at Appendix E.

<sup>540</sup> Northpoint states that through its subsidiary BroadwaveUSA, Inc., it has an affiliate relationship with the 68 entities that have applied for licenses to deploy the Northpoint technology nationwide. The applicants refer to themselves as Broadwave, followed by their city of proposed service (*i.e.*, Broadwave Albany, L.L.C.). Broadwave proposed to use the technology developed by Northpoint to enable sharing of this spectrum with existing DBS, geostationary satellite, and fixed microwave services. For the purposes of this *Further NPRM*, we will consider Northpoint and Broadwave to be one and the same and will refer to them both as Northpoint.

<sup>541</sup> *Public Notice*, Wireless Telecommunications Bureau Seeks Comment on Broadwave Albany, L.L.C., *et al.* Requests for Waiver of Part 101 Rules, DA 99-494, 14 FCC Rcd 3937 (1999) (Northpoint Waiver Request). The comment period ended on April 22, 1999.

<sup>542</sup> *Id.*

<sup>543</sup> *Id.*

<sup>544</sup> On October 29, 1999, DIRECTV and EchoStar (collectively, DBS licensees) filed comments addressing Northpoint's experimental tests. On January 27, 2000, DIRECTV filed a report and studies asserting that Northpoint's proposal would cause unacceptable interference to DBS operations. On Feb. 4, 2000, we denied an application for review and petitions for reconsideration and for a cease and desist order that DIRECTV and EchoStar filed against Diversified's experimental license. Finally, on February 9, 2000, the Commission granted (continued...)

was enacted.<sup>545</sup> The SHVIA legislation generally seeks to place satellite carriers on equal footing with local cable operators concerning the availability of broadcast programming, and thus is intended to give consumers more and better choices in selecting a MVPD.<sup>546</sup> As part of the 1999 SHVIA legislation, Congress passed a provision entitled Rural Local Broadcast Signal Act.<sup>547</sup> Among other things, this law requires the Commission to make a determination by November 29, 2000, regarding licenses or other authorizations for facilities that will utilize, for delivering local broadcast television signals to satellite television subscribers in unserved and underserved local television markets, spectrum otherwise allocated to commercial use.<sup>548</sup> The SHVIA legislation also mandates that we ensure that no facility licensed or authorized to deliver such local broadcast television signals “causes harmful interference to the primary users of that spectrum or to public safety spectrum use.”<sup>549</sup>

265. On April 18, 2000, PDC Broadband Corporation (“Pegasus”) filed an application for authority to provide terrestrial service in the 12.2-12.7 GHz band to deliver data transmission, Internet services, and MVPD services. Pegasus asserts that its application is mutually exclusive with those filed by Northpoint.<sup>550</sup> On August 23, 2000, Satellite Receivers, Ltd. (“SRL”) filed an application for authority to provide terrestrial television broadcast, Internet and data services in the 12.2-12.7 GHz band in Illinois, Indiana, Iowa, Michigan, Minnesota and Wisconsin.

(Continued from previous page) \_\_\_\_\_

DIRECTV and EchoStar experimental authorization in Washington, D.C. and Denver, CO to test DBS sensitivity to fixed service transmissions, such as Northpoint’s proposal. On July 25, 2000, DIRECTV and EchoStar filed a “Report of the Interference Impact on DBS Systems from Northpoint Transmitter Operating at Oxon Hill, MD, May 22 to June 7, 2000” for the Commission’s consideration.

<sup>545</sup> See Act of Nov. 29, 1999, Pub.L. 106-113 Stat. 1501 (enacting S. 1948, including the Satellite Home Viewer Improvement Act of 1999 (“SHVIA”), Title I of the Intellectual Property and Communications Omnibus Reform Act of 1999 (“IPACORA”), relating to copyright licensing and carriage of broadcast signals by satellite carriers, codified in scattered sections of 17 and 47 U.S.C.). See generally Implementation of the Satellite Home Viewer Improvement Act of 1999: Application of Network Nonduplication, Syndicated Exclusivity, and Sports Blackout Rules to Satellite Retransmissions, CS Docket No. 00-2, *Notice of Proposed Rule Making*, 65 Fed. Reg. 4927 (Feb. 2, 2000); Implementation of the Satellite Home Viewer Improvement Act of 1999, CS Docket No. 99-363, *Notice of Proposed Rule Making*, 14 FCC Rcd 21736 (1999) (1999 SHVIA Implementation NPRM).

<sup>546</sup> See 1999 SHVIA Implementation NPRM, 14 FCC Rcd 21736 at ¶1.

<sup>547</sup> See Act of Nov. 29, 1999, Pub. L. 106-113, 113 Stat. 1501, 1537 (enacting S. 1948, Title II of the Intellectual Property and Communications Omnibus Reform Act of 1999 (IPACORA)), to be codified at 47 U.S.C. § 338.

<sup>548</sup> *Id.* While this provision does not identify the 12.2-12.7 GHz band specifically, Northpoint’s proposed service could be one alternative to satisfy this demand in rural and underserved local television markets. See also Letter from Senator Ted Stevens, *et al.*, Committee on Commerce, Science, and Transportation to Chairman, William E. Kennard, Federal Communications Commission, dated July 27, 2000.

<sup>549</sup> *Id.*

<sup>550</sup> *Id.* Northpoint filed a Motion to Dismiss the Pegasus applications on May 23, 2000. See In the Matter of PDC Broadband Corporation Application to Provide Terrestrial Services in the 12.2-12.7 GHz Band, Motion to Dismiss (May 23, 2000). On August 21, 2000, Pegasus Broadband Corporation filed a Petition to Dismiss or Deny against the Northpoint applications. See In the Matter of Broadwave Albany, L.L.C., *et al.*, Application for License to Provide New Terrestrial Transport Service in the 12.2-12.7 GHz Band, Petition to Dismiss or Deny (Aug. 21, 2000). On September 6, 2000, Northpoint filed an Opposition to the Pegasus Petition to Dismiss or Deny. See In the Matter of Broadwave Albany, L.L.C., *et al.* - Applications for Licenses to Provide Terrestrial Services in the 12.2-12.7 GHz Band, Opposition of Northpoint Technology, Ltd. And BroadwaveUSA to Petition to Dismiss or Deny (Sept. 6, 2000).

**A. Technical Criteria for Sharing and Operations the 12.2-12.7 GHz Band****1. MVDDS/DBS Sharing**

266. As discussed in the *First R&O*, the DBS licensees and Northpoint dispute whether MVDDS can be deployed in this band without causing harmful interference to DBS customers. Both parties conducted experiments purporting to support their assertions.<sup>551</sup> DirecTV and EchoStar argue that the introduction of a signal from a Fixed transmitter would reduce BSS signal strength margins significantly, thereby increasing the incidence of increased outages experienced by DBS customers in large portions of an MVDDS service area, primarily during rain events. DIRECTV and EchoStar state that in the international process they agreed to accept no more than a 10% aggregate increase in unavailability to its operations due to interference from all co-frequency NGSO FSS systems, and that if a new FS is introduced in this band, both NGSO FSS and FS in the aggregate should cause no more than 10% increased unavailability to BSS operations. Northpoint disagrees with the suggestion to treat MVDDS as if it were an NGSO FSS system. Further, Northpoint claims that MVDDS can avoid interference to DBS systems, and it proposes that unavailability criteria be based on either a percentage increase or a specified number of minutes of increased unavailability, whichever is greater.

267. As concluded in the *First R&O*, MVDDS can be introduced in this band without causing harmful interference to BSS. In doing so, we will define a permissible level of increased DBS service outage that may be attributable to MVDDS that shall not be exceeded. Thus, the impact of introducing both MVDDS and NGSO FSS in this frequency band will be evaluated in terms of an allowable increase in DBS unavailability. We are sensitive to the DBS licensees' concerns that the introduction of additional services in this band could increase BSS unavailability, and our objective in this further proceeding is to avoid unreasonable outages. As discussed in the *First R&O*, we believe that, with the aid of mitigation techniques, MVDDS operations can be designed so that interference caused by their transmitters will not impair the provision of DBS. In this further proceeding, our objective is to identify an unavailability criterion for MVDDS operations that will achieve this result. The area close to the MVDDS transmitter is where interference that exceeds the unavailability criterion is most likely to occur. The unavailability criterion that we adopt will be used to identify the area (mitigation zone) around the MVDDS transmitter within which the MVDDS licensee must avoid or correct interference to a DBS subscriber to the permissible level. In this way, we can ensure that BSS operations will not be threatened by MVDDS operations.

268. One way to do this would be to base the MVDDS sharing criterion for the 12.2-12.7 GHz band on the criterion used by the ITU to develop the EPFD<sub>down</sub> limits for NGSO FSS systems. As discussed in the *First R&O*, the ITU criteria for NGSO FSS and BSS sharing consists in part of the concept that the aggregate interference from NGSO FSS systems should be responsible for at most 10% of the time allowance(s) for unavailability of the GSO BSS network.<sup>552</sup> The 10% sharing criterion was used to develop both aggregate (*i.e.*, all NGSO FSS systems) and single-entry (*i.e.*, single NGSO FSS system) EPFD values. The methodology used to develop the single-entry EPFD values essentially attributed to each NGSO FSS system a 2.86% increase in unavailability.<sup>553</sup> In the interest of providing

---

<sup>551</sup> See ¶ 211, *supra*.

<sup>552</sup> This criterion is contained in draft new Recommendation ITU-R BO.1444. In addition, it is described in Section 3.1.3.1 of the CPM report to WRC-2000.

<sup>553</sup> Based on the agreed upon criteria and the database of representative GSO BSS links (*see* ITU-R Recommendation BO.1444, Annex, for the compiled existing and planned GSO BSS system characteristics that comprise the international database of GSO BSS links), the ITU-R reached consensus on both single-entry and aggregate EPFD<sub>down</sub> limits for NGSO FSS systems in the Ku-Band. In order to calculate single-entry EPFD values, (continued....)

DBS subscribers with a high degree of protection, the percentage of DBS unavailability that the MVDDS would be permitted to cause to any DBS subscriber could be the same as a single NGSO FSS system, *i.e.*, 2.86% of current unavailability based on the model contained in Appendices H and I or other models agreed to by both DBS and MVDDS licensees. This approach would effectively treat MVDDS similarly to how the ITU-R assumed an individual NGSO FSS system would be treated, and should not result in increases in unavailability from MVDDS that are perceptible to any DBS subscriber. Under this approach, we would not propose that interference from MVDDS and NGSO FSS in the aggregate cause no more than a 10% increase in BSS unavailability, as suggested by DIRECTV and EchoStar. To do so would undermine the single-entry EPFD values for NGSO FSS systems, which we adopt in the First R&O and which were developed by applying the 10% criterion only to NGSO FSS systems. Thus, under this approach, MVDDS interference could contribute 2.86% unavailability in addition to the aggregate 10% caused by NGSO FSS operations. We believe that this increase in BSS unavailability would be *de minimis* and would not have a significant impact on the BSS.

269. Under this approach, a 2.86% unavailability criterion would be an important factor used to identify the size of the mitigation zone; *i.e.*, the area around the MVDDS transmitter within which the MVDDS licensee must avoid or correct interference to a DBS subscriber. Because of the worst-case assumptions of our proposed mitigation zone calculations, the impact of MVDDS transmissions beyond the mitigation zone would be negligible, and thus we propose that the MVDDS licensee would have no obligation to BSS subscribers outside the mitigation zone. Appendix I contains predicted mitigation zones calculated to meet a 2.86% criterion for three locations: Washington, DC, Houston, TX, and Denver, CO.<sup>554</sup> Commenters may address whether we should consider applying a different percentage criterion, for example in areas where BSS reliability is already high. In particular, should we allow MVDDS to cause up to 10% increased unavailability to BSS, which is the same criterion developed by the ITU-R for interference from all NGSO FSS systems? Would the 10% criterion apply regardless of how many MVDDS licensees are authorized, as is deemed appropriate by the ITU-R for the NGSO FSS? Commenters should specify whether they support using a percentage approach, the specific percentage they favor, and the effect of the percentage approach on BSS unavailability and MVDDS deployment.

270. We note that the implementation of a percentage criterion would affect DBS customers in different areas in different ways. For example, since the sharing criterion would be applied to each MVDDS transmitter, an unavailability criterion based on a percentage increase of current unavailability would permit a much larger number of minutes of increased unavailability in areas where BSS reliability is already low and a much smaller number of minutes of increased unavailability in areas where BSS reliability is already high, and differences would also exist within the same area for different BSS orbital positions.<sup>555</sup> We therefore solicit comment on whether we should permit, as suggested by Northpoint, a

(Continued from previous page) \_\_\_\_\_

the ITU agreed to use a factor of 3.5 from the aggregate EPFD masks developed, even though the 3.5 factor does not directly correlate to the number of NGSO FSS systems that may be authorized in the allocated bands. Nonetheless, if the 3.5 factor used to develop single-entry EPFD values did represent actual systems, each NGSO FSS system that met the single-entry EPFD values would cause no more than a 2.86% increase in unavailability of a BSS network.

<sup>554</sup> For example, in order to meet the 2.86% criterion in Denver for the DIRECTV 101° W.L. satellite location (unavailability increase of 1.6 minutes annually), an MVDDS licensee would be required to fix occurrences of unacceptable interference at distances in excess of 6 kilometers from each MVDDS transmitting tower. However, in Houston, the 2.86% criterion for the DIRECTV 101° W.L. satellite location (unavailability increase of 32.7 minutes annually) would result in mitigation zones of only about 4.8 kilometers. Thirty and 60 minute increases in annual unavailability are also shown in Appendix I.

<sup>555</sup> For example, in the Miami area, EchoStar subscribers who receive signals from the 119° W.L. satellite and use the standard 45 cm (18 inch) dish antennas can expect about 2,166 minutes of average annual (continued....)

MVDDS licensee to cause a fixed increase in the number of minutes, rather than a percentage, of annual outage in each area. For example, rather than a 2.86% increase in annual unavailability, we could permit a specified number of minutes of annual increase in unavailability (*e.g.*, 30 minutes).<sup>556</sup> Under this approach, all DBS systems and their subscribers in all areas would be impacted equally in terms of increased minutes of unavailability. However, we would have to determine the appropriate number of minutes under this approach, and this approach would permit sharply varying percentage increases in DBS unavailability to different subscribers in different areas.<sup>557</sup> Commenters favoring this approach should address the impacts on BSS unavailability and MVDDS deployment, and specify the number of minutes that should be selected for the criterion.<sup>558</sup>

271. Another alternative would be to simply require the MVDDS operator to mitigate harmful interference in response to DBS subscribers' complaints of increased unavailability caused by MVDDS operations. This approach would not rely on any increase in DBS unavailability as a trigger for an MVDDS operator to mitigate harmful interference and would eliminate the mitigation zone concept, replacing an objective criterion with a subjective approach. We seek comment on this alternative, as well as any other alternatives, such as the Commission specifying a minimum C/I ratio between DBS and MVDDS signals that would have to be maintained at all times by the MVDDS operator.

272. We propose to define an analytical model for calculating mitigation zones where there may be an increase in unavailability caused by an MVDDS system to DBS subscribers. This will ensure that parties use consistent methods to analyze potential interference. The model is described in Appendices H and I. The model would be used to calculate the mitigation zone to determine where the MVDDS entity would have the responsibility for ensuring that DBS subscribers do not suffer an impermissible level of increased outage due to MVDDS operations. This model is similar to the approach used by the DBS and NGSO FSS proponents. We request comment on the appropriateness of the model and the parameters we have used in our analysis. Commenting parties proposing alternative calculation methods and parameters should provide sufficient technical analysis to support their proposals.

(Continued from previous page) \_\_\_\_\_

unavailability due to projected precipitation, whereas DIRECTV subscribers in that area who receive signals from the 101° W.L. satellite and use the standard 45 cm antennas can expect about 924 minutes of average annual unavailability due to projected precipitation; *see* Appendix G, *infra*. A 2.86% criterion in Miami would therefore permit a 62 minute increase in annual unavailability to EchoStar subscribers, but only a 26 minute annual increase to DIRECTV subscribers. In the Denver area, EchoStar subscribers who receive signals from the 119° W.L. satellite and use 45 cm antennas experience about 109 minutes of average annual unavailability, whereas DIRECTV subscribers in that area who receive signals from the 101° W.L. satellite and use the standard 45 cm antennas experience about 55 minutes of annual unavailability; *see again* Appendix G, *infra*. A 2.86% criterion in Denver would therefore permit a 3.1 minute annual increase in unavailability to EchoStar subscribers, but only a 1.6 minute annual increase to DIRECTV subscribers.

<sup>556</sup> Although this approach is similar to Northpoint's proposed five minutes increase per month, we find that, because of varying rain characteristics from month to month, a minutes per month calculation can produce unnecessary complexity in calculating mitigation zones.

<sup>557</sup> For example, a 30 minute annual increase in DBS unavailability would be only about 1.4% to Miami EchoStar subscribers who use 45 cm antennas, but would be about 54.5% to Denver DIRECTV subscribers who use 45 cm antennas.

<sup>558</sup> We have included in the docket file a staff analysis that shows the annual increased outage impacts of the 2.86%, 30 minute and 60 minute criteria on the top 30 television markets, based on the Nielsen Media Research Designated Market Areas (DMAs). A summary of this analysis is attached herein as Appendix J.

273. To ensure interference protection for DBS subscribers, we propose to require that at least 30 days before any MVDDS transmitter commences operations, the MVDDS operator must: (1) notify the appropriate DBS providers in their area (*e.g.*, the local DBS reseller, the DBS licensee (DIRECTV and EchoStar), or some other entity) of the location and any relevant technical characteristics of their transmitting facilities; and (2) certify to the Commission and the appropriate DBS providers in their area that it has designed its transmitter facility to avoid impermissible levels of interference to DBS receivers, consistent with any requirements to be adopted in this further proceeding. The MVDDS licensee also would be required to identify the steps it has taken to mitigate potential interference around its transmitter.<sup>559</sup> We believe that these procedures would provide ample opportunity for DBS operators to determine the potential impact on their subscribers and to ensure that any potential interference situation is adequately addressed by the MVDDS operator.

274. We also propose to make the MVDDS operator responsible for correcting any interference beyond that deemed permissible to existing DBS subscribers that occurs within 18 months of the onset of service from an MVDDS transmitter. This should provide existing DBS customers with sufficient time to identify any interference problems that need to be corrected. We also propose that for any new DBS subscribers within the mitigation zone, and for existing subscribers after this 18-month period, the MVDDS operator would be required to provide technical information and advice to assist such DBS subscribers in mitigating interference. This information and advice requirement, for example, will ensure that new DBS customers can tailor their installations to avoid any impact from MVDDS transmissions. This procedure is similar to that used to address blanketing interference in the FM radio service.<sup>560</sup>

275. We believe that this approach should provide both MVDDS and DBS licensees flexibility to identify and resolve any case of impermissible interference. We expect that, in the first instance, the MVDDS licensee will site its transmitter to avoid harmful interference to DBS customers, and we expect that MVDDS and DBS licensees will find mutually agreeable means to identify and mitigate interference to DBS customers. For example, the MVDDS licensee should be able to identify through a site survey DBS receivers that are not properly shielded from MVDDS transmissions, and the DBS licensee might notify the MVDDS licensee of DBS customers that will need interference protection. Alternatively, the MVDDS and DBS licensees might rely on predictive modeling or customer complaints to identify DBS customers who need interference protection. As detailed in the First R&O, the MVDDS operator in each area will have a variety of techniques at its disposal to mitigate interference to DBS subscribers.<sup>561</sup> We expect that the MVDDS and DBS licensees will mutually agree if the MVDDS licensee will act through the DBS licensee or an independent third party or work directly with the DBS customer in addressing mitigation techniques.

276. We seek comment on all aspects of our mitigation proposal for MVDDS operators. Commenters suggesting specific methods for identifying and mitigating interference to DBS customers should support their proposals with thorough analysis on the impact to all relevant parties. We also invite comments on procedures, such as arbitration, that could be used to expeditiously resolve interference disputes between the MVDDS and DBS licensees.

---

<sup>559</sup> Alternatively, the MVDDS licensee could maintain the certification in its station file. Under this alternative, the certificate could be made available to the Commission upon request.

<sup>560</sup> 47 C.F.R. §73.318

<sup>561</sup> See ¶ 216, *supra*.

## 2. MVDDS/NGSO FSS Sharing

277. As we noted in our companion First R&O, Northpoint states that it can share spectrum with NGSO FSS downlink signals if the satellite PFD level is lower at low elevation angles where the MVDDS receiver antennas are pointed. Specifically, Northpoint proposes that NGSO FSS systems meet a PFD limit of  $-158$  dB ( $W/m^2/4kHz$ ) for angles of  $0-2^\circ$  above the horizon and  $-158 + 3.33(\delta-2)$  dB ( $W/m^2/4kHz$ ) for angles of  $2-5^\circ$  above the horizon.<sup>562</sup>

278. SkyBridge states that it can accept Northpoint's proposal, but only if the power of MVDDS signals is also limited. Specifically, SkyBridge states that, in order to prevent an MVDDS transmitter from causing harmful interference to an NGSO FSS receiver, an MVDDS signal must be limited at the input of any NGSO FSS receiver to an EPFD of  $-132.1$  dB ( $W/m^2/4$  kHz), with a corresponding power limit of  $-68$  dBm at the output of an operational NGSO earth station with a gain of  $31.6$  dBi at  $12.5$  GHz. SkyBridge also requests that MVDDS out-of-band emissions be attenuated by  $25$  dB below the carrier power in the band  $12.188-12.2$  GHz; by  $35$  dB below the carrier power in the band  $12.164-12.188$  GHz; and by  $43 + 10\log(p)$  below the carrier power ( $p$ ) in the band below  $12.164$  GHz. SkyBridge further requests that the EPFD caused by a MVDDS signal into a NGSO FSS earth station be limited to  $-169.1$  dB ( $W/m^2/4$  kHz) in bands below  $12.164$  GHz. Additionally, SkyBridge requests that the power received by a NGSO FSS user terminal from an MVDDS transmitter be limited (in  $90\%$  of the service area) to a power flux of  $-106.5$  ( $W/m^2$ ) in a NGSO carrier of  $22.6$  megahertz bandwidth, or a PFD of  $-120$  dB( $W/MHz$ ). Finally, SkyBridge requests that the density of MVDDS transmitters be limited so that an EPFD of  $-135.1$  dB( $W/ m^2/4$  kHz) is not exceeded in more than  $0.2\%$  of the service area of any MVDDS system.<sup>563</sup> Northpoint responds that the limits proposed by SkyBridge are unacceptable for the operation of its proposed system.<sup>564</sup>

279. We note that satellite and terrestrial systems share spectrum on a co-primary basis, but typically not for ubiquitous deployment, as would be the case in the  $12.2-12.7$  GHz band. Thus, sharing between the NGSO FSS and MVDDS will be complex. Nonetheless, we believe that Northpoint's and SkyBridge's proposals generally set forth a viable sharing scheme. Accordingly, we first propose to reduce the PFD limit for NGSO FSS satellites that transmit at angles of  $5$  degrees or less above the earth's horizon from the limit of  $-150$  dB ( $W/m^2/4kHz$ ) that we adopted for the  $10.7-11.7$  GHz band in the First R&O.<sup>565</sup> Without such a reduction, MVDDS coverage areas would likely be more limited than proposed by Northpoint, and the number of MVDDS transmit towers would have to correspondingly increase to compensate for the more limited coverage areas. An increase in MVDDS towers would complicate sharing with both the NGSO FSS and DBS services because the potential for interference from MVDDS transmitters to NGSO FSS and DBS receivers would increase. Therefore, we find it appropriate to require NGSO FSS downlinks in the  $12.2-12.7$  GHz band to meet a reduced PFD limit of  $-158$  dB( $W/m^2/4kHz$ ) for angles of  $0-2^\circ$  above the horizon, and a reduced PFD limit of  $-158 + 3.33(\delta-2)$  dB( $W/m^2/4kHz$ ) for angles of  $2-5^\circ$  above the horizon. These reduced power limits will affect only those NGSO FSS systems that transmit their signals low to the horizon. We believe that reducing PFD limits for satellites that may transmit at low-earth angles is preferable to establishing a minimum elevation angle for downlinks in the  $12.2-12.7$  GHz band because those limits would allow LEO systems to operate at a greater range of angles to the earth. We do not believe that a reduced low elevation angle PFD

<sup>562</sup> See ¶ 221, *supra*.

<sup>563</sup> SkyBridge July 10, 2000 *ex parte* letter.

<sup>564</sup> Northpoint July 11, 2000 *ex parte* letter at 1-2.

<sup>565</sup> See §25.208(b), *infra*.

requirement will threaten the viability of such systems, and note that LEO systems can also protect MVDDS receivers with spatial and frequency diversity.<sup>566</sup> Comments are requested as to the appropriateness of the specific PFD limits that we are proposing.

280. We next propose to limit the interference from MVDDS operations into NGSO FSS receivers by adopting a limit on MVDDS transmitter power. While SkyBridge proposes that specific MVDDS out-of-band emission and EPFD limits be adopted, we do not believe that this proposal is practical because the limits proposed would not be appropriate for other NGSO FSS systems that may use the 12.2-12.7 GHz band. Additionally, under SkyBridge's proposal, EPFD requirements would have to be measured at each NGSO FSS earth station. We believe that an MVDDS transmitter power limit could achieve the protection desired by SkyBridge for NGSO FSS receivers without such measurements. Accordingly, we propose that MVDDS transmitter power be limited to 12.5 dBm in most areas. We believe that this limit will protect NGSO FSS receivers from harmful interference without unduly restricting MVDDS operations. However, we request comment on whether a different limit would be preferable, and discuss this issue in more detail in Section 3c below.

281. We also request comment on whether coordination procedures should be established between NGSO FSS earth stations and MVDDS transmitters, rather than specific EPFD limits.<sup>567</sup> Standard coordination procedures would ensure that the first entity to establish services would be protected from a latter entrant. However, such coordination could limit deployment for either service because the entity wishing to deploy the later facility could be denied due to potential sharing problems, unless the interference could be mitigated. We also request comment on another form of coordination, where a MVDDS operator could notify the NGSO FSS providers in their area of the location and height of their transmitting towers, as we propose above for MVDDS and DBS band sharing. With this information, NGSO FSS installers can minimize the impact of MVDDS on NGSO FSS for new installations after an MVDDS operator begins service. The notification requirement is necessary because the Commission generally does not collect specific site information for every location when a service is licensed on a geographic basis, as would be the case here. Alternatively, we request comment on whether a database of MVDDS transmitter sites and NGSO FSS earth station sites should be established so that licensees could determine problem areas prior to deployment of facilities. At this time we are not proposing to adopt specific EPFD limits on MVDDS operations or coordination procedures between MVDDS and NGSO FSS because such requirements may be overly burdensome on both parties. Rather, we propose to limit the transmitter power of MVDDS operations to minimize any area of potential interference and rely upon the ability of NGSO FSS user terminals to work around static sources of interference in any environment in which they may be placed.

### 3. MVDDS and Adjacent CARS/BAS Band Considerations

282. Currently, CARS and BAS facilities operate in the upper adjacent 12.7-13.25 GHz band. To ensure that the addition of MVDDS does not interfere with CARS and BAS operations, we seek

---

<sup>566</sup> Spatial and frequency diversity, as well as reduced power, is the way that NGSO FSS systems will share spectrum with GSO FSS systems; *e.g.*, when an NGSO FSS satellite is aligned in its orbit between a GSO satellite and a GSO receiver, that NGSO FSS satellite may handoff its communications with an earth station to another satellite in the NGSO constellation that is not aligned between a GSO satellite and a GSO receiver.

<sup>567</sup> In the *First R&O*, we concluded that NGSO FSS gateway stations could use existing coordination procedures in Part 101 of our rules in bands shared with point-to-point FS operations. In the 12.2-12.7 GHz band, however, numerous NGSO FSS user terminals would be operating, making the use of the existing Part 101 coordination procedures impracticable.

comment on necessary coordination and interference resolution procedures for MVDDS stations to and from CARS and BAS facilities.

## B. Multichannel Video Distribution and Data Service Rules

283. In addition to resolving the interference issues between MVDDS/DBS and MVDDS/NGSO FSS, we must establish licensing and service rules. In this section, we will discuss the licensing and service issues that will impact MVDDS operations.

### 1. Licensing Plan

#### a. Service Areas

284. We may license MVDDS either on a site-by-site basis, or on a geographic area basis. Licensing MVDDS on a site-by-site basis would be resource intensive for both applicants and the Commission. Historically, when service requires ubiquitous coverage, we have issued licenses on a geographic-area basis, such as regional and nationwide. Given that the MVDDS service will potentially compete with other wide area service providers such as cable and DBS, we favor geographic-area licensing. Consequently, consistent with our approach in similar services,<sup>568</sup> we propose to license the 12.2-12.7 GHz band for MVDDS on the basis of geographic areas. We seek comment on this proposal.

285. In light of our proposal to license MVDDS on the basis of geographic areas, we request comment on the most appropriate geographic area licensing scheme for this service. In the *Markets Modification Final Report and Order*, we concluded that Nielsen's Designated Market Areas ("DMAs") provide the best method of "delineat[ing] television markets based on viewing patterns."<sup>569</sup> Nielsen uses audience survey information from cable and non-cable households to determine the assignment of counties to local television markets, or DMAs.<sup>570</sup> Nielsen determines what constitutes a separate market based on a complex statistical formula based upon viewership and other factors.<sup>571</sup> The station's assignment to a DMA is then made available in Nielsen's *Directory of Stations* publication. In light of the similarities between cable, non-cable and MVDDS services, we seek comment on whether we should authorize terrestrial MVDDS licensees on the basis of Nielsen's 211 DMAs.<sup>572</sup> We believe that this county-based licensing scheme is a viable option in facilitating local access to these services. If we determine that the public interest will be served by licensing MVDDS pursuant to DMAs, we propose that one licensee should be responsible for service in each DMA.

---

<sup>568</sup> 47 U.S.C. § 76.55(e) requires that a commercial broadcast television station's market shall be defined by Nielsen Media Research's designated market areas ("DMAs"). See Definition of Markets for Purposes of the Cable Television, Broadcast Signal Carriage Rules, *Order on Reconsideration and Second Report and Order*, CS Docket No. 95-178, 14 FCC Rcd 8366 (1999) (*Market Modification Final Report and Order*).

<sup>569</sup> *Id.*

<sup>570</sup> Nielsen Media Research, *Nielsen Station Index: Methodology Techniques and Data Interpretation*.

<sup>571</sup> For Nielsen's Market-Of-Origin assignment, a broadcast station is designated as "local" and assigned to the Nielsen market of the DMA in which its community of license is located. A broadcast station is "local" to only one Nielsen market. See 1997-1998 *NSI Reference Supplement* at 47. Nielsen "reserves the right not to create a DMA if there is a lack of sufficient financial support of Nielsen Service in that potential DMA." Nielsen Media Research, *Nielsen Station Index: Methodology Techniques and Data Interpretation*, 1994-95 at 2

<sup>572</sup> See *Market Modification Final Report and Order*, 14 FCC Rcd 8366 (1999).

286. The use of DMAs may result in greater economic opportunities for a wide variety of applicants, including small business, rural telephone, and minority-owned and women-owned applicants, as required by Section 309(j)(4)(C) of the Communications Act.<sup>573</sup> For example, the nature of a DMA lends itself to local business opportunities and services, and creates the opportunity for local groups to form bidding consortia for the purpose of obtaining DMAs through the competitive bidding process. Thus, we seek comment on whether DMAs or some other geographic area would be a better choice for this service. For example, we seek comment on whether to license MVDDS on the basis of nationwide licenses, licenses based upon Metropolitan and Rural Service Areas (“MSAs” and “RSAs”),<sup>574</sup> Economic Areas (“EAs”),<sup>575</sup> Regional Economic Area Groupings (“REAGs”),<sup>576</sup> Major Economic Areas (“MEAs”),<sup>577</sup> DMAs, and other relevant geographic areas. Commenters should specify which licensing methods they support and explain in detail why a particular geographic area category would be appropriate for the MVDDS licensing areas.

### b. Frequency Availability and Assignments

287. Currently, the Frequency Availability Table in Section 101.100 of our Rules designates the POFS and the BSS as available services in the 12.2-12.7 GHz frequency band. With the assignment of MVDDS to the 12.2-12.7 GHz frequency band, we seek comment on whether to modify the Frequency Availability Table in Section 101.101 of our Rules under 12.2-12.7 GHz to designate an additional radio service as MVDDS. In addition, we seek comment on whether to amend the Frequency Assignments in Section 101.147 of our Rules to designate MVDDS as an additional radio service for this band. In the *First R&O*, we note that while the FS has a primary allocation in this band, we will allow MVDDS in the band on a non-harmful interference basis only to DBS.<sup>578</sup> Hence, we seek comment on whether to amend Part 101 of our Rules to incorporate these changes. Finally, we note that Section 21.901 of our Rules

<sup>573</sup> “In prescribing regulations. . . the Commission shall . . . prescribe area designations and bandwidth assignments that promote (i) an equitable distribution of licenses and services among geographic areas, (ii) economic opportunity for a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women, and (iii) investment in and rapid deployment of new technologies and services.” 47 U.S.C. § 309(j)(4)(C).

<sup>574</sup> An MSA is a geographic area defined by the Office of Management and Budget. There are 306 MSAs, including New England County Metropolitan Areas and the Gulf of Mexico Service Area (water area of the Gulf of Mexico, border is the coastline). An RSA consists of 428 areas, which when combined with the 306 MSAs, comprise the 734 cellular geographic service areas. *See also* Implementation of Section 309(j) of the Communications Act—Competitive Bidding, PP Docket No. 93-253, *Fourth Report and Order*, 9 FCC Rcd 2330, 2333 ¶ 16 (1994).

<sup>575</sup> An EA is a geographic area established by the Bureau of Economic Analysis of the Department of Commerce. There are 172 EAs, plus three EA-like areas, encompassing the Northern Mariana Islands, Guam, American Samoa, the United States Virgin Islands and Puerto Rico. Each EA consists of one or more economic nodes – metropolitan areas or similar areas that serve as centers of economic activity – and the surrounding counties that are economically related to the nodes. *See Final Redefinition of the BEA Economic Areas*, 60 Fed. Reg. 13, 114, 13,114-118 (Mar. 10, 1995).

<sup>576</sup> An REAG is a geographic area based on groupings of 172 EAs and four EA-like areas developed by the Bureau of Economic Analysis of the Department of Commerce.

<sup>577</sup> An MEA is a geographic area developed by the Bureau of Economic Analysis of the Department of Commerce. There are two MEAs, including 46 in the continental United States and six covering Alaska, Hawaii, Guam and the Northern Mariana Islands, Puerto Rico and the U.S. Virgin Islands.

<sup>578</sup> *See First R&O*, ¶¶ 213-218.

states the frequencies that are available for FS.<sup>579</sup> Accordingly, we also seek comment on whether to modify Section 21.901 of our Rules, if we determine to regulate MVDDS under Part 21 of our Rules.

### c. Channeling Plan

288. The 12.2-12.7 GHz band has a total of 500 megahertz of spectrum per service area. Northpoint has requested that we license one spectrum block of 500 megahertz per service area.<sup>580</sup> We believe that in order to effectively compete with local cable and DBS service operators who routinely provide hundreds of channels to subscribers, MVDDS operators will similarly require 500 megahertz spectrum blocks in order to provide the type of variety that 100 video channels offers. In addition, we believe that licensing one spectrum block will reduce the number of technical and interference problems that would otherwise arise if multiple MVDDS providers were permitted to operate in the same geographic area on several different blocks of spectrum. We seek comment on whether licensing one spectrum block of 500 megahertz per geographic area will facilitate competition between MVDDS, cable TV, DBS, and other broadband video and data providers. Also, how would one 500 megahertz license serve to reduce technical, design, and coordination burdens? We also seek comment on whether MVDDS, as a terrestrial operation, requires the same amount of spectrum as all DBS operations and whether capacity needs for both video and data applications require the full 500 megahertz in each licensed area. In addition, we seek comment on whether other channeling plans, such as 250 megahertz blocks would promote the objectives of Section 309(j)(4)(C)<sup>581</sup> and the public interest.

### d. Permissible Operations for MVDDS

289. Based on the record in this proceeding and the First R&O, we expect that the 12.2-12.7 GHz band will likely be used for the delivery of video services as well as one-way high speed data (non-video) services.<sup>582</sup> For two-way services, licensees could find spectrum in other bands or use telephone lines or other means for the return path. Thus, consistent with our general policies of flexible spectrum use, we seek comment on whether MVDDS licensees should be authorized to use spectrum in the 12.2-12.7 GHz band for fixed one-way direct-to-home/business video and data services. Additionally, we propose to preclude mobile and aeronautical operations because of the interference problems they would cause to DBS and the complication of the NGSO allocation. At this juncture, we do not know precisely the types of other services, in addition to video services, that new MVDDS licensees will seek to provide. We envision that MVDDS licensees will have substantial flexibility and a variety of options for using the spectrum to meet market demands within the confines of the technical sharing rules. For example, using Northpoint-type technology, the 500 megahertz of spectrum in the 12.2-12.7 GHz band can provide approximately 96 video channels without advanced compression techniques with other capacity usable for other services such as Internet service.<sup>583</sup> We seek comment on whether this use is the most efficient use of the 12.2-12.7 GHz spectrum, or whether other technologies exist or can be designed to allow MVDDS to provide similar services. Therefore, we propose flexible rules that will encourage the widest

---

<sup>579</sup> 47 C.F.R. § 21.901

<sup>580</sup> Northpoint August 29, 2000 *ex parte* letter at 3-4. *See also*, Broadwave USA March 23, 2000 *ex parte* letter to Julie P. Knapp, Chief, Policy and Rules Division, at 1-2.

<sup>581</sup> *See supra* ¶ 286.

<sup>582</sup> *See, e.g.*, *First R&O*, ¶¶ 212-217.

<sup>583</sup> *See* Opposition to Application of DIRECTV, Inc. for Expedited Review and Request for Immediate Suspension of Testing at 7-8 (filed Jul. 9, 1999) (regarding experimental special temporary authorization, File No. 0094-EX-ST-1999, Call Sign WA2XMY).

variety of services within the technical constraints of our Rules. Consistent with this approach, we invite comment on other possible uses of this frequency band.

290. Our proposed rules also promote Congress' mandate "to make a determination regarding licenses or other authorizations for facilities that will utilize, for delivering local broadcast television station signals to satellite television subscribers in unserved and underserved local television markets, spectrum otherwise allocated to commercial use."<sup>584</sup> For example, if we use DMA markets for service areas, each terrestrial licensee in the 211 markets will have the capacity to provide all local television channels, whereas a DBS satellite system with one Continental United States footprint, does not have the capacity to retransmit all of the local channels nationwide. We wish to minimize regulatory barriers and costs of operation to usher service, most notably the transmission of local broadcast signals into unserved and underserved markets. We seek comment on ways to ensure that MVDDS licensees provide service to such markets.

291. We also propose to modify Part 101 of our Rules to the extent necessary so that MVDDS licensees may provide flexible service. We seek comment on changes to our existing Part 101 rules that might be useful or necessary for MVDDS licensees in the 12.2-12.7 GHz band. We believe that modifying certain Part 101 provisions to accommodate the MVDDS service is in the public interest because such action will contribute to technological and service innovation, encourage robust competition in the telecommunications service markets, and help provide local broadcast signals to unserved or underserved areas, pursuant to Congress' mandate. We also seek comment on whether any Part 21 service rule should apply to MVDDS.

#### e. Must-Carry Rules

292. We note that the new MVDDS is in many ways comparable to, and may be competing with, MVPDs, such as cable operators and DBS. Although the Communications Act does not make specific reference to MVDDS, we seek comment on the applicability to MVDDS providers of certain requirements that apply to MVPDs. For example, should the Commission's closed captioning, video description and navigation devices rules apply to MVDDS?<sup>585</sup> Should the network nonduplication, syndicated exclusivity and sports blackout rules apply to MVDDS carriage of broadcast programming?<sup>586</sup> Should we require MVDDS to provide access to alternative commercial providers in the same way that cable systems are required, pursuant to leased access requirements?<sup>587</sup> Additionally, should we require MVDDS to obtain retransmission consent for carriage of broadcast television stations, just as cable, DBS, and Multichannel Multipoint Distribution Services ("MMDS") are required to do?<sup>588</sup> In contrast, there does not appear to be a statutory basis for requiring mandatory carriage of all local broadcast signals.<sup>589</sup> We seek comment on whether to require licensees to provide all local television channels to

---

<sup>584</sup> Section 2002(a) of the Rural Local Broadcast Signal Act.

<sup>585</sup> See 47 C.F.R. §§ 76.606 (closed captioning), 76.1200 et seq. (competitive availability of navigation devices).

<sup>586</sup> See 47 C.F.R. §§ 76.92 - 76.163, 76.67.

<sup>587</sup> See 47 C.F.R. § 76.701.

<sup>588</sup> See 47 U.S.C. § 325(b) (retransmission consent required of all MVPDs).

<sup>589</sup> See 47 U.S.C. §§ 338 ("must carry" for DBS); 534 (cable "must carry" of commercial stations), and 535 (cable "must carry" of noncommercial educational stations). There is no comparable statutory requirement for MDS, MMDS, or LMDS or for MVPDs in general.

every subscriber within each individual service area. We also seek comment on what, if any, must-carry obligations should be imposed on MVDDS licensees.<sup>590</sup>

#### **f. Treatment of Incumbent Licensees**

293. Presently, incumbent public safety and commercial POFS and DBS operations are authorized in the 12.2-12.7 GHz band. In tandem with our proposal to permit the entry of MVDDS operations in the 12.2-12.7 GHz band on a non-harmful interference basis to DBS operations, we must assess the impact of new MVDDS systems on the POFS incumbents in this spectrum. Previously, the Commission recognized the potential for interference between the POFS and DBS systems sharing the 12.2-12.7 GHz band,<sup>591</sup> and instructed the incumbent POFS licensees to either operate on a secondary basis to DBS operations in the 12.2-12.7 GHz band, or to relocate their operations to other available frequency bands or alternative facilities.<sup>592</sup>

294. Although many incumbent POFS licensees chose to relocate their operations to other frequency bands or alternative facilities, over 200 POFS licensees remain in the 12.2-12.7 GHz band. The Rural Local Broadcast Signal Act mandates that we ensure that no facility licensed or authorized to deliver local broadcast television signals as set forth in the Act, causes harmful interference to the primary users of that spectrum or to public safety spectrum use.<sup>593</sup> As a result of this statutory language, we believe that only incumbent commercial POFS licensees should be required to protect new MVDDS and NGSO FSS licensees in the 12.2-12.7 GHz band from harmful interference. Under this proposal, MVDDS and NGSO FSS licensees will be required to protect incumbent public safety POFS licensees. We emphasize that this proposal would not relieve any POFS and MVDDS licensees of their obligation to protect DBS operations in the 12.2-12.7 GHz frequency band. We believe these proposals further the public interest as they are consistent with the statutory language and Congressional intent. We seek comment on this tentative conclusion.

## **2. Application, Licensing and Processing Rules**

### **a. Regulatory Status**

295. In this *Further NPRM*, we seek comment on an appropriate licensing framework for implementing MVDDS in the 12.2-12.7 GHz band. In particular, we seek comment on whether we should allow an MVDDS licensee to use this spectrum for distribution of video programming and data services, and note that we previously indicated that a licensee may use other spectrum or telephone lines to provide the return line for two-way services.<sup>594</sup> We do not envision MVDDS as a common carrier

---

<sup>590</sup> See Multichannel Video and Cable Television Service Rules, Subpart D (Carriage of Television Broadcast Signals), 47 C.F.R. §§ 76.51-76.70.

<sup>591</sup> See Inquiry into the Development of Regulatory Policy in Regard to Direct Broadcast Satellites for the Period Following the 1983 Regional Administrative Radio Conference, Gen. Docket No. 80-603, *Report and Order*, 90 FCC 2d 676 (1982).

<sup>592</sup> *Id.* See also Initiation of Direct Broadcast Satellite Service – Effect on 12 GHz Terrestrial Point-to-Point Licensees in the Private Operational Fixed Radio Service, *Public Notice*, 10 FCC Rcd 1211 (1994). The Commission indicated that in the event that DBS service experiences interference from terrestrial point-to-point operations, it is the sole responsibility of terrestrial licensees to eliminate such interference immediately. *Id.*

<sup>593</sup> See Act of Nov. 29, 1999, Pub. L. 106-113, 113 Stat. 1501, 1537.

<sup>594</sup> See *supra*, ¶ 289.

service,<sup>595</sup> nor do we envision that MVDDS licensees will provide switched voice and data services.<sup>596</sup> We note that local cable companies and DBS operators provide their services on a non-common carrier basis. We seek comment on whether to limit the scope of MVDDS operations to the provision of service on a non-common carrier basis.

#### b. License Eligibility

296. Our overall goal in assessing the need to restrict the opportunity of any class of service provider to obtain and use spectrum to provide communications services has been to determine whether the restriction is a necessary step in ensuring that consumers will receive efficient communications services at reasonable charges.<sup>597</sup> Because we are of the view that competitive markets are the most direct and reliable means for ensuring that consumers receive the benefits described in the Communications Act, we have evaluated the need for spectrum licensing restrictions in terms of whether the restrictions are necessary to promote competition in the telecommunications marketplace and whether these restrictions are otherwise consistent with our obligation to promote the public interest.<sup>598</sup>

297. When Congress granted the Commission authority in Section 309(j) to auction spectrum licenses, it acknowledged our authority "to [specify] eligibility and other characteristics of such licenses."<sup>599</sup> Moreover, Section 309(j)(3) specifically directs that we exercise that authority so as to "promot[e] . . . economic opportunity and competition . . . by avoiding excessive concentration of

---

<sup>595</sup> See 47 U.S.C. § 153(10), 47 C.F.R. § 32.9000. A common carrier is "any person engaged as a common carrier for hire, in interstate or foreign communication by wire or radio or in interstate or foreign radio transmission of energy, except where reference is made to common carriers not subject to this ACT; but a person engaged in radio broadcasting shall not, insofar as such person is so engaged, be deemed a common carrier."

<sup>596</sup> Video programming service will be treated as a non-common carrier service. See *MVDS Second Report and Order*, 12 FCC Rcd at 12639-41, ¶¶ 213-15; Rule Making to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, CC Docket No. 92-297, *Second Report and Order, Order on Reconsideration and Fifth Notice of Proposed Rule Making*, 12 FCC Rcd 12545, ¶ 213 (1997) (*LMDS Second R&O*). Thus, any applicant intending to provide a video programming service would appropriately indicate a choice of non-common carrier regulatory status. We note that in other services we adopted a more flexible approach wherein an applicant may elect common carrier status and/or non-common carrier status under its authorization. For instance, in the LMDS proceeding, we permitted licensees to operate exclusively as a common carrier or non-common carrier or to provide services on both bases. See *LMDS Second R&O*, 12 FCC Rcd 12545, ¶¶ 245-251. Similarly, in the 39 GHz proceeding, we adopted a flexible approach where we permitted licensees to service as either a common carrier or a private licensee, permitting licensees that selected to provide common carrier service to private service as well. See Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands, ET Docket No. 95-183, *Report and Order and Second Notice of Proposed Rule Making*, 12 FCC Rcd 18600, 18636 (1997) (*39 GHz R&O*).

<sup>597</sup> See 47 U.S.C. § 151.

<sup>598</sup> Cf., e.g., Implementation of Sections 3(n) and 332 of the Communications Act – Regulatory Treatment of Mobile Services, GN Docket No. 93-252, *Second Report and Order*, 9 FCC Rcd 1411, 1420 ¶ 19 (*CMRS Second Report and Order*) ("Success in the marketplace. . . should be driven by technological innovation, service quality, competition-based pricing decisions, and responsiveness to consumer needs – and not by strategies in the regulatory arena.").

<sup>599</sup> See 47 U.S.C. § 309(j)(3).

licenses and by disseminating licenses among a wide variety of applicants."<sup>600</sup> Congress also emphasized this pro-competitive policy in Section 257, in which it articulated a "national policy" in favor of "vigorous economic competition" and the elimination of barriers to market entry by a new generation of telecommunications providers.<sup>601</sup>

298. Toward that end, the Commission has created a standard for determining whether an eligibility restriction is warranted for certain services.<sup>602</sup> Specifically, this standard demands that this regulatory restriction be imposed on MVDDS only when there is a significant likelihood of substantial harm to competition in specific markets and when the restriction will be effective in eliminating that harm.<sup>603</sup> This standard involves much more than examining market power. In addition, the test entails examining other relevant market facts and circumstances: economic incentives, entry barriers, and potential competition.<sup>604</sup> We believe that this approach is appropriate here because it comports with our statutory guidance as discussed above. We seek comment on whether there is a significant likelihood that incumbent cable operators and DBS firms may substantially harm competition by acquiring MVDDS licenses. Based on our initial preliminary analysis, incumbent local cable operators and existing DBS service providers may have both the ability and incentive to acquire MVDDS licenses in order to anti-competitively foreclose entry by a new MVPD competitor. MVDDS licensees will likely be entrants into MVPD markets. While competitive choices continue to develop in these markets, local franchised cable television operators generally continue to hold dominant market shares. Roughly 82% of MVPD households are served by cable companies.<sup>605</sup> In addition, much of the growth in competition is due to the two DBS operators. Together they serve roughly 12% of MVPD households. Other providers are typically fringe competitors.<sup>606</sup> The incumbent cable companies in most markets will have an incentive to acquire the in-region MVDDS license in order to prevent a fourth significant provider from emerging. These incumbent cable companies possess very large market shares and would find it rational to foreclose or at least delay the emergence of new firms that might drive prices down or otherwise increase MVPD competition. While the market share of the DBS firms is far smaller, we have seen fast growth of

---

<sup>600</sup> Our use of that authority to "place restrictions on the bidding process in order to ensure that a wide variety of applicants are able to meaningfully participate" in the market for the service being auctioned has been upheld by the courts. *Cincinnati Bell Tel. Co. v. FCC*, 69 F.3d 752, 761-762 (6<sup>th</sup> Cir. 1995) (*Cincinnati Bell*).

<sup>601</sup> See 47 U.S.C. § 257. Section 257 directs the Commission to identify and eliminate, "by regulations pursuant to its authority under this [Act] . . . market entry barriers for entrepreneurs and other small businesses in the provision and ownership of telecommunications services and information services."

<sup>602</sup> See, i.e., *39 GHz R&O*, 12 FCC Rcd 18600, 18619; Rule Making 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, Hyperion Communications Long Haul, L.P., Application for Expedited Review, CC Docket No. 92-927, *Third Report and Order and Memorandum Opinion and Order*, 15 FCC Rcd 11857 (2000).

<sup>603</sup> See *39 GHz R&O*, 12 FCC Rcd at 18619.

<sup>604</sup> In the Matter of Rule Making 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, *Third Order on Reconsideration*, CC Docket No. 92-297, 13 FCC Rcd 4856, 4861 ¶ 7, 4863 ¶ 12 (1998).

<sup>605</sup> See Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, *Sixth Annual Report*, CS Docket No. 99-230, 15 FCC Rcd 978, 981-987, and Table C-1, Appendix C at C-1, Appendix D (2000) (*Sixth Cable Competition Report*).

<sup>606</sup> *Id.*

DBS, and their current subscriber totals may understate their competitive importance. Thus, the incentives facing the DBS firms may be similar to those facing the incumbent cable operators. These cable and DBS firms could also have the financial ability to carry out such competition-precluding behavior.<sup>607</sup> In contrast, other MVPD, such as MDS and “private cable” operators, may lack significant market power and the financial wherewithal, and thus possess relatively little incentive and ability to anticompetitively acquire an MVDDS license in the region of their current operations. We seek comment on this analysis.

299. We note further that in most geographic markets the rivalry among MVPDs does not appear to adequately make these markets competitive currently. On the other hand, if such rivalry were sufficient, these firms would have nothing to gain from precluding additional entry. While we have found relatively few MVPD markets to be “effectively competitive” pursuant to Section 623(l) of the Act<sup>608</sup> there are markets where effective competition has been found, or is developing. Thus, where we have found (or find) “effective competition” to be present, we would not restrict either the incumbent cable operator or the DBS operators from acquiring the MVDDS license. Accordingly, we seek comment on whether to restrict cable service operators from acquiring an attributable interest within their franchised cable service area, unless such service area has been found by the Commission to be characterized by effective competition. We also seek comment on whether to restrict DBS carriers or distributors from obtaining or investing in a MVDDS license.<sup>609</sup> We also seek comment on whether any alleged harm to competition would be substantial in specific markets and whether such a restriction will be effective in eliminating that harm. On the other hand, we also seek comment on whether there would be any public interest benefits to providing for open (or partially open) eligibility for MVDDS licenses.

---

<sup>607</sup> *Id.* We note that these current market conditions seem closely comparable to those in the wireless telephony market at the time the Commission adopted its original broadband PCS licensing rules, which limited in-region cellular licensees’ PCS spectrum holdings. See *In the Matter of Amendment of the Commission’s Rules to Establish New Personal Communications Services, Second Report and Order*, Gen Docket No. 90-314, 8 FCC Rcd 7700 (1993). We also note that the evidence from the mobile voice marketplace is that the more competitive structure has resulted in public benefits such as lower prices, on average, and improved quality and variety of service. See *In the Matter of Implementation of Section 6002(B) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, Fifth Report*, 15 FCC Rcd 17660 (2000).

<sup>608</sup> See 47 U.S.C. § 543(l). Section 623(l) of the Communication’s Act defines “effective competition” as: A) fewer than 30 percent of the households in the franchise area subscribe to the cable service of a cable system; B) the franchise area is served by a minimum of two unaffiliated multichannel video programming distributors each of which offers comparable video programming to at least 50 percent of the households in the franchise area and the number of households subscribing to programming services offered by multichannel video programming distributors other than the largest multichannel video programming distributor exceeds 15 percent of the households in the franchise area; C) a multichannel video programming distributor operated by the franchising authority for that franchise area offers video programming to at least 50 percent of the households in that franchise area; or D) a local exchange carrier or its affiliate (or any multichannel video programming distributor using the facilities of such carrier or its affiliate) offers video programming services directly to subscribers by any means (other than direct-to-home satellite services) in the franchise area of an unaffiliated cable operator which is providing cable service in that franchise area, but only if the video programming services so offered in that area are comparable to the video programming services provided by the unaffiliated cable operator in that area.

<sup>609</sup> We note that there are no current rules that prevent common ownership in DBS and other MPVD services, including cable and MDS, but we have imposed restrictions in DBS auctions and the U.S. Department of Justice has prevented common cable and DBS ownership in one case. See *In the Matter of Revision of Rules and Policies for the Direct Broadcast Service, Report and Order*, IB Docket No. 95-168, 11 FCC Rcd 9712 (1995); *U.S. v. Primestar Partners, L.P.*, 140 L. Ed.2d. 180 (S.D.N.Y. 1994).

For example, we note that Northpoint's Petition for Rule Making argued that Northpoint's technology will "enable DBS providers to compete more effectively against cable," "add value to DBS and promote localism by curing the local television signal problem," and "provide DBS providers a method to deliver Noncommercial Broadcasting Services."<sup>610</sup> Northpoint also proposed that both DBS licensees and their affiliates be eligible for terrestrial DBS authorizations "in order to facilitate arrangements whereby DBS providers could engage in equity sharing arrangements with local broadcasters or other entities willing to construct facilities for terrestrial DBS signal carriage."<sup>611</sup> What public interest benefits, if any, would accrue if incumbent cable operators were permitted to acquire or invest in MVDDS licenses?

### c. Foreign Ownership Restrictions

300. Certain foreign ownership and citizenship requirements are imposed in Sections 310(a) and 310(b) of the Communications Act that restrict the issuance of licenses to certain applicants.<sup>612</sup> The statutory provisions are implemented in Section 101.7 of our Rules.<sup>613</sup> Specifically, Section 101.7(a) prohibits the grant of any license to a foreign government or its representative.<sup>614</sup> Section 101.7(b) of our Rules prohibits the grant of any common carrier license to individuals who do not meet the citizenship requirements listed in the rule.<sup>615</sup> We propose that MVDDS licensees be subject to Section 101.7 of our Rules, which closely tracks the language of Section 310 of the Communications Act. As with other licenses granted pursuant to Section 310 of the Communications Act, we propose that these licenses would be granted in accordance with the foreign ownership precedent set forth in our *Foreign Participation Order* and other relevant Commission precedent.<sup>616</sup>

301. We propose that Universal Licensing System ("ULS") forms and procedures contained in the Commission's Rules will apply to MVDDS. In this connection, we expect MVDDS licensees to file appropriate documentation whenever there are changes to foreign ownership information, as well as other legal and financial qualifications. We request comment on these proposals.

### d. License Term and Renewal Expectancy

302. We seek comment on whether to license MVDDS for a term of ten years, beginning on the date of the initial authorization grant. We note that a ten-year license term is consistent with the

---

<sup>610</sup> See Northpoint Petition for Rule Making at 5-13.

<sup>611</sup> *Id.* at 20-21.

<sup>612</sup> See 47 U.S.C. § 310(a)-(b).

<sup>613</sup> See 47 C.F.R. § 101.7.

<sup>614</sup> See 47 C.F.R. § 101.7(a).

<sup>615</sup> See 47 C.F.R. § 101.7(b).

<sup>616</sup> See Rules and Policies on Foreign Participation in the U.S. Telecommunications Market, IB Docket No. 97-142, Market Entry and Regulation of Foreign-Affiliated Entities, IB Docket No. 95-22, *Report and Order and Order on Reconsideration*, 12 FCC Rcd 23891, 23951-52, ¶ 144 (1997) (*Foreign Participation Order*); Rules and Policies on Foreign Participation in the U.S. Telecommunications Market, IB Docket No. 97-142 *Order on Reconsideration*, 15 FCC Rcd 18158 (2000).

license terms in other wireless services.<sup>617</sup> Congress has signaled a strong interest in quickly deploying local broadcast programming service to unserved and underserved areas and we believe that a ten-year license term would offer sufficient time and flexibility for licensees to establish systems and to deploy valuable services to the public.<sup>618</sup>

303. We also seek comment on providing a renewal expectancy similar to that afforded to 24 GHz and 39 GHz licensees.<sup>619</sup> We seek comment on whether a renewal expectancy based on the substantial service requirement will offer licensees the most flexibility as they determine how best to deploy service. We define substantial service as “a service that is sound, favorable, and substantially above a level of mediocre service which might minimally warrant renewal.”<sup>620</sup> In order to determine whether a licensee has provided substantial service upon renewal, we propose to consider factors such as: a) whether the licensee’s operations service niche markets or focus on serving populations outside of areas serviced by other licensees; b) whether the licensee’s operations serve populations with limited access to communications services; and c) a demonstration of service to a significant portion of the population or land area of the licensed area.<sup>621</sup> As a result of the flexibility that this standard affords, we have, in past proceedings, provided safe harbor examples to provide guidance to licensees in meeting this requirement. Therefore, we seek comment on safe harbor examples for MVDDS. Moreover, we propose to assess the substantial service showing on a case-by-case basis. In addition, we seek comment on whether to require a more aggressive approach such as a five-year build out.

304. We propose that upon license renewal, the application of an MVDDS licensee must include the following showings (at a minimum) in order to request a renewal expectancy: (1) a coverage map depicting the served and unserved areas; (2) a corresponding description of current service in terms of geographic coverage and population served or links installed in the served areas, including a description of how the licensee has complied with the substantial service requirement; and (3) copies of any Commission Orders finding the licensee to have violated the Communications Act or any Commission rule or policy and a list of any pending proceedings that relate to any matter described by the requirements for the renewal expectancy.<sup>622</sup> We seek comment on these proposals, and ask whether alternate showings would more accurately guide a Commission decision on license renewal.

---

<sup>617</sup> See *LMDS Second Report and Order*, 12 FCC Rcd 12545; *39 GHz R&O*, 12 FCC Rcd 18600 (1997); Amendment of Part 95 of the Commission’s Rules to Provide Regulatory Flexibility in the 218-219 MHz Service, WT Docket No. 98-169, *Report and Order and Memorandum Opinion and Order*, 15 FCC Rcd 1497 (1999); Amendment of the Commission’s Rules Regarding Multiple Address Systems, *Report and Order*, WT Docket No. 97-81, 15 FCC Rcd 11956 (2000); *24 GHz Report and Order*, 15 FCC Rcd 16934.

<sup>618</sup> See Rural Local Broadcast Signal Act of 1999, Pub. L. 106-113, 113 Stat. 1501, 1537.

<sup>619</sup> See *24 GHz Report and Order*, 15 FCC Rcd 16934.

<sup>620</sup> See 47 C.F.R. § 22.940(a)(1)(i). See also *LMDS Second Report and Order*, 12 FCC Rcd 12545, 12660; Amendment of the Commission’s Rules to Establish Part 27, the Wireless Communications Service, GN Docket No. 96-228, *Report and Order*, 12 FCC Rcd 10785, 10843-10844 (1997) (*WCS Report and Order*); Amendment of Part 95 of the Commission’s Rules to Provide Regulatory Flexibility in the 218-219 MHz Service, WT Docket No. 98-169, *Report and Order and Memorandum Opinion and Order*, 15 FCC Rcd 1497, 1537-38 (1999); *MAS Report and Order*, 15 FCC Rcd 11956 (2000).

<sup>621</sup> See, i.e., *24 GHz Report and Order*, 15 FCC Rcd 16934.

<sup>622</sup> Cf. 47 C.F.R. §§ 22.940(a)(2)(i)-(iv).

**e. Partitioning and Disaggregation**

305. *Partitioning.* We propose to allow MVDDS operators to partition their geographic service areas.<sup>623</sup> One of the main goals of the reallocation of spectrum in the 12.2-12.7 GHz band is to further Congress' mandate "to make a determination regarding licenses or other authorizations for facilities that will utilize, for delivering local broadcast television station signals to satellite television subscribers in unserved and underserved local television markets, spectrum otherwise allocated to commercial use."<sup>624</sup> Thus, in keeping with this mandate, we believe that partitioning encourages spectrum efficiency and will enable additional licensees to respond to market demands for services and/or spectrum in unserved and underserved areas. We request comment on this issue. We also seek comment on what additional information parties should be required to file in conjunction with the partitioning process.

306. *Disaggregation.* Furthermore, we seek comment on possible market incentives for disaggregating spectrum in the 12.2-12.7 GHz band.<sup>625</sup> We realize that disaggregation may potentially cause complications involving interference. However, if the spectrum is developed in the manner in which we currently envision, we believe that such interference will be minimal. Because we do not intend to broaden the interference rights of parties, we propose to hold all terrestrial parties that are a possible source for interference responsible for rectifying the problem should complications arise as a result of spectrum disaggregation. We also seek comment on what additional information parties should be required to file in conjunction with the disaggregation process. In addition, we seek comment on whether the implementation of alternative policies would be more appropriate for this service. On the other hand, we acknowledge that identifying a source of interference becomes more challenging by allowing disaggregation and seek comment on whether we should place a five-year prohibition on disaggregation, or prohibit disaggregation altogether in the 12.2-12.7 GHz band.

**f. Annual Report**

307. Consistent with other MVPDs, we propose that each MVDDS licensee should file with the Commission two copies of a report no later than March 1 of each year for the preceding calendar year, which must include the following: (a) name and address of licensee; (b) station(s) call letters and primary geographic service area(s); and (c) the following statistical information for the licensee's station (and each channel thereof): (i) the total number of separate subscribers served during the calendar year; (ii) the total hours of transmission service rendered during the calendar year to all subscribers; (iii) the total hours of transmission service rendered during the calendar year involving the transmission of local broadcast signals; and (iv) a list of each period of time during the calendar year in which the station rendered no service as authorized, if the time period was a consecutive period longer than forty-eight hours.<sup>626</sup> We believe that the information compiled in this report will assist us in analyzing trends and competition in the marketplace.

---

<sup>623</sup> "Partitioning" is the assignment of geographic portions of a license along geopolitical or other boundaries.

<sup>624</sup> See Section 2002(a) of the Rural Local Broadcast Signal Act.

<sup>625</sup> "Disaggregation" is the assignment of discrete portions or "blocks" of spectrum licensed to a geographic licensee or qualifying entity. Disaggregation allows for multiple transmitters in the same area operated by different companies (thus the possibility of harmful interference increases). With partitioning, one company operates in a licensed area.

<sup>626</sup> See, e.g., 47 C.F.R. § 21.911 ("Annual Reports" for MDS).

### **g. Licensing and Coordination of MVDDS Stations**

308. Although the low power and directionality of MVDDS systems minimizes interference, we anticipate that 12.2-12.7 GHz terrestrial licensees in adjacent service areas will have concerns about interference. Because of our decision to allow licensees to have flexibility in selecting and deploying equipment, we do not believe that universal sharing criteria can be developed between adjacent licensees. Therefore, because of the advent of this new service and the variable and unique nature of individual MVDDS systems, geographical climate and terrain, we propose to require adjacent licensees to develop their own sharing and protection agreements based on the design and architecture of their systems, in order to ensure that no harmful interference occurs between adjacent service areas. This approach is similar to the approach we took in the 24 GHz proceeding.<sup>627</sup> We seek comment on this proposal.

### **h. Canadian and Mexican Coordination**

309. Section 2.301 of our Rules requires stations using radio frequencies to identify their transmissions with a view to eliminate harmful interference and generally enforce applicable radio treaties, conventions, regulations, arrangements, and agreements.<sup>628</sup> At this time, international coordination between and among the United States, Mexico and Canada concerning the reallocation of this spectrum is not complete. We propose to adopt certain interim requirements for terrestrial licenses along these borders, and provide that these licensees will be subject to the provisions contained within future agreements between and among the three countries.

310. We propose to grant conditional licenses to United States MVDDS systems within fifty-six km (thirty-five miles) of the Canadian and Mexican borders, until final international agreements are signed. These systems may not cause harmful interference to stations in Canada or Mexico. In addition, we note that further modification may be necessary in order to comply with future agreements with Canada and Mexico regarding the use of this band. We seek comments on this proposal.

## **3. Technical Rules**

### **a. Transmitter Power**

311. In 1999, Northpoint demonstrated that it could provide service in the 12.2-12.7 GHz band using an e.i.r.p. of 12.5 dBm at its test sites in Rosslyn, Virginia and Washington, D.C. With a view toward simplifying coordination and reducing potential interference, we propose to limit urban area e.i.r.p. to 12.5 dBm, with two exceptions: (1) those MVDDS systems with service areas containing mountain ridges that are over one kilometer from populated subscriber areas may use higher output power, provided that the increase will not cause the system to exceed the "unavailability criteria" to be established in this proceeding, and (2) those MVDDS systems located on tall manmade structures and natural formations that are adjacent to bodies of water or other significant and clearly unpopulated areas, may use higher output power, provided that the increase will not cause the system to exceed the same "unavailability criteria."

312. We find that the C/I (such as 18 dB at each DBS subscriber unit) and power flux densities (an amount not to be exceeded at any DBS subscriber unit) fluctuate too much from area to area to be used as acceptable standards for the entire United States. Therefore, as discussed above, we seek comment on protection criteria options regarding an amount of yearly increased outage for each DBS

---

<sup>627</sup> 24 GHz Report and Order, ¶¶ 65-67.

<sup>628</sup> See 47 C.F.R. § 2.301.

system, instead of considering the variable conditions for power flux densities or C/I ratios in each different area of the United States. We seek comment on this issue.

**b. RF Safety**

313. Although we propose to limit power in the terrestrial use of the 12.2-12.7 GHz band in urban areas, we do not propose to set limits for the excepted areas on tall manmade structures and natural formations adjacent to bodies of water or unpopulated areas. Therefore, we propose that those stations with output powers that equal or exceed 1640 watts e.i.r.p. will be subject to the routine environmental evaluation rules for radiation hazards, as set forth in Section 1.1307 of our Rules.<sup>629</sup> We seek comment on this proposal.

**c. Quiet Zone Protection**

314. We tentatively conclude to require MVDDS operators to comply with the quiet radio zone criteria set forth in Part 1 of our Rules.<sup>630</sup> As such, we propose that stations authorized by competitive bidding must receive approvals from the relevant quiet zone before commencing operations. We seek comment on these proposals.

**d. Antennas**

315. We propose to require antennas deployed to receive MVDDS services to be technically similar to home DBS antennas and have a minimum unidirectional gain of 34 dBi. With regard to transmitting antennas, we propose that such antennas not be required to meet the antenna standards specified in Section 101.115 of our Rules, because they may be sectored and not unidirectional antennas. Thus, we propose to require MVDDS transmitting antennas to (1) meet the marking and lighting requirements under Part 17 of our Rules,<sup>631</sup> and (2) generally point southward. The terrestrial licensee of each service area must take into consideration that the DBS satellite receive antennas in the United States generally point southward. In order to minimize harmful interference to DBS satellite dishes, MVDDS licensees must determine for each area of the country, the "look angles" of all DBS antennas to determine appropriate angles that do not place high concentrations of interfering power into DBS antennas.<sup>632</sup> As discussed above, we propose to require MVDDS licensees to mitigate any interference beyond that deemed to be permissible caused by their transmitters into the DBS antennas.<sup>633</sup>

316. In addition, the Over-the-Air Reception Devices Rule ("OTARD") will probably apply to the MVDDS antennas at subscribers' homes or offices.<sup>634</sup> MVDDS antennas will be used to provide wireless services, and therefore, we seek comment on whether to amend or clarify the current OTARD rule to cover MVDDS just as MMDS and LMDS are covered.<sup>635</sup>

---

<sup>629</sup> See 47 C.F.R. § 1.1307.

<sup>630</sup> See 47 C.F.R. § 1.924.

<sup>631</sup> See 47 C.F.R. Part 17, Subpart C.

<sup>632</sup> A "look angle" is the elevation angle and azimuth of the antenna pointing at the satellite.

<sup>633</sup> See *supra*, ¶ 272.

<sup>634</sup> See 47 C.F.R. § 1.4000.

<sup>635</sup> We note that we recently expanded OTARD to apply to fixed wireless services when the antenna is otherwise within the scope of OTARD. See Promotion of Competitive Networks in Local Telecommunications (continued....)

### e. Transmitting Equipment

317. We propose to amend either Section 101.139 or Section 21.120 of our Rules to require verification of all MVDDS transmitters in the 12.2-12.7 GHz band. We also propose to require MVDDS transmitters with digital modulation and operating bandwidth of 500 megahertz to provide as many video and data channels as possible. We do not believe that MVDDS transmitters should be required to meet the efficiency standards in Section 101.141 of our Rules,<sup>636</sup> because terrestrial licensees will, by necessity, utilize the most efficient technology available. In addition, we propose to require all MVDDS stations to meet the digital emission mask, set forth in Section 101.111(a)(2) of our Rules.<sup>637</sup> Further, we propose to retain the frequency tolerance standard of 0.005% in Section 101.107 of our Rules,<sup>638</sup> changing the maximum bandwidth in Section 101.109 of our Rules to reflect a value of 500 megahertz for MVDDS systems.<sup>639</sup> As such, the value of 500 megahertz will also be the value for B in the equation for determining the emission mask, set forth in Section 101.111(a)(2) of our Rules.<sup>640</sup>

### 4. Pending Applications

318. *Background.* As stated earlier, on January 8, 1999, Northpoint filed waiver requests and applications for licenses for terrestrial use of the 12.2-12.7 GHz band, in response to the *Ku Band Cut-Off Notice*.<sup>641</sup> Northpoint requests waivers of Sections 101.105, 101.107, 101.109, 101.111, 101.115, 101.139 and 101.603 of our Rules, and any other fixed microwave radio service rules necessary to permit the Commission to process its applications to deploy service.<sup>642</sup> Northpoint asserts that its proposed service will be on a secondary, non-interfering basis to DBS services and on a co-primary basis with any new FSS entering the subject frequency band.<sup>643</sup> On March 11, 1999, the Bureau sought comment on Northpoint's request for waiver.<sup>644</sup> Requests for waiver of the Commission's Rules are subject, unless otherwise provided, to treatment by the Commission as restricted proceedings for *ex parte* purposes (Continued from previous page)

Markets, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, *First Report and Order and Further Notice of Proposed Rule Making in WT Docket No. 99-217, Fifth Report and Order and Memorandum Opinion and Order in CC Docket No. 96-98, and Fourth Report and Order and Memorandum Opinion and Order in CC Docket No. 88-57*, FCC 00-366 (rel. Oct. 25, 2000).

<sup>636</sup> See 47 C.F.R. § 101.141.

<sup>637</sup> See 47 C.F.R. § 101.11(a)(2).

<sup>638</sup> See 47 C.F.R. § 101.107.

<sup>639</sup> See 47 C.F.R. § 101.109.

<sup>640</sup> See 47 C.F.R. § 101.111(a)(2).

<sup>641</sup> See *supra*, ¶ 263. Note that on August 21, 2000, Pegasus filed a *Petition to Dismiss or Deny* the Northpoint applications arguing that the application proceeding is restricted as between Pegasus and Northpoint and as such, Northpoint's *ex parte* presentations violated the Commission's *ex parte* rules. Thus, according to Pegasus, the severity of the *ex parte* violations warrants dismissal of the Northpoint applications. See Pegasus *Petition to Dismiss or Deny* (filed Aug. 21, 2000) at 5-11 (Pegasus *Petition*). See also 47 C.F.R. §§ 1.1202(b), (d); 1.1208(c)(1)(i)(C).

<sup>642</sup> *Id.*

<sup>643</sup> *Id.*

<sup>644</sup> *Public Notice*, Wireless Telecommunications Bureau Seeks Comment on Broadwave Albany, L.L.C., *et al.* Requests for Waiver of Part 101 Rules, DA 99-494 (rel. March 11, 1999).

under Section 1.1208 of our Rules.<sup>645</sup> In this case, “because of the policy implications and the potential impact of this proceeding on other proceedings, as well as, persons not parties to the waiver requests” the Bureau decided to treat the matter as a permit-but-disclose proceeding under the *ex parte* rules.<sup>646</sup>

319. Subsequently, on April 18, 2000, Pegasus filed a waiver request and application for authority to provide terrestrial service in the 12.2-12.7 GHz band to deliver data transmission, Internet services, and MVPD services. In its application, Pegasus indicates that its proposed services are not contemplated by our current Rules and are analogous to fixed microwave services.<sup>647</sup> As such, Pegasus requests all waivers of the fixed microwave service rules necessary to allow processing of its application.<sup>648</sup> In its application, Pegasus maintains that its applications are mutually exclusive with those filed by Northpoint. On August 14, 2000, the Bureau established a permit-but-disclose *ex parte* status for the Pegasus application.<sup>649</sup>

320. On May 23, 2000, Northpoint filed a *Motion to Dismiss* the Pegasus applications arguing that (1) procedurally, the subject applications were filed over a year after the cut-off deadline established by the *Ku Band Cut-Off Notice* without requesting a waiver of the Commission’s cut-off rule; (2) substantively, Pegasus lacks a credible public interest showing and adequate support for grant of the requested waiver; and (3) Pegasus displays an anticompetitive spirit by filing its application at the time the Commission was about to render a final decision.<sup>650</sup> Northpoint avers that this anticompetitive attempt on the part of Pegasus, the largest independent distributor of DIRECTV, will delay the licensing process. On June 7, 2000, Pegasus filed a responsive pleading asserting that Northpoint’s arguments hinge on the mistaken premise that it missed an application cut-off deadline when, in fact, the Commission has not established one; and that Northpoint’s unsupported assertion of abuse of process was not accompanied by an affidavit specifying allegations of fact.<sup>651</sup>

321. Finally, on August 25, 2000, SRL filed a waiver request and application to provide terrestrial television broadcast, Internet and data services. The SRL application seeks authorization for service in Illinois, Indiana, Iowa, Michigan, Minnesota and Wisconsin. On September 20, 2000, the Bureau established a permit-but-disclose *ex parte* status for the SRL application.<sup>652</sup>

---

<sup>645</sup> 47 C.F.R. §1.1208.

<sup>646</sup> *Public Notice*, Wireless Telecommunications Bureau Seeks Comment on Broadwave Albany, L.L.C., *et al.* Requests for Waiver of Part 101 Rules, DA 99-494 (rel. March 11, 1999) at 2. *See* 47 C.F.R. §§ 1.1200(a), 1.1206.

<sup>647</sup> *Id.* *Public Notice*, Wireless Telecommunications Bureau Sets Permit-but-Disclose Status for PDC Broadband Corporation Requests for Waiver, DA 00-1841 (rel. Aug. 14, 2000).

<sup>648</sup> Specifically, Pegasus sought waiver of 47 C.F.R. §§ 101.101, 101.105, 101.107, 101.111, 101.115, 101.139, 101.603.

<sup>649</sup> *Public Notice*, Wireless Telecommunications Bureau Sets Permit-but-Disclose Status for PDC Broadband Corporation Requests for Waiver, DA 00-1841 (rel. Aug. 14, 2000).

<sup>650</sup> Northpoint Motion to Dismiss (filed May 23, 2000) (“Northpoint Motion”) at 16.

<sup>651</sup> Pegasus Opposition to Motion to Dismiss (filed June 7, 2000) (“Pegasus Opposition”) at 6-13. On June 19, 2000, Northpoint filed a Reply to Opposition (“Northpoint Reply”).

<sup>652</sup> *See Wireless Telecommunications Bureau Sets Permit-But-Disclose Status for Satellite Receivers Ltd. Requests For Waiver of Part 101 Rules*, DA No. 00-2134 (released September 20, 2000).

322. *Discussion.* As an initial matter, we note that none of the subject waiver requests and applications submitted to date have been formally accepted for filing. If we decide to grant any of these waiver requests and accept any of these applications, we would need to determine how they should be processed.

323. *Northpoint application.* Northpoint argues that its application should be granted without an auction because it is not mutually exclusive with any other applications.<sup>653</sup> According to Northpoint, we gave adequate notice that we would consider terrestrial use of the 12.2-12.7 GHz band in the *FSS NPRM* and that the *Ku Band Cut-Off Notice* should be construed as inviting applications for any purposed new service in that band, terrestrial or satellite.<sup>654</sup> Thus, Northpoint contends that parties intending terrestrial use of these frequencies were required to file within the announced NGSO FSS window, and no other party seeking to provide terrestrial services besides itself filed an application within the window.<sup>655</sup> Northpoint also avers that it has demonstrated that its technology is not mutually exclusive with the NGSO applicants in the band.<sup>656</sup>

324. Northpoint also argues that in order to promote the type of satellite-terrestrial sharing arrangement they have proposed, the two services must be licensed in the same manner simultaneously. According to Northpoint, this arrangement would enable them to effectively negotiate spectrum capacity with the satellite applicants and to facilitate negotiations concerning interference. In this connection, Northpoint sets forth an equity argument explaining that it would be extremely unfair if other terrestrial applicants were allowed to share in the "interference budget" that Northpoint has already negotiated with NGSO applicants.<sup>657</sup> Northpoint argues that granting 12.2-12.7 GHz band satellite applications while submitting terrestrial applications to auction would severely prejudice Northpoint and deny it the ability to effectively negotiate spectrum capacity with satellite applicants.<sup>658</sup> Finally, Northpoint contends that a number of public interest factors would be advanced by granting the applications, including the promotion of spectrum efficiency, prompt service to the public, greater competition for cable television and DBS systems, and delivery of advanced services to rural and other underserved areas.

325. We seek comment on the disposition of Northpoint's waiver request and application. Specifically, we request that commenters address the merits of Northpoint's arguments that its applications should be accepted for filing and granted. We specifically seek comment on whether the *FSS NPRM* and the *Ku Band Cut-Off Notice* gave adequate notice to all parties interested in filing applications for terrestrial use of the 12.2-12.7 GHz band, whether Northpoint's application should be accepted for filing, and whether it is mutually exclusive with any other applications. Based on Northpoint's request for 500 megahertz of spectrum nationwide, grant of its request would mean that it

---

<sup>653</sup> *Ex Parte* Submission of Northpoint (filed Aug. 29, 2000) ("Northpoint *Ex Parte* Submission") at 2.

<sup>654</sup> Northpoint *Ex Parte* Submission at 4-10.

<sup>655</sup> *See id.*; see also Northpoint Motion to Dismiss PDC Broadband Corporation Application to Provide Terrestrial Services in the 12.2-12.7 GHz Band (May 23, 2000) at 7-12. ("Northpoint Motion to Dismiss"). We note that Northpoint's argument that its application is not mutually exclusive with any other assumes that mutual exclusivity may exist between applications for different services.

<sup>656</sup> Northpoint *Ex Parte* Submission at 12-16.

<sup>657</sup> *Id.* at 12-15. Northpoint states that an "interference budget" is the amount of additional noise that Northpoint may generate in addition to the interference caused by NGSO operators, without causing unacceptable interference to incumbent DBS operators.

<sup>658</sup> *Id.* at 10-11.

would be the sole provider of terrestrial MVDDS in the 12.2-12.7 GHz band. We seek comment on the advantages and disadvantages associated with grant of Northpoint's request.

326. We note that Northpoint also contends that the Open-Market Reorganization for the Betterment of International Telecommunications Act ("Orbit Act") expressly prohibits the Commission from auctioning any spectrum used for global satellite communications services and that this prohibition extends to all other services that use such spectrum, including terrestrial microwave.<sup>659</sup> We do not agree with Northpoint's construction of the Orbit Act, because the statute does not prohibit the Commission from auctioning licenses for non-satellite services.<sup>660</sup> Thus, where we establish a terrestrial service, as we propose to do here, the Orbit Act is not a bar to auctioning licenses to provide that service merely because the terrestrial service operates on the same frequencies as a satellite service. We note that the 24 GHz band is allocated for terrestrial fixed services and satellite services, and we recently adopted rules for awarding licenses for terrestrial fixed service in that band by competitive bidding.<sup>661</sup> Terrestrial services and satellite services also share the 39 GHz band, and we have auctioned terrestrial fixed service licenses in that band.<sup>662</sup> We have also substituted the 3650-3700 MHz band, in which the fixed satellite service operates, for spectrum that must be auctioned pursuant to the Balanced Budget Act of 1997 ("Balanced Budget Act")<sup>663</sup> and thus plan to auction licenses for fixed and mobile terrestrial services in that band.<sup>664</sup>

327. As noted above, the approach suggested by Northpoint differs from our traditional process for establishing new terrestrial wireless services. When a party or the Commission proposes such a service, we generally initiate rule making proceedings both to allocate spectrum for the new service and establish service rules before we accept any applications for licenses. In the context of these proceedings, we establish rules governing the application and licensing process for the new service. After the completion of such proceedings, parties are provided an opportunity to submit applications in accordance with the adopted service rules. If mutually exclusive applications are accepted, licenses must

---

<sup>659</sup> *Id.* at 16. See Open-Market Reorganization for the Betterment of International Telecommunications Act, Pub. L. No. 106-180, 114 Stat. 48 (enacted March 12, 2000).

<sup>660</sup> We note also that the Orbit Act does not prohibit the use of auctions for domestic services. As President Clinton stated in signing the act into law, "in approving S. 376, I state my understanding that section 647 does not limit the Federal Communications Commission from assigning, via competitive bidding, domestic satellite service licenses intended to cover only the United States." Statement by President William J. Clinton upon signing S. 376, 36 WEEKLY COMP. PRES. DOC. 578 (Mar. 17, 2000).

<sup>661</sup> *24 GHz Report and Order*, 15 FCC Rcd 16934. We note that the allocation for satellite services in this band will not become effective until April 1, 2007.

<sup>662</sup> *39 GHz R&O*, 12 FCC Rcd 18600; *39 GHz Band Auction Closes, Public Notice*, DA 00-1035, Report No. AUC-30-E (rel. May 10, 2000).

<sup>663</sup> Pub. L. No. 105-33, Title III, 111 Stat. 251 (1997).

<sup>664</sup> As we stated in our recent order allocating the 3650-3700 MHz band to the fixed and mobile terrestrial services, "the assignment of licenses for terrestrial services by competitive bidding . . . is not prohibited by [the Orbit Act]." Existing international satellite fixed earth stations will be grandfathered in this band and new stations will be secondary to fixed services. Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band, ET Docket No. 98-237; The 4.9 GHz Band Transferred from Federal Government Use, WT Docket No. 00-32, *First Report and Order and Second Notice of Proposed Rule Making*, FCC 00-363 (rel. Oct. 24, 2000), ¶ 20 n.64. Thus, this *First R&O* allows satellite entities to remain in the band.

be assigned by auction, with few exceptions.<sup>665</sup> Because we have not yet established service rules for terrestrial use in this band, if we were to follow the traditional approach in creating terrestrial MVDDS in the 12.2-12.7 GHz band, it would appear that the Northpoint waiver requests and applications would be subject to dismissal. Northpoint would, however, be able to file an application after we have established service rules for terrestrial use of the 12.2-12.7 GHz band and opened a window for licenses to provide the new service. We seek comment on whether we should follow our traditional approach for creating new wireless services in this context and the advantages and disadvantages of such approach.

328. *Pegasus and SRL Applications.* Pegasus and SRL argue that their applications are mutually exclusive with those of Northpoint and that they did not file their applications after the cut-off date for this service because no cut-off date has been established.<sup>666</sup> Before we can address the disposition of the Pegasus and SRL applications, we must determine whether adequate notice that applications for terrestrial service should be filed in the NGSO FSS window was provided in the *Ku Band Cut-Off Notice*. As discussed above, this issue is also involved in evaluating Northpoint's applications. Unlike Northpoint, however, which filed prior to the cut-off date of January 8, 1999, established in the *Ku Band Cut-off Notice*, Pegasus and SRL did not file their applications until April 18, 2000, and August 25, 2000, respectively. Thus, even if we ultimately find that the *Ku Band Cut-Off Public Notice* gave adequate notice to all entities interested in filing applications for authorization in the 12.2-12.7 GHz band, we then must determine whether the Pegasus and SRL applications should be dismissed as late-filed. On the other hand, if we ultimately find that the *Ku Band Cut-Off Notice* did not give adequate notice to all entities interested in filing applications for authorization in the 12.2-12.7 GHz band, then it appears that the Pegasus and SRL applications were prematurely filed and should be dismissed without prejudice as defective. We seek comment on these, and other factors upon which we should analyze the Pegasus and SRL applications.

329. We also note that there is another possible scenario under our traditional approach to establishing service and licensing rules for wireless services. We could limit applications under our new rules for terrestrial service in the 12.2-12.7 GHz band and limit eligibility to one or more of the applications for terrestrial service received to date.<sup>667</sup> Under this scenario, we would need to determine whether the terrestrial applications are mutually exclusive. If they are found to be mutually exclusive, such applications would be subject to auction under the Balanced Budget Act. We seek comment on whether we should adopt a rule that would limit applications under the terrestrial service rules we ultimately adopt.

---

<sup>665</sup> See 47 U.S.C. § 309(j)(1), (2). Section 309(j)(2) exempts from auctions licenses and construction permits for public safety radio services, digital television service licenses and permits given to existing terrestrial broadcast licensees to replace their analog television service licenses, and licenses and construction permits for noncommercial educational broadcast stations and public broadcast stations.

<sup>666</sup> PDC Broadband Corporation Applications for Licenses to Provide Terrestrial Service in the 12.2-12.7 GHz Band in all DMAs, Exhibit 1 at 2 (filed Apr. 18, 2000); Satellite Receivers, Ltd. Application for Licenses to provide Terrestrial Broadcast and Data Services in the 12.2-12.7 GHz Band in Illinois, Indiana, Iowa, Michigan, Minnesota and Wisconsin, Exhibit 1 at 2 (filed Aug. 25, 2000); Pegasus Opposition at 6-13. See also, Northpoint Reply filed June 19, 2000.

<sup>667</sup> In 1987, in order to expedite the MSS rollout, the Commission limited its acceptance of applications to the thirteen applications that were on file, and required those applicants to form a consortium with the result that there was one licensee and no mutual exclusivity. Amendment of Parts 2, 22 and 25 of the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service for the Provision of Various Common Carrier Services, *Second Report and Order*, Gen. Docket No. 84-1234, 2 FCC Rcd 485 (1987).

330. We submit –in light of the fact that we have not yet determined whether to process the subject applications– that it is premature at this point to examine whether mutual exclusivity exists between or among any of the applications currently on file. We therefore hold the waiver requests and applications of Northpoint, Pegasus and SRL in abeyance pending further action in this proceeding.<sup>668</sup>

## 5. Competitive Bidding Procedures

### a. Statutory Requirements

331. The Balanced Budget Act revised the Commission’s auction authority.<sup>669</sup> Specifically, it amended Section 309(j) of the Act to require the Commission to grant licenses through the use of competitive bidding when mutually exclusive applications for initial licenses are filed, unless certain specific statutory exemptions apply.<sup>670</sup> The Balanced Budget Act also added to Section 309(j)(1) a reference to the Commission’s obligation under Section 309(j)(6)(E) to use engineering solutions, negotiation, threshold qualifications, service regulations, or other means to avoid mutual exclusivity where it is in the public interest to do so.<sup>671</sup> The Balanced Budget Act did not amend Section 309(j)(3)’s directive to consider certain public interest objectives in identifying classes of licenses and permits to be issued by competitive bidding.<sup>672</sup>

332. In a recently released *Report and Order and Further Notice of Proposed Rule Making*, the Commission established a framework for exercise of its auction authority, as amended by the Balanced Budget Act.<sup>673</sup> The *Report and Order* affirmed that in identifying which classes of licenses should be subject to competitive bidding, the Commission is required to pursue the public interest objectives set forth in Section 309(j)(3).<sup>674</sup> The *Report and Order* also affirmed that, as part of this public interest analysis, the Commission must continue to consider alternative procedures that avoid or reduce the likelihood of mutual exclusivity.<sup>675</sup> The Commission concluded, however, that its obligation to avoid mutual exclusivity does not preclude it from adopting licensing processes in the non-exempt services that result in the filing of

---

<sup>668</sup> Generally, a rule making is a better, fairer, and more effective method of implementing a new industry-wide policy than is the ad hoc and potentially uneven application of conditions in an isolated proceeding affecting a single party. See *Stockholders of Renaissance Communications Corp. and Tribune Co.*, 12 FCC Rcd. 11866, 11887-88 50 (1997) citing *Community Television of Southern California v. Gottfried*, 459 U.S. 498, 511 (1983).

<sup>669</sup> See 47 U.S.C. § 309(j)(1), (2) (as amended by Balanced Budget Act, § 3002).

<sup>670</sup> *Id.* 47 U.S.C. § 309(j)(2) exempts from auctions licenses and construction permits for public safety radio services, digital television service licenses and permits given to existing terrestrial broadcast licensees to replace their analog television service licenses, and licenses and construction permits for noncommercial educational broadcast stations and public broadcast stations.

<sup>671</sup> See 47 U.S.C. §§ 309(j)(1), 309(j)(6)(E).

<sup>672</sup> See 47 U.S.C. § 309(j)(3).

<sup>673</sup> See Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, WT Docket No. 99-87, *Report and Order and Further Notice of Proposed Rule Making*, FCC 00-403 (rel. Nov. 20, 2000).

<sup>674</sup> *Id.* at ¶¶ 20-27.

<sup>675</sup> *Id.*

mutually exclusive applications where it determines that such an approach would serve the public interest.<sup>676</sup>

333. In determining whether to assign licenses for MVDDS through competitive bidding, we intend to follow the approach set forth in the Balanced Budget Act proceeding regarding the exercise of our auction authority. We note, too, that subsequent to the adoption of the Balanced Budget Act, the U.S. Court of Appeals for the D.C. Circuit concluded that the Section 309(j)(6)(E) obligation does not foreclose new licensing schemes that are likely to result in mutual exclusivity.<sup>677</sup> The court states that if the Commission finds such schemes to be in the public interest, it may implement them “without regard to [S]ection 309(j)(6)(E) which imposes an obligation only to minimize mutual exclusivity ‘in the public interest,’ and ‘within the framework of existing policies.’”<sup>678</sup>

334. In this *Further NPRM*, we propose to license the 12.2-12.7 GHz band for MVDDS on the basis of geographic areas. As explained above, we seek comment on whether the use of DMAs in particular is a viable option in facilitating local access to service, and whether the use of DMAs may promote economic opportunities for a wide variety of applicants, including small businesses, rural telephone companies, and minority- and women-owned applicants.<sup>679</sup> If we find that it would serve the public interest to implement a geographic area licensing scheme, under which mutual exclusivity is possible, mutually exclusive applications for initial MVDDS licenses must be resolved through competitive bidding. We note, however, that Northpoint argues that its pending application to provide service in the 12.2-12.7 GHz band is not mutually exclusive with any other application and that the Commission should grant its application without conducting an auction. As discussed above, we therefore seek comment on this argument and on the disposition of Northpoint’s and other pending applications.<sup>680</sup>

#### **b. Incorporation by Reference of the Part 1 Standardized Auction Rules**

335. If we ultimately adopt a licensing scheme under which mutually exclusive applications may be filed, we propose to conduct the auction of MVDDS licenses in the 12.2-12.7 GHz band in conformity with the general competitive bidding rules set forth in Part 1, Subpart Q, of the Commission’s Rules, and substantially consistent with the bidding procedures that have been employed in previous auctions.<sup>681</sup>

<sup>676</sup> *Id.*

<sup>677</sup> See *Benkelman Telephone Co., et al. v. FCC*, 220 F.3d 601, 606 (D.C. Cir. 2000).

<sup>678</sup> *Id.* (citations omitted) (citing *DIRECTV, Inc. v. FCC*, 110 F.3d 816, 828 (D.C. Cir. 1997)).

<sup>679</sup> See *supra* ¶¶ 284-286.

<sup>680</sup> See *supra* ¶¶ 318-330.

<sup>681</sup> In the *Part 1 Third Report and Order*, the Commission streamlined its auction procedures by adopting general competitive bidding rules applicable to all auctionable services. Amendment of Part 1 of the Commission’s Rules -- Competitive Bidding Procedures, WT Docket No. 97-82, Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, ET Docket No. 94-32, *Third Report and Order and Second Further Notice of Proposed Rule Making*, 13 FCC Rcd 374 (1997) (modified by Erratum, DA 98-419 (rel. March 2, 1998)) (“*Part 1 Third Report and Order*”). In the *Part 1 Recon Order and Part 1 Fifth Report and Order*, the Commission clarified and amended these general competitive bidding rules. Amendment of Part 1 of the Commission’s Rules – Competitive Bidding Procedures, WT Docket No. 97-82, *Order on Reconsideration of the Third Report and Order, Fifth Report and Order, and Fourth Further Notice of Proposed Rule Making*, FCC 00-274 (rel. Aug. 14, 2000) (“*Part 1 Recon Order and Part 1 Fifth Report and Order*,” “*Fourth Further Notice of Proposed Rule Making*”).

Specifically, we propose to employ the Part 1 rules governing competitive bidding design, designated entities, application and payment procedures, reporting requirements, collusion issues, and unjust enrichment. Under this proposal, such rules would be subject to any modifications that the Commission may adopt in the Part 1 proceeding.<sup>682</sup> In addition, consistent with current practice, matters such as the appropriate competitive bidding design for the auction of MVDDS licenses, as well as minimum opening bids and reserve prices, would be determined by the Wireless Telecommunications Bureau ("Bureau") pursuant to its delegated authority.<sup>683</sup> We seek comment on whether any of our Part 1 rules would be inappropriate in an auction of licenses in the 12.2-12.7 GHz band.

### c. Provisions for Designated Entities

336. In authorizing the Commission to use competitive bidding, Congress mandated that the Commission "ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services."<sup>684</sup> In addition, Section 309(j)(3)(B) of the Act provides that in establishing eligibility criteria and bidding methodologies the Commission shall promote "economic opportunity and competition . . . by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women."<sup>685</sup>

337. In the *Competitive Bidding Second Memorandum Opinion and Order*, the Commission stated that it would define eligibility requirements for small businesses on a service-specific basis, taking into account the capital requirements and other characteristics of each particular service in establishing the appropriate threshold.<sup>686</sup> The *Part 1 Third Report and Order*, while it standardizes many auction rules, provides that the Commission will continue a service-by-service approach to defining small businesses.<sup>687</sup> In this *Further NPRM* we seek comment on permitting MVDDS licensees to use spectrum in the 12.2-12.7 GHz band for fixed one-way direct-to-home/business video and data services. We also seek comment on other services that might be provided in this band. Thus, we contemplate the use of this spectrum for video services and one-way high speed data services, but we do not know precisely the other types of services that licensees may seek to provide.<sup>688</sup>

338. In light of these circumstances, we tentatively conclude that, if we conduct an auction for licenses in the 12.2-12.7 GHz band, it would be in the public interest to provide bidding credits to three tiers of small businesses. We believe that the use of three small business definitions and three levels of

<sup>682</sup> See *Fourth Further Notice of Proposed Rule Making*, FCC 00-274 (rel. Aug. 14, 2000); Amendment of Part 1 of the Commission's Rules – Competitive Bidding Procedures, WT Docket No. 97-82, *Third Further Notice of Proposed Rule Making*, 14 FCC Rcd 21558 (1999).

<sup>683</sup> *Part 1 Third Report and Order*, 13 FCC Rcd at 448-49, 454-55, ¶¶ 125, 139 (directing the Bureau to seek comment on specific mechanisms relating to auction conduct pursuant to the Balanced Budget Act).

<sup>684</sup> 47 U.S.C. § 309(j)(4)(D).

<sup>685</sup> 47 U.S.C. § 309(j)(3)(B).

<sup>686</sup> Implementation of Section 309(j) of the Communications Act – Competitive Bidding, *Second Memorandum Opinion and Order*, 9 FCC Rcd 7245, 7269, ¶ 145 (1994) ("*Competitive Bidding Second Memorandum Opinion and Order*").

<sup>687</sup> *Part 1 Third Report and Order*, 13 FCC Rcd at 388, ¶ 18.

<sup>688</sup> See *supra* ¶ 289.

bidding credits would provide a variety of businesses, including local businesses, with opportunities to participate in the auction of licenses for this spectrum, and may also be appropriate to promote opportunities for the provision of services with varying capital costs. Accordingly, we propose to define a very small business as an entity with average annual gross revenues not exceeding \$3 million for the preceding three years, a small business as an entity with average annual gross revenues not exceeding \$15 million for the preceding three years, and an entrepreneur as an entity with average annual gross revenues not exceeding \$40 million for the preceding three years. We further propose to provide very small businesses with a bidding credit of 35%, small businesses with a bidding credit of 25%, and entrepreneurs with a bidding credit of 15%. The bidding credits we propose here are those set forth in the standardized schedule in Part 1 of our Rules.<sup>689</sup> We seek comment on whether our proposed small business definitions and bidding credits are appropriate for the 12.2-12.7 GHz band.

339. We also seek comment on whether the small business provisions we propose today are sufficient to promote participation by businesses owned by minorities and women, as well as rural telephone companies. To the extent that commenters propose additional provisions to ensure participation by minority-owned or women-owned businesses, they should address how such provisions should be crafted to meet the relevant standards of judicial review.<sup>690</sup>

## 6. Issues Affecting Tribal Governments

340. We seek comment from the public in general concerning the proposals set forth in this Further NPRM, and we specifically seek comment from Indian Tribal governments on the proposals below. As detailed in the *Tribal Government Policy Statement*, adopted earlier this year, the Commission is committed to (1) working with Indian tribes on a government-to-government basis to ensure that Indian tribes have adequate access to communications services, and (2) consulting with Tribal governments prior to implementing any regulatory action or policy that will significantly affect Tribal governments, their land, and resources.<sup>691</sup> We believe the proposals set forth in this Further NPRM have the potential to foster the development and, ultimately, the deployment of new technologies and services to many communities, including tribal communities. In keeping with the principles of the *Tribal Government Policy Statement*, we welcome the opportunity to consult with Tribal governments on the issues raised by this Further NPRM and we seek comment both from Tribal governments and other interested parties on the potential for the spectrum proposals set forth herein to serve the communications needs of tribal communities.

## VII. PROCEDURAL INFORMATION

### A. Initial Regulatory Flexibility Analysis

341. As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603, the Commission has prepared an Initial Regulatory Flexibility Analysis ("IRFA") of the expected impact on small entities of the proposals suggested in this *Further Notice of Proposed Rule Making*. The IRFA is

---

<sup>689</sup> In the *Part 1 Third Report and Order*, we adopted a standard schedule of bidding credits, the levels of which were developed based on our auction experience. *Part 1 Third Report and Order*, 13 FCC Rcd at 403-04, ¶ 47. See also 47 C.F.R. § 1.2110(f)(2).

<sup>690</sup> See *Adarand Constructors v. Peña*, 515 U.S. 200 (1995) (requiring a strict scrutiny standard of review for Congressionally mandated race-conscious measures); *United States v. Virginia*, 518 U.S. 515 (1996) (applying an intermediate standard of review to a state program based on gender classification).

<sup>691</sup> See Statement of Policy on Establishing a Government-to-Government Relationship with Indian Tribes, FCC 00-207 (rel. June 23, 2000) ("*Tribal Government Policy Statement*").

set forth in Appendix F. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments filed in this *Further Notice of Proposed Rule Making* ("*Further NPRM*"), but they must have a separate and distinct heading designating them as responses to the IRFA.

### B. Paperwork Reduction Analysis

342. The *Further Notice of Proposed Rule Making* contains proposed information collections. As part of our continuing effort to reduce paperwork burdens, we invite the general public and the Office of Management and Budget ("OMB") to take this opportunity to comment on the information collections contained in this Notice, as required by the Paperwork Reduction Act of 1995, Pub. L. No. 104-13. Public and agency comments are due at the same time as other comments on this Notice; OMB comments are due 60 days from the date of publication of this Notice in the Federal Register. Comments should address:

- Whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility.
- The accuracy of the Commission's burden estimates.
- Ways to enhance the quality, utility, and clarity of the information collected.
- Ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

343. Written comments by the public on the proposed information collections are due on or before **45 days from date of publication in the Federal Register**. Written comments must be submitted by the OMB on the proposed information collections on or before **60 days after the date of publication in the Federal Register**. In addition to filing comments with the Secretary, a copy of any comments on the proposed information collections contained herein should be submitted to Judy Boley, Federal Communications Commission, Room 1-C804, 445 12<sup>th</sup> Street, S.W., Washington, D.C. 20554, or via the Internet to [jboley@fcc.gov](mailto:jboley@fcc.gov), and to Virginia Huth, OMB Desk Officer, 10236 New Executive Office Building, 725 17<sup>th</sup> Street, N.W., Washington, D.C. 20503, or via the Internet to [fain\\_t@al.eop.gov](mailto:fain_t@al.eop.gov).

### C. Ex Parte Presentations

344. This is a permit-but-disclose notice and comment rule making proceeding. Members of the public are advised that ex parte presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed under the Commission's Rules.<sup>692</sup>

### D. Comment Dates

345. Pursuant to Sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. §§ 1.415 and 1.419, interested parties may file comments on or before **45 days from date of publication in the Federal Register** and reply comments on or before **60 days from date of publication in the Federal Register**. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS), <http://www.fcc.gov/e-file/ecfs.html>, or by filing paper copies. See *Electronic Filing of Documents in Rule Making Proceedings*, 63 Fed. Reg. 23,121 (1998).

---

<sup>692</sup> See generally 47 C.F.R. §§ 1.1202, 1.1203, 1.1206(a).

346. Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/e-file/ecfs.html>. Generally, only one copy of an electronic submission must be filed. If multiple docket or rule making numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rule making number referenced in the caption. In completing the transmittal screen, commenters should include their full name, Postal Service mailing address, and the applicable docket or rule making number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an E-mail to [ecfs@fcc.gov](mailto:ecfs@fcc.gov), and should including the following words in the body of the message, "get form <your e-mail address." A sample form and directions will be sent in reply.

347. Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rule making number appear in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rule making number. All filings must be sent to the Commission's Secretary, Magalie Roman Salas, Office of the Secretary, Federal Communications Commission, 445 12th Street, S.W., TW-A325, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center of the Federal Communications Commission, Room TW-A306, 445 12th Street, S.W., Washington, D.C. 20554.

348. Parties who choose to file by paper should also submit their comments on diskette. Such a submission should be on a 3.5-inch diskette formatted in an IBM compatible format using Microsoft Word or compatible software. The diskette should be accompanied by a cover letter and should be submitted in "read only" mode. The diskette should be clearly labeled with the commenter's name, proceeding (including the lead docket number, type of pleading (comment or reply comment), date of submission, and the name of the electronic file on the diskette. The label should also include the following phrase "Disk Copy – Not an Original." Each diskette should contain only the party's pleading, preferably in a single electronic file. In addition, commenters must send diskette copies to the Commission's copy contract, International Transcription Service, Inc., 1231 20<sup>th</sup> Street, NW, Washington, D.C. 20037.

349. Alternative formats (computer diskette, large print, audio cassette and Braille) are available to persons with disabilities by contacting Martha Contee at (202 ) 418-0260, TTY (202) 418-2555, or via e-mail to [mcontee@fcc.gov](mailto:mcontee@fcc.gov). This *R&O and Further NPRM* can also be downloaded at <http://www.fcc.gov/oet>.

#### **E. Further Information**

350. For further information concerning this *Further NPRM*, contact the following: For MVDDS/DBS and MVDDS/NGSO FSS sharing issues, Office of Engineering and Technology – Rodney Small at (202) 418-2452, Thomas Derenge at (202) 418-2451, or Geraldine Matisse at (202) 418-2322. For MVDDS service rules, Wireless Telecommunications Bureau – Michael Pollak, Jennifer Burton, Shellie Blakeney, or Nese Guendelsberger at (202) 418-0680.

#### **F. Final Regulatory Analysis**

351. *Final Regulatory Flexibility Analysis.* The analysis regarding the First Report and Order, pursuant to the Regulatory Flexibility Act of 1980, 5 U.S.C. Section 603, is contained in Appendix B.

**VIII. ORDERING CLAUSES**

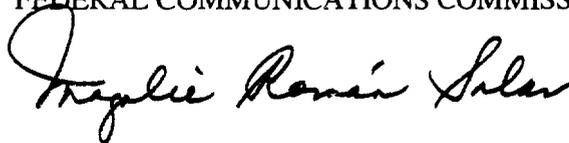
352. *Authority.* Accordingly, IT IS ORDERED that pursuant to the authority contained in Sections 1, 4(i), 7(a), 301, 303(c), 303(f), 303(g), 303(r), 308, and 309(j) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 151, 154(i), 157(a), 301, 303(c), 303(f), 303(g), 303(r), 308, and 309(j), this First Report and Order and Further Notice of Proposed Rule Making IS ADOPTED.

353. IT IS FURTHER ORDERED that, pursuant to Sections 4(i) and 303 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303, and Section 1.425 of the Commission's Rules, 47 C.F.R. § 1.425, the Petition for Rule Making filed on March 6, 1998 by Northpoint Technology, Ltd. is GRANTED IN PART, consistent with the decisions set forth herein.

354. IT IS FURTHER ORDERED that Parts 2 and 25 of the Commission's Rules ARE AMENDED as set forth in Appendix A, effective thirty days after publication in the Federal Register; and that NOTICE IS HEREBY GIVEN of the proposed regulatory changes described in the Further Notice of Proposed Rule Making and contained in Appendix E.

355. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this First Report and Order and Further Notice of Proposed Rule Making, including the Final Regulatory Flexibility Analysis and Initial Regulatory Flexibility Analysis, in a report to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996, *see* 5 U.S.C. § 801(a)(1)(A); and shall also send a copy of the First Report and Order and Further Notice of Proposed Rule Making, including the Final Regulatory Analysis and Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration. *See* 5 U.S.C. § 603(a). A summary of the First Report and Order and Further Notice of Proposed Rule Making will be published in the Federal Register. *See* 5 U.S.C. § 605(b).

FEDERAL COMMUNICATIONS COMMISSION



Magalie Roman Salas  
Secretary

**APPENDIX A: FINAL RULES**

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 C.F.R. parts 1, 2, and 25 as follows:

**PART 1 – PRACTICE AND PROCEDURE**

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

AUTHORITY: 47 U.S.C. 151, 154(i), 154(j), 155, 225, 303(r), 309.

2. Section 1.1307 is amended as follows:

**§ 1.1307 Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.**

\* \* \* \* \*

(b)(1) \* \* \*

Table 1--Transmitters, Facilities and Operations Subject to Routine Environmental Evaluation

Service (title 47 rule part)	Evaluation required if
<p style="text-align: center;">* * * * *</p> <p>Satellite Communications (part 25)</p> <p style="text-align: center;">* * * * *</p>	<p style="text-align: center;">* * *</p> <p>All included. In addition, for NGSO subscriber equipment, licensees are required to attach a label to subscriber transceiver antennas that:</p> <p>(1) provides adequate notice regarding potential radiofrequency safety hazards, e.g., information regarding the safe minimum separation distance required between users and transceiver antennas; and</p> <p>(2) references the applicable FCC-adopted limits for radiofrequency exposure specified in §1.1310 of this chapter.</p> <p style="text-align: center;">* * *</p>

\* \* \* \* \*

---

**PART 2 -- FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL  
RULES AND REGULATIONS**

3. The authority citation for part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

4. Section 2.106, the Table of Frequency Allocations, is amended as follows:

- a. Pages 63, 64, and 65 are revised.
- b. In the list of International Footnotes, footnotes S5.441, S5.484A, S5.487A, S5.488, S5.492, S5.502, and S5.503 are revised.
- c. In the list of United States (US) Footnotes, footnotes US355, US356, and US357 are added.
- d. In the list of Non-Government (NG) Footnotes, footnotes NG104, NG118, and NG143 are revised.

The revisions and additions read as follows:

**§ 2.106 Table of Frequency Allocations.**

10-12.7 GHz (SHF)

International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
10-10.45 FIXED MOBILE RADIOLOCATION Amateur  S5.479	10-10.45 RADIOLOCATION Amateur  S5.479 S5.480	10-10.45 FIXED MOBILE RADIOLOCATION Amateur  S5.479	10-10.45 RADIOLOCATION  S5.479 US58 US108 G32	10-10.45 Radiolocation Amateur  S5.479 US58 US108 NG42	Private Land Mobile (90) Amateur (97)
10.45-10.5 RADIOLOCATION Amateur Amateur-satellite  S5.481			10.45-10.5 RADIOLOCATION  US58 US108 G32	10.45-10.5 Radiolocation Amateur Amateur-satellite  US58 US108 NG42 NG134	
10.5-10.55 FIXED MOBILE Radiolocation	10.5-10.55 FIXED MOBILE RADIOLOCATION		10.5-10.55 RADIOLOCATION  US59		Private Land Mobile (90)
10.55-10.6 FIXED MOBILE except aeronautical mobile Radiolocation			10.55-10.6	10.55-10.6 FIXED	Fixed Microwave (101)
10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation  S5.149 S5.482			10.6-10.68 EARTH EXPLORATION- SATELLITE (passive) SPACE RESEARCH (passive)  US265 US277	10.6-10.68 EARTH EXPLORATION- SATELLITE (passive) FIXED SPACE RESEARCH (passive)  US265 US277	
10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)  S5.340 S5.483			10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  US246 US355		

<p>10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) S5.441 S5.484A (Earth-to-space) S5.484 MOBILE except aeronautical mobile</p>	<p>10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) S5.441 S5.484A MOBILE except aeronautical mobile</p>		<p>10.7-11.7  US211 US355</p>	<p>10.7-11.7 FIXED NG41 FIXED-SATELLITE (space-to-Earth) S5.441 US211 NG104  US355</p>	<p>International Fixed (23) Satellite Communications (25) Fixed Microwave (101)</p>
<p>11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE</p>	<p>11.7-12.1 FIXED S5.486 FIXED-SATELLITE (space-to-Earth) S5.484A Mobile except aeronautical mobile  S5.485 S5.488</p>	<p>11.7-12.2 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE</p>	<p>11.7-12.1  S5.486</p>	<p>11.7-12.2 FIXED-SATELLITE (space-to-Earth) NG143 NG145 Mobile except aeronautical mobile</p>	<p>Satellite Communications (25) Fixed Microwave (101)</p>
<p>S5.487 S5.487A S5.492</p>	<p>12.1-12.2 FIXED-SATELLITE (space-to-Earth) S5.484A  S5.485 S5.488 S5.489</p>	<p>S5.487 S5.487A S5.492</p>	<p>12.1-12.2</p>	<p>S5.486 S5.488</p>	
<p>12.2-12.7 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE</p>	<p>12.2-12.7 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE</p>	<p>12.2-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING  S5.484A S5.487 S5.491</p>	<p>12.2-12.7</p>	<p>12.2-12.7 FIXED BROADCASTING-SATELLITE</p>	<p>International Fixed (23) Satellite Communications (25) Direct Broadcast Satellite (100) Fixed Microwave (101)</p>
<p>12.5-12.75 FIXED-SATELLITE (space-to-Earth) S5.484A (Earth-to-space)</p>	<p>S5.487A S5.488 S5.490 S5.492</p>	<p>12.5-12.75 FIXED FIXED-SATELLITE (space-to-Earth) S5.484A MOBILE except aeronautical mobile BROADCASTING-SATELLITE S5.493</p>	<p>S5.490</p>	<p>S5.487A S5.488 S5.490</p>	
<p>S5.494 S5.495 S5.496</p>	<p>See next page for 12.7-12.75 GHz</p>		<p>See next page for 12.7-12.75 GHz</p>		<p>See next page for 12.7-12.75 GHz</p>

12.7-14.5 GHz (SHF)

International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 12.5-12.75 GHz	12.7-12.75 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile	See previous page for 12.5-12.75 GHz	12.7-12.75	12.7-12.75 FIXED NG118 FIXED-SATELLITE (Earth-to-space) MOBILE  NG53	Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78) Fixed Microwave (101)
12.75-13.25 FIXED FIXED-SATELLITE (Earth-to-space) S5.441 MOBILE Space research (deep space) (space-to-Earth)			12.75-13.25   US251	12.75-13.25 FIXED NG118 FIXED-SATELLITE (Earth-to-space) S5.441 NG104 MOBILE  US251 NG53	
13.25-13.4 EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION S5.497 SPACE RESEARCH (active)  S5.498A S5.499			13.25-13.4 AERONAUTICAL RADIONAVIGATION S5.497 Space research (Earth-to-space)		Aviation (87)
13.4-13.75 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH S5.501A Standard frequency and time signal-satellite (Earth-to-space)  S5.499 S5.500 S5.501 S5.501B			13.4-13.75 RADIOLOCATION S5.333 US110 G59 Space research Standard frequency and time signal-satellite (Earth-to-space)	13.4-13.75 Radiolocation S5.333 US110 Space research Standard frequency and time signal-satellite (Earth-to-space)	Private Land Mobile (90)
13.75-14 FIXED-SATELLITE (Earth-to-space) S5.484A RADIOLOCATION Standard frequency and time signal-satellite (Earth-to-space) Space research  S5.499 S5.500 S5.501 S5.502 S5.503 S5.503A			13.75-14 RADIOLOCATION US110 G59 Standard frequency and time signal-satellite (Earth-to-space) Space research US337  S5.503A US356 US357	13.75-14 FIXED-SATELLITE (Earth-to-space) US337 Radiolocation US110 Standard frequency and time signal-satellite (Earth-to-space) Space research  S5.503A US356 US357	Satellite Communications (25) Private Land Mobile (90)

\* \* \* \* \*

## INTERNATIONAL FOOTNOTES

\* \* \* \* \*

I. New "S" Numbering Scheme

\* \* \* \* \*

S5.441 The use of the bands 4 500-4 800 MHz (space-to-Earth), 6 725-7 025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix S30B. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by geostationary-satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix S30B. The use of the bands 10.7-10.95 GHz (space-to Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. S9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite system in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks, and No. S5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

\* \* \* \* \*

S5.484A The use of the bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. S9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks, and No. S5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

\* \* \* \* \*

S5.487A Additional allocation: in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. S9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete

coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks, and No. S5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

S5.488 The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to the provisions of Resolution 77 (WRC-2000). For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix S30.

\* \* \* \* \*

S5.492 Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List in Appendix S30 may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference, or require more protection from interference, than the broadcasting-satellite service transmissions operating in conformity with the Plan or the List, as appropriate.

\* \* \* \* \*

S5.502 In the band 13.75-14 GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW. The protection of assignments to receiving space stations in the fixed-satellite service operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radionavigation stations operating in accordance with the Radio Regulations. No. S5.43A does not apply. See Resolution 733 (WRC-2000).

S5.503 In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

a) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed 71 dBW in the 6 MHz band from 13.772 to 13.778 GHz;

b) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz.

Automatic power control may be used to increase the e.i.r.p. density in the 6 MHz band in this frequency range to compensate for rain attenuation, to the extent that the power-flux density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions.

\* \* \* \* \*

#### United States (US) Footnotes

\* \* \* \* \*

US355 In the band 10.7-11.7 GHz, non-geostationary satellite orbit licensees in the fixed-satellite service (space-to-Earth), prior to commencing operations, shall coordinate with the following radio

astronomy observatories to achieve a mutually acceptable agreement regarding the protection of the radio telescope facilities operating in the band 10.6-10.7 GHz:

Observatory	West Longitude	North Latitude	Elevation
Arecibo Obs. ....	.....66° 45' 11"	.....18° 20' 46"	.....496 m
Green Bank Telescope (GBT).....	.....79° 50' 24"	.....38° 25' 59"	.....825 m
Very Large Array (VLA).....	.....107° 37' 04"	.....34° 04' 44"	.....2126 m
Very Long Baseline Array (VLBA) Stations:			
Pie Town, NM.....	.....108° 07' 07"	.....34° 18' 04"	.....2371 m
Kitt Peak, AZ.....	.....111° 36' 42"	.....31° 57' 22"	.....1916 m
Los Alamos, NM.....	.....106° 14' 42"	.....35° 46' 30"	.....1967 m
Ft. Davis, TX.....	.....103° 56' 39"	.....30° 38' 06"	.....1615 m
N. Liberty, IA.....	.....91° 34' 26"	.....41° 46' 17"	.....241 m
Brewster, WA.....	.....119° 40' 55"	.....48° 07' 53"	.....255 m
Owens Valley, CA.....	.....118° 16' 34"	.....37° 13' 54"	.....1207 m
St. Croix, VI.....	.....64° 35' 03"	.....17° 45' 31"	.....16 m
Hancock, NH.....	.....71° 59' 12"	.....42° 56' 01"	.....309 m
Mauna Kea, HI.....	.....155° 27' 29"	.....19° 48' 16"	.....3720 m

US356 In the band 13.75-14 GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation service towards the geostationary-satellite orbit shall not exceed 59 dBW. Receiving space stations in the fixed-satellite service shall not claim protection from radiolocation transmitting stations operating in accordance with the United States Table of Frequency Allocations. ITU Radio Regulation No. S5.43A does not apply.

US357 In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the ITU Radiocommunication Bureau (Bureau) prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

a) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed 71 dBW in any 6 MHz band from 13.77 to 13.78 GHz;

b) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in any 6 MHz band from 13.77 to 13.78 GHz.

Automatic power control may be used to increase the e.i.r.p. density in any 6 MHz band in these frequency ranges to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in any 6 MHz band in clear-sky conditions.

\* \* \* \* \*

#### Non-Federal Government (NG) Footnotes

\* \* \* \* \*

NG104 The use of the bands 10.7-11.7 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by the fixed-satellite service in the geostationary-satellite orbit shall be limited to international systems, i.e., other than domestic systems.

\* \* \* \* \*

NG118 In the bands 2025-2110 MHz, 6875-7125 MHz, and 12.7-13.25 GHz, television translator relay stations may be authorized to use frequencies on a secondary basis to other stations in the Television Broadcast Auxiliary Service that are operating in accordance with the Table of Frequency Allocations.

\* \* \* \* \*

NG143 In the band 11.7-12.2 GHz, protection from harmful interference shall be afforded to transmissions from space stations not in conformance with ITU Radio Regulation S5.488 only if the operations of such space stations impose no unacceptable constraints on operations or orbit locations of space stations in conformance with S5.488.

\* \* \* \* \*

## PART 25-SATELLITE COMMUNICATIONS

5. 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.

6. Section 25.146 is added to Subpart B – Space Stations – 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 14.5 GHz.**

(a) A comprehensive technical showing shall be submitted for the proposed non-geostationary satellite orbit fixed-satellite service (NGSO FSS) system in the bands 10.7 GHz to 14.5 GHz. The technical information shall demonstrate that the proposed NGSO FSS system would not exceed the validation equivalent power flux-density (EPFD) limits as specified in § 25.208 (d), (h), and (i) for EPFD<sub>down</sub>, and EPFD<sub>up</sub>. If the technical demonstration exceeds the validation EPFD limits at any test points within the U.S. for domestic service and at any points outside of the U.S. for international service or at any points in the geostationary satellite orbit, as appropriate, the application would be unacceptable for filing and will be returned to the applicant with a brief statement identifying the non-compliance technical demonstration. The technical showing consists of the following:

(1) Single-entry validation equivalent power flux-density, in the space-to-Earth direction, (EPFD<sub>down</sub>) limits:

(i) Provide a set of power flux-density (pfd) masks, on the surface of the Earth, for each space station in the NGSO FSS system. The pfd masks shall be generated in accordance with the specification stipulated in the ITU-R Recommendation BO.1503, "Functional Description to be used in Developing Software Tools for Determining Conformity of Non-GSO FSS Networks with Limits Contained in Article S22 of the Radio Regulations." In particular, the pfd mask must encompass the power flux-density radiated by the space station regardless of the satellite transmitter power resource allocation and traffic/beam switching strategy that are used at different periods of a NGSO FSS system life. The pfd

masks shall also be in an electronic form that can be accessed by the computer program contained in paragraph (a)(1)(iii) of this section.

(ii) Identify and describe in detail the assumptions and conditions used in generating the power flux-density masks.

(iii) Provide a computer program for the single-entry EPFD<sub>down</sub> validation computation, including both the source code and the executable file. This computer program shall be developed in accordance with the specification stipulated in the ITU-R Recommendation BO.1503.

(iv) Identify and describe in detail the necessary input parameters for the execution of the computer program identified in paragraph (a)(1)(iii) of this section.

(v) Provide the result, the cumulative probability distribution function of EPFD, of the execution of the computer program described in paragraph (a)(1)(iii) of this section by using only the input parameters contained in paragraphs (a)(1)(i) and (a)(1)(iv) of this section. The result must contain the worst three (3) test points in the U.S. for domestic service and the worst three (3) test points on each continent, except Antarctica, outside of the U.S. for international services, and as many points as the number of service areas; i.e., foot-prints. The center of each beam service area should be the test point coordinate.

(2) Single-entry validation equivalent power flux-density, in the Earth-to-space direction, EPFD<sub>up</sub> limits:

(i) Provide a set of NGSO FSS earth station maximum equivalent isotropically radiated power (e.i.r.p.) mask as a function of the off-axis angle generated by a NGSO FSS earth station. The maximum e.i.r.p. mask shall be generated in accordance with the specification stipulated in the ITU-R Recommendation BO.1503. In particular, the results of calculations encompass what would be radiated regardless of the earth station transmitter power resource allocation and traffic/beam switching strategy are used at different periods of a NGSO FSS system life. The e.i.r.p. masks shall also be in an electronic form that can be accessed by the computer program contained in paragraph (a)(2)(iii) of this section.

(ii) Identify and describe in detail the assumptions and conditions used in generating the maximum earth station e.i.r.p. mask.

(iii) Provide a computer program for the single-entry EPFD<sub>up</sub> validation computation, including both the source code and the executable file. This computer program shall be developed in accordance with the specification stipulated in ITU-R Recommendation BO.1503.

(iv) Identify and describe in detail the necessary input parameters for the execution of the computer program identified in paragraph (a)(2)(iii) of this section.

(v) Provide the result of the execution of the computer program described in paragraph (a)(2)(iii) of this section by using only the input parameters contained in paragraphs (a)(2)(i) and (a)(2)(iv) of this section. The result must contain an EPFD<sub>up</sub> for every longitudinal location on the geostationary satellite orbit at every two-degree spacing that is visible to the U.S. for domestic service and every three-degree longitudinal location in the geostationary satellite orbit for service outside of the U.S.

(b) Ninety days prior to the initiation of service to the public, the NGSO FSS system licensee shall submit a comprehensive technical showing for the non-geostationary satellite orbit fixed-satellite service (NGSO FSS) system in the bands 10.7 GHz to 14.5 GHz. The technical information shall demonstrate that the NGSO FSS system is expected not to operate in excess of the additional operational EPFD<sub>down</sub> limits and the operational EPFD<sub>down</sub> limits as specified in §25.208 (f), (g) and notes 2 and 3 to the table in paragraph (i). If the technical demonstration exceeds the additional operational EPFD<sub>down</sub> limits or the operational EPFD<sub>down</sub> limits at any test points with the U.S. for domestic service and at any test points outside of the U.S. for international service, the NGSO FSS system licensee shall not initiate service to the public until the deficiency has been rectified by reducing satellite transmission power or other adjustments. This must be substantiated by subsequent technical showings. The technical showings consist of the following:

(1) Single-entry additional operational equivalent power flux-density, in the space-to-Earth direction, (additional operational EPFD<sub>down</sub>) limits:

(i) Provide a set of anticipated operational power flux-density (pfd) masks, on the surface of the Earth, for each space station in the NGSO FSS system. The anticipated operational power flux-density

masks could be generated by using the method specified in ITU-R Recommendation BO.1503. In particular, the anticipated operational pfd mask shall take into account the expected maximum traffic loading distributions and geographic specific scheduling of the actual measured space station antenna patterns (see §25.210(k)). The anticipated operational power flux-density masks shall also be in an electronic form that can be accessed by the computer program contained in paragraph (b)(1)(iii) of this section.

(ii) Identify and describe in detail the assumptions and conditions used in generating the anticipated operational power flux-density masks.

(iii) Provide a computer program for the single-entry additional operational EPFD<sub>down</sub> verification computation, including both the source code and the executable file. This computer program could be developed by using the method specified in ITU-R Recommendation BO.1503.

(iv) Identify and describe in detail the necessary input parameters for the execution of the additional operational EPFD<sub>down</sub> verification computer program identified in paragraph (b)(1)(iii) of this section.

(v) Provide the result, the cumulative probability distribution function of EPFD, of the execution of the verification computer program described in paragraph (b)(1)(iii) of this section by using only the input parameters contained in paragraphs (b)(1)(i) and (b)(1)(iv) of this section. The result must contain the worst three (3) test points in the U.S. for domestic service and the worst three (3) test points in each continent, excluding Antarctica, out side of the U.S. for international service plus as many points as the number of service areas; *i.e.*, foot-prints. The center of each beam service area should be the test point coordinate.

(2) Operational equivalent power flux-density, space-to-Earth direction, (operational EPFD<sub>down</sub>) limits. Using the information contained in (b)(1) of this section plus the measured space station antenna patterns, provide the result of the execution of the computer simulation for the anticipated in-line operational EPFD<sub>down</sub> levels for the 3.0, 4.5, 6.2 and 10 m GSO FSS receiving earth station antennas having an efficiency of 65%. The result must contain the worst three (3) test points in the U.S. for domestic service and the worst three (3) test points per continent, exclude Antarctica, out side of the U.S. for international service plus as many points as the number of service areas; *i.e.*, foot-prints. The center of each beam service area should be the test point coordinate. In addition, also using the information contained in (b)(1) of this section plus the measured space station antenna patterns, provide the result of the execution of the computer simulation for the anticipated in-line operational EPFD<sub>down</sub> levels for the 180 cm GSO BSS receiving earth station antennas in Hawaii, and for 240 cm GSO BSS receiving earth station antennas in Alaska, assuming an efficiency of 65%. The result must contain the worst test point in Alaska and Hawaii, plus as many points as the number of service areas; *i.e.*, foot-prints in these areas, using the center of each beam service area should be the test point coordinate.

(c) The NGSO FSS system licensee shall, on June 30 of each year, file a report with the International Bureau and the Commission's Columbia Operations Center in Columbia, Maryland, certifying the status of the additional operational EPFD<sub>down</sub> levels into the 3 m and 10 m GSO FSS receiving earth station antennas, the operational EPFD<sub>down</sub> levels into the 3 m, 4.5 m, 6.2 m and 10 m GSO FSS receiving earth station antennas and the operational EPFD<sub>down</sub> levels into the 180 cm GSO BSS receiving earth station antennas in Hawaii and 240 GSO BSS receiving earth station antennas Alaska.

(d) The Commission may request at any time additional information from the NGSO FSS system applicant or licensee concerning the EPFD levels and the related technical showings.

(e) A NGSO FSS system licensee operating a system in compliance with the limits specified in §25.208 (d), (f), (g), (h), (i) and (j) shall be considered as having fulfilled its obligations under ITU Radio Regulations provision S22.2 with respect to any GSO network. However, such NGSO FSS system shall not claim protection from GSO FSS and BSS networks operating in accordance with Part 25 or Part 100, respectively, and the ITU Radio Regulations.

(f) Coordination will be required between NGSO FSS systems and GSO FSS earth stations in the frequency band 10.7-12.75 GHz when all of the following threshold conditions are met:

(i) bandwidth overlap; and

(ii) the satellite network using the GSO has specific receive earth stations which meet all of the following conditions: earth station antenna maximum isotropic gain greater than or equal to 64 dBi; G/T of 44 dB/K or higher; and emission bandwidth of 250 MHz; and the EPFD<sub>down</sub> radiated by the satellite system using the NGSO into the GSO specific receive earth station, either within the U.S. for domestic service or any points outside the U.S. for international service, exceeds -174.5 dB(W/(m<sup>2</sup>/40 kHz)) for any percentage of time for NGSO systems with all satellites only operating at or below 2500 km altitude, or -202 dB(W/(m<sup>2</sup>/40 kHz)) for any percentage of the time for NGSO systems with any satellites operating above 2500 km altitude

7. Section 25.201 is amended by adding the following definitions:

**§ 25.201 Definitions.**

\* \* \* \* \*

Equivalent power flux-density. The equivalent power flux-density (EPFD) is the sum of the power flux-densities produced at a geostationary satellite orbit (GSO) receive earth or space station on the Earth's surface or in the geostationary satellite orbit, as appropriate, by all the transmit stations within a non-geostationary satellite orbit fixed-satellite service (NGSO FSS) system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction. The equivalent power flux-density, in dB(W/m<sup>2</sup>) in the reference bandwidth, is calculated using the following formula:

$$EPFD = 10 \cdot \log_{10} \left[ \sum_{i=1}^{N_a} 10^{10} \cdot \frac{P_i}{4 \cdot \pi d_i^2} \cdot \frac{G_t(\theta_i)}{G_{r,max}} \right]$$

where:

- $N_a$  is the number of transmit stations in the non-geostationary satellite orbit system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary satellite orbit, as appropriate;
- $i$  is the index of the transmit station considered in the non-geostationary satellite orbit system;
- $P_i$  is the RF power at the input of the antenna of the transmit station, considered in the non-geostationary satellite orbit system in dBW in the reference bandwidth;
- $\theta_i$  is the off-axis angle between the boresight of the transmit station considered in the non-geostationary satellite orbit system and the direction of the GSO receive station;
- $G_t(\theta_i)$  is the transmit antenna gain (as a ratio) of the station considered in the non-geostationary satellite orbit system in the direction of the GSO receive station;
- $d_i$  is the distance in meters between the transmit station considered in the non-geostationary satellite orbit system and the GSO receive station;
- $\phi_i$  is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the  $i$ th transmit station considered in the non-geostationary satellite orbit system;
- $G_r(\phi_i)$  is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the  $i$ th transmit station considered in the non-geostationary satellite orbit system;
- $G_{r,max}$  is the maximum gain (as a ratio) of the antenna of the GSO receive station;

\* \* \* \* \*

Gateway earth station. A gateway earth station is an earth station complex consisting of multiple interconnecting earth station antennas supporting the communication routing and switching functions of a non-geostationary satellite orbit fixed-satellite service (NGSO FSS) system as a whole. A gateway

earth station in the NGSO FSS: (1) does not originate or terminate radiocommunication traffic, but interconnects multiple non-collocated user earth stations operating in frequency bands other than designated gateway bands, through a satellite with other primary terrestrial networks, such as the public switched telephone network (PSTN) and/or Internet networks; (2) is prohibited from connecting directly with a private communication network; (3) may also be used for telemetry, tracking, and command transmissions for the same NGSO FSS system; (4) may include multiple antennas, each required to meet the antenna performance standard in Section 25.209(h), located within an area of one second latitude by one second longitude; and (5) is considered as a separate gateway earth station complex if it is out side of the area of one second latitude by one second longitude of (4) above, for the purposes of coordination with terrestrial services.

\* \* \* \* \*

8. Section 25.202(a)(1) is revised to read as follows:

**§ 25.202 Frequencies, frequency tolerance and emission limitations.**

(a)(1) Frequency band. The following frequencies are available for use by the fixed-satellite service. Precise frequencies and bandwidths of emission shall be assigned on a case-by-case basis.

Space-to-Earth (GHz)	Earth-to-space (GHz)
3.7-4.2 <sup>1</sup>	5.925-6.425 <sup>1</sup>
10.7-10.95 <sup>1, 12</sup>	12.75-13.15 <sup>1, 12</sup>
10.95-11.2 <sup>1, 2, 12</sup>	13.2125-13.25 <sup>1, 12</sup>
11.2-11.45 <sup>1, 12</sup>	13.75-14 <sup>4, 12</sup>
11.45-11.7 <sup>1, 2, 12</sup>	14-14.2 <sup>5</sup>
11.7-12.2 <sup>3</sup>	14.2-14.5
12.2-12.7 <sup>13</sup>	17.3-17.8 <sup>9</sup>
18.3-18.58 <sup>1, 10</sup>	27.5-29.5 <sup>1</sup>
18.58-18.8 <sup>6, 10, 11</sup>	29.5-30
18.8-19.3 <sup>7, 10</sup>	48.2-50.2
19.3-19.7 <sup>8, 10</sup>	
19.7-20.2 <sup>10</sup>	
37.6-38.6	
40-41	

<sup>1</sup> This band is shared coequally with terrestrial radiocommunication services.

<sup>2</sup> Use of this band by geostationary satellite orbit satellite systems in the fixed-satellite service is limited to international systems; i.e., other than domestic systems.

<sup>3</sup> Fixed-satellite transponders may be used additionally for transmissions in the broadcasting-satellite service.

<sup>4</sup> This band is shared on an equal basis with the Government radiolocation service and grandfathered space stations in the Tracking and Data Relay Satellite System.

<sup>5</sup> In this band, stations in the radionavigation service shall operate on a secondary basis to the fixed-satellite service.

<sup>6</sup> The band 18.58-18.8 GHz is shared co-equally with existing terrestrial radiocommunication systems until June 8, 2010.

<sup>7</sup> The band 18.8-19.3 GHz is shared co-equally with terrestrial radiocommunication services, until June 8, 2010. After this date, the sub-band 19.26-19.3 GHz is shared co-equally with existing terrestrial radiocommunication systems.

<sup>8</sup> The use of the band 19.3-19.7 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links for the mobile-satellite service.

<sup>9</sup> The use of the band 17.3-17.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for broadcasting-satellite service, and the sub-band 17.7-17.8 GHz is shared co-equally with terrestrial fixed services.

<sup>10</sup> This band is shared co-equally with the Federal Government fixed-satellite service.

<sup>11</sup> The band 18.6-18.8 GHz is shared co-equally with the non-Federal Government and Federal Government Earth exploration-satellite (passive) and space research (passive) services.

<sup>12</sup> Use of this band by non-geostationary satellite orbit systems in the fixed-satellite service is limited to gateway earth station operations.

<sup>13</sup> Use of this band by the fixed-satellite service is limited to non-geostationary satellite orbit systems.

\* \* \* \* \*

9. Section 25.203 is amended by revising paragraphs (b), (c), and (d) to read as follows:

**§ 25.203 Choice of sites and frequencies.**

\* \* \* \* \*

(b) An applicant for an earth station authorization in a frequency band shared with equal rights with terrestrial microwave services shall compute the great circle coordination distance contour(s) for the proposed station in accordance with the procedures set forth in § 25.251. The applicant shall submit with the application a map or maps drawn to appropriate scale and in a form suitable for reproduction indicating the location of the proposed station and these contours. These maps, together with the pertinent data on which the computation of these contours is based, including all relevant transmitting and/or receiving parameters of the proposed station that is necessary in assessing the likelihood of interference, an appropriately scaled plot of the elevation of the local horizon as a function of azimuth, and the electrical characteristics of the earth station antenna(s), shall be submitted by the applicant in a single exhibit to the application. The coordination distance contour plot(s), horizon elevation plot, and antenna horizon gain plot(s) required by this section may also be submitted in tabular numerical format at 5° azimuthal increments instead of graphical format. At a minimum, this exhibit shall include the information listed in paragraph (c)(2) of this section. An earth station applicant shall also include in the application relevant technical details (both theoretical calculations and/or actual measurements) of any special techniques, such as the use of artificial site shielding, or operating procedures or restrictions at the proposed earth station which are to be employed to reduce the likelihood of interference, or of any particular characteristics of the earth station site which could have an effect on the calculation of the coordination distance.

(c) Prior to the filing of its application, an earth station applicant shall coordinate the proposed frequency usage with existing terrestrial users and with applicants for terrestrial station authorizations with previously filed applications in accordance with the following procedure:

(1) An applicant for an earth station authorization shall perform an interference analysis in accordance with the procedures set forth in § 25.251 for each terrestrial station, for which a license or construction permit has been granted or for which an application has been accepted for filing, which is or is to be operated in a shared frequency band to be used by the proposed earth station and which is located within the great circle coordination distance contour(s) of the proposed earth station.

(2) The earth station applicant shall provide each such terrestrial station licensee, permittee, and prior filed applicant with the technical details of the proposed earth station and the relevant interference analyses that were made. At a minimum, the earth station applicant shall provide the terrestrial user with the following technical information:

- (i) The geographical coordinates of the proposed earth station antenna(s),
- (ii) Proposed operating frequency band(s) and emission(s),
- (iii) Antenna center height above ground and ground elevation above mean sea level,
- (iv) Antenna gain pattern(s) in the plane of the main beam,

(v) Longitude range of geostationary satellite orbit (GSO) satellites at which antenna may be pointed, for proposed earth station antenna(s) accessing GSO satellites,

(vi) Horizon elevation plot,

(vii) Antenna horizon gain plot(s) determined in accordance with § 25.251 for satellite longitude range specified in paragraph (c)(2)(v) of this section, taking into account the provisions of § 25.251 for earth stations operating with non-geostationary satellites.

(viii) Minimum elevation angle,

(ix) Maximum equivalent isotropically radiated power (e.i.r.p.) density in the main beam in any 4 kHz band, (dBW/4 kHz) for frequency bands below 15 GHz or in any 1 MHz band (dBW/MHz) for frequency band above 15 GHz,

(x) Maximum available RF transmit power density in any 1 MHz band and in any 4 kHz band at the input terminals of the antenna(s),

(xi) Maximum permissible RF interference power level as determined in accordance with § 25.251 for all applicable percentages of time, and

(xii) A plot of great circle coordination distance contour(s) and rain scatter coordination distance contour(s) as determined by § 25.251.

(3) The coordination procedures specified in §§ 101.103 and 25.251 of this chapter shall be applicable except that the information to be provided shall be that set forth in paragraph (c)(2) of this section, and that the 30-day period allowed for response to a request for coordination may be increased to a maximum of 45 days by mutual consent of the parties.

(4) Where technical problems are resolved by an agreement or operating arrangement between the parties that would require special procedures be taken to reduce the likelihood of harmful interference (such as the use of artificial site shielding) or would result in lessened quality or capacity of either system, the details thereof shall be contained in the application.

(5) The Commission may, in the course of examining any application, require the submission of additional showings, complete with pertinent data and calculations in accordance with § 25.251, showing that harmful interference is not likely to result from the proposed operation.

(d) An applicant for an earth station authorization shall also ascertain whether the great circle coordination distance contours and rain scatter coordination distance contours, computed for those values of parameters indicated in §25.251 (Appendix S7 of the ITU RR) for international coordination, cross the boundaries of another Administration. In this case, the applicant shall furnish the Commission copies of these contours on maps drawn to appropriate scale for use by the Commission in effecting coordination of the proposed earth station with the Administration(s) affected.

\* \* \* \* \*

10. Section 25.204(f) is amended to read as follows:

**§ 25.204 Power limits.**

\* \* \* \* \*

(f) In the band 13.75-14 GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. The e.i.r.p. density of emissions from any earth station in the FSS operating with a space station in geostationary-satellite orbit shall not exceed 71 dBW in any 6 MHz band from 13.77 to 13.78 GHz. The e.i.r.p. density of emissions from any earth station in the FSS operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in any 6 MHz band from 13.77 to 13.78 GHz. Automatic power control may be used to increase the e.i.r.p. density in the 6 MHz band in this frequency range to compensate for rain attenuation, to the extent that the power flux-density at the

FSS space station does not exceed the value resulting from use by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions.

11. Section 25.208 is amended by revising paragraph (b) and adding new paragraphs (d), (e), (f), (g), (h), (i), and (j) to read as follows:

**§ 25.208 Power flux density limits.**

\* \* \* \* \*

(b) In the bands 10.95-11.2 and 11.45-11.7 GHz for GSO FSS space stations and 10.7-11.7 GHz for NGSO FSS space stations, the power flux-density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the lower of the following values:

(1)  $-150 \text{ dB(W/m}^2\text{)}$  in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;  $-150 + (\delta - 5)/2 \text{ dB(W/m}^2\text{)}$  in any 4 kHz band for angles of arrival ( $\delta$ ) (in degrees) between 5 and 25 degrees above the horizontal plane; and  $-140 \text{ dB(W/m}^2\text{)}$  in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane; or

(2)  $-126 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;  $-126 + (\delta - 5)/2 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band for angles of arrival ( $\delta$ ) (in degrees) between 5 and 25 degrees above the horizontal plane; and  $-116 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

Note to paragraph (b): These limits relate to the power flux density, which would be obtained under assumed free-space propagation conditions.

\* \* \* \* \*

(d) In the frequency bands 10.7-11.7 GHz and 11.7-12.2 GHz, the single-entry equivalent power-flux density, in the space-to-Earth direction, ( $\text{EPFD}_{\text{down}}$ ), at any point on the Earth's surface, produced by emissions from all co-frequency space stations of a single non-geostationary-satellite orbit (NGSO) system operating in the fixed-satellite service (FSS) shall not exceed the following limits for the given percentages of time. Use both of the following tables to meet the requirements in the previous sentence:

Table 1D: Single-Entry EPFD<sub>down</sub> limits for protection of 0.6, 1.2, 3 and 10 meter GSO FSS earth station antennas<sup>1,2</sup>

Frequency band (GHz) for International Allocations	Single-entry EPFD <sub>down</sub> dB(W/m <sup>2</sup> )	Percentage of time during which EPFD <sub>down</sub> level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern <sup>3</sup>
	-175.4	0	40	60 cm Recommendation ITU-R S.1428
	-174	90		
	-170.8	99		
	-165.3	99.73		
10.7-11.7 in all Regions; 11.7-12.2 in Region 2;	-160.4	99.991	40	1.2 m Recommendation ITU-R S.1428
	-160	99.997		
	-160	100		
	-181.9	0		
	-178.4	99.5		
	-173.4	99.74		
	-173	99.857		
	-164	99.954		
	-161.6	99.984		
	-161.4	99.991		
12.2-12.5 in Region 3; and 12.5-12.75 in Regions 1 and 3	-160.8	99.997	40	3 m Recommendation ITU-R S.1428
	-160.5	99.997		
	-160	99.9993		
	-160	100		
	-190.45	0		
	-189.45	90		
	-187.45	99.5		
	-182.4	99.7		
	-182	99.855		
	-168	99.971		
	-164	99.988	40	10 m Recommendation ITU-R S.1428
	-162	99.995		
	-160	99.999		
	-160	100		
	-195.45	0		
	-195.45	99		
	-190	99.65		
	-190	99.71		
-172.5	99.99			
-160	99.998			
-160	100			

<sup>1</sup> In addition to the limits shown in this table, the single-entry EPFD<sub>down</sub> shown in the following table in this paragraph apply to all antenna sizes greater than 60 cm in the frequency bands listed in this table.

<sup>2</sup> For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the EPFD levels and logarithmic for the time percentages, with straight lines joining the data points.

<sup>3</sup> The earth station antenna reference radiation patterns are to be used only for the calculation of interference from NGSO FSS systems into GSO FSS systems.

Table 2D: Single-entry EPFD<sub>down</sub> limits radiated by non-GSO FSS systems at certain latitudes

100% of the time EPFD <sub>down</sub> dB(W/(m <sup>2</sup> /40 kHz))	Latitude (North or South in degrees)
-160	0 <  Latitude  ≤ 57.5
-160 + 3.4(57.5 -  Latitude )/4	57.5 <  Latitude  ≤ 63.75
-165.3	63.75 ≤  Latitude

Note to paragraph d: These limits relate to the equivalent power flux density, which would be obtained under free-space propagation conditions, for all conditions and for all methods of modulation.

(e) In the frequency bands 10.7-11.7 GHz and 11.7-12.2 GHz, the aggregate equivalent power-flux density, in the space-to-Earth direction, (EPFD<sub>down</sub>) at any point on the Earth's surface, produced by emissions from all co-frequency space stations of all non-geostationary-satellite orbit systems operating in the fixed-satellite service (FSS) shall not exceed the following limits for the given percentages of time. Use both of the following tables to meet the requirements in the previous sentence:

Table 1E: Aggregate EPFD<sub>down</sub> limits for protection of 0.6, 1.2, 3, and 10 meter GSO FSS earth station antennas<sup>1</sup>

Frequency band (GHz) For International Allocations	Aggregate EPFD <sub>down</sub> dB(W/m <sup>2</sup> )	Percentage of time during which EPFD <sub>down</sub> may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern <sup>2</sup>
10.7-11.7 in all Regions; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3; and 12.5-12.75 in Regions 1 and 3	-170	0	40	60 cm Recommendation ITU-R S.1428
	-168.6	90		
	-165.3	99		
	-160.4	99.97		
	-160	99.99		
	-160	100		
	-176.5	0	40	1.2 m Recommendation ITU-R S.1428
	-173	99.5		
	-164	99.84		
	-161.6	99.945		
	-161.4	99.97		
	-160.8	99.99		
	-160.5	99.99		
	-160	99.9975		
	-160	100		
	-185	0	40	3 m Recommendation ITU-R S.1428
-184	90			
-182	99.5			
-168	99.9			
-164	99.96			
-162	99.982			
-160	99.997			
-160	100			
-190	0	40	10 m Recommendation ITU-R S.1428	
-190	99			
-166	99.99			
-160	99.998			
-160	100			

<sup>1</sup> In addition to the limits shown in this table, the aggregate EPFD<sub>down</sub> limits shown in the following table in this paragraph apply to all antenna sizes greater than 60 cm in the frequency bands shown in this table.

<sup>2</sup> The earth station antenna reference patterns are to be used only for the calculation of interference from NGSO FSS systems into GSO FSS systems.

Table 2E: Aggregate EPFD<sub>down</sub> limits radiated by non-GSO FSS systems at certain latitudes

100% of the time EPFD <sub>down</sub> dB(W/(m <sup>2</sup> /40 kHz))	Latitude (North or South in degrees)
-160	$0 <  \text{Latitude}  \leq 57.5$
$-160 + 3.4(57.5 -  \text{Latitude} )/4$	$57.5 <  \text{Latitude}  \leq 63.75$
-165.3	$63.75 \leq  \text{Latitude} $

Note to paragraph e: These limits relate to the equivalent power flux density, which would be obtained under free-space propagation conditions, for all conditions and for all methods of modulation.

(f) In the frequency bands 10.7-11.7 GHz and 11.7-12.2 GHz, the additional operational equivalent power-flux density, in the space-to-Earth direction, (additional operational EPFD<sub>down</sub>) at any point on the Earth's surface, produced by actual operational emissions from all co-frequency space stations of a non-geostationary-satellite orbit (NGSO) system operating in the fixed-satellite service (FSS) shall not exceed the following operational limits for the given percentages of time:

Additional operational limits on the EPFD<sub>down</sub> radiated by non-GSO FSS systems into 3 m and 10 m GSO FSS earth station antennas

EPFD <sub>down</sub> dB(W/(m <sup>2</sup> /40 kHz))	Percentage of time during which EPFD <sub>down</sub> may not be exceeded	Receive GSO earth station antenna diameter (m)
-182	99.9	3
-179	99.94	
-176	99.97	
-171	99.98	
-168	99.984	
-165	99.993	
-163	99.999	
-161.25	99.99975	
-161.25	100	
-185	99.97	
-183	99.98	
-179	99.99	
-175	99.996	
-171	99.998	
-168	99.999	
-166	99.9998	
-166	100	

Note to paragraph f: These limits relate to the equivalent power flux density, which is obtained under free-space propagation conditions, for all conditions and for all methods of modulation.