

47 CFR Parts 25 and 101**[CC Docket No. 92-297, FCC 96-311]****Redesignating the 27.5-29.5 GHz Frequency Band, Reallocating the 29.5-30.0 GHz Frequency Band, and Establishing Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services****AGENCY:** Federal Communications Commission.**ACTION:** Final rule.

SUMMARY: By this *First Report and Order*, the Commission designates band segments in the 27.5-30.0 GHz band ("28 GHz band") for several types of wireless systems, clearing the way for licensing Local Multipoint Distribution Service ("LMDS") providers, Fixed Satellite Service ("FSS") systems, and feeder links for certain Mobile Satellite Service ("MSS") systems. The associated downlink bands for satellite services at 17.7-20.2 GHz, are designated as well. Our band segmentation plan seeks to promote competition by permitting all proposed services to develop and offer innovative consumer services such as video program distribution, two-way interactive video, teleconferencing, telemedicine, telecommuting, and high speed data services within our borders and around the globe.

EFFECTIVE DATE: October 28, 1996.**FOR FURTHER INFORMATION CONTACT:**

Robert James, Wireless Telecommunications Bureau, (202) 418-

0798; Jennifer Gilsenan, International Bureau, Satellite Policy Branch, (202) 418-0757; Kathleen Campbell, International Bureau, Satellite Policy Branch, (202) 418-0753.

SUPPLEMENTARY INFORMATION: This is a summary of the First Report and Order portion of the Commission's First Report and Order and Fourth Notice of Proposed Rulemaking in CC Docket No. 92-297; FCC 96-311, adopted July 17, 1996 and released July 22, 1996. The complete text of this document is available for inspection and copying during normal business hours in the FCC Reference Center (Room 239), 1919 M Street, NW., Washington, DC, and also may be purchased from the Commission's copy contractor, International Transcription Service, (202) 857-3800, 2100 M Street, NW., Suite 140, Washington, DC 20037.

The *First Report and Order* contains information collections and third party disclosure requirements subject to the Paperwork Reduction Act of 1995, Pub. L. 104-13 (PRA). Notice of this collection appeared at 61 FR 43058, August 20, 1996. It will be submitted to the Office of Management and Budget (OMB) for review under PRA.

As required by section 603 of the Regulatory Flexibility Act, the Commission has prepared a Final Regulatory Flexibility Act (FRFA) of the expected impact on small entities of the *First Report and Order* adopted.

Summary of First Report and Order

1. This is the *First Report and Order* in a proceeding that involves the

development of one of the largest contiguous spectrum segments available to the Commission, the 28 GHz band. The commercialization of this spectrum enables consumers to receive emerging domestic and global technologies via multiple service providers.

2. With this *First Report and Order*, the Commission designates band segments in the 28 GHz band for several types of wireless systems, clearing the way for licensing Local Multipoint Distribution Service ("LMDS") providers, Fixed Satellite Service ("FSS") systems, and feeder links for certain Mobile Satellite Service ("MSS") systems. The associated downlink bands for satellite services are designated as well.¹ We will address issues relating to service rules for both GSO/FSS and NGSO/FSS systems proposing to operate in the 28 GHz band in a forthcoming Report and Order. Service and auction rules relating to LMDS will also be addressed in a separate Report and Order.

3. The band segmentation plan seeks to promote competition by permitting all proposed services to develop and offer innovative consumer services such as video program distribution, two-way interactive video, teleconferencing, telemedicine, telecommuting, and high speed data services within our borders and around the globe.

4. The Commission's band segmentation plan is depicted graphically as follows:

UPLINK BAND 27.5-30.0 GHz

LMDS fss 850 MHz	GSO/FSS ngso/fss 250 MHz	NGSO/FSS gso/fss 500 MHz	MSS feeder links & LMDS (h-s) 150 MHz	MSS feeder links & GSO/FSS 250 MHz	GSO/FSS ngso/fss 500 MHz	GOVT	LMDS (h-to-s) (s-to-h) 300 MHz
27.5	28.35	28.60	29.1	29.25	29.5	30.0	31.0 31.3 GHz

5. The Commission's plan designates co-frequency sharing in band segments where the Commission and the parties have concluded it is technically feasible. This band plan promotes spectrum efficiency and facilitates the deployment of diverse, interactive, competitive services for consumers.

6. The band segmentation plan will be implemented through appropriate changes in part 25 and part 101 of the Commission's rules. The Commission designates discrete spectrum bands for specific types of systems. Services

designated for domestic licensing priority are specified in capital letters in the graphic depiction of the band plan. These services have licensing priority vis-a-vis any other type of service allocated domestically or internationally in the band. Lower-case letters indicate services in a particular band segment which also have licensing priority vis-a-vis any third service allocated domestically or internationally in the band, but have no licensing priority over the service in capital letters in the band segment and must operate on a

non-interference basis and must accept interference vis-a-vis that service. Services designated with two priority users have equal licensing rights based on the sharing principles adopted for that particular band segment.

7. In implementing this band plan, the Commission set out procedures for "grandfathering" the existing LMDS system, CellularVision, in the 28 GHz band. Specifically, the Commission requires CellularVision to vacate the 28.35-28.50 GHz band by 24 months following the release date of the *First*

¹ Satellite downlinks paired with satellite uplinks in the 28 GHz band are in the 17.7-20.2 GHz band.

Report and Order, or by the date of launch of the first GSO/FSS satellite intended to provide service in the United States in this band, whichever occurs later. In order to ensure certainty for both CellularVision's customers and for potential GSO/FSS systems planning to provide service in the United States in the 28.35–28.50 GHz band, the Commission clarified its reference to "launch" as the date which the first GSO/FSS satellite, intended to operate

in the 28.35–28.50 GHz band, leaves the Earth's surface. The satellite licensee is responsible for notifying CellularVision six months prior to the planned launch date, and for giving CellularVision, upon its request, updates on the satellite's status. CellularVision has the responsibility to remain apprised of the satellite's status and to ensure that LMDS operations cease on the 150 MHz allocated for GSO/FSS operations in accordance with the order herein.

8. To ensure the implementation of this band plan, the Commission adopted specific inter-service sharing rules for those services designated in the same band segment.

9. The Commission also designated band segments for the associated satellite downlink band at 17.7–20.2 GHz. The 17.7–20.2 GHz band segmentation plan can be depicted as follows:

DOWNLINK BAND 17.7–20.2 GHz

GSO/FSS fixed ngso/ fss 1100 MHz	NGSO/FSS fixed gso/ fss 500 MHz	MSS F.L. fixed gso/ fss 400 MHz	GSO/FSS ngso/fss 500 MHz
17.7	18.80	19.30	19.70 20.20 GHz

This plan specifically designates downlinks in the 17.7–18.8 GHz band for GSO/FSS uses, the 18.8–19.3 GHz band for NGSO/FSS uses, the 19.3–19.7 GHz band for NGSO/MSS feeder links, and the 19.7–20.2 GHz band for GSO/FSS uses. These designations do not preclude the authorized use of these bands by other satellite applications on a secondary basis to the primary satellite application designated in the band.

10. GSO/FSS, NGSO/MSS feeder links and NGSO/FSS systems are all fixed satellite services. Under current rules, such services share the 17.7–19.7 GHz band with fixed services on a coequal basis.² Current rules require coordination of these services pursuant to the requirements in § 25.130(b) of the rules, and under the procedures outlined in § 101.103 of the rules. These coordination rules will continue to be applied in these bands; however, should the affected parties wish to propose slightly modified procedures to facilitate the deployment of these services, we would consider such a proposal in the future. The record does not indicate that other requirements for coordination between non-government satellite systems are necessary at this time.³

Final Regulatory Flexibility Analysis of First Report and Order

11. As required by section 603 of the Regulatory Flexibility Act, 5 U.S.C. 603 (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Third Notice of Proposed Rulemaking in this proceeding (*Third NPRM*), 60 FR

43470 (August 23, 1995). The Commission sought written public comments on the proposals in the *Third NPRM*, including on the IRFA. The Commission's Final Regulatory Flexibility Analysis (FRFA) in this *First Report and Order* conforms to the RFA, as amended by the Contract With America Advancement Act of 1996, (CWAAA), Pub. L. 104–121, 110 Stat. 847 (1996).⁴

Need for and Purpose of this Action

12. In this decision, the Commission, adopts a band plan designating discrete spectrum segments for the Local Multipoint Distribution Systems ("LMDS"), Fixed Satellite Service (FSS) systems, and feeder links for certain Mobile Satellite Service ("MSS") systems in the 27.5–30.0 GHz band ("28 GHz band"). The Commission also adopts rules and procedures intended to facilitate the efficient use of this large spectrum segment among these three different types of services. The purposes of this action are to help launch two new broadband industries well-suited to compete in the domestic and global marketplace.

Summary of Issues Raised by the Public Comments in Response to the Initial Regulatory Flexibility Analysis

13. No comments were filed in direct response to the IRFA. In general, comments on the *Third NPRM*, however, the only licensee in the band, CellularVision, an LMDS small entity believed that the plan proposed in the *Third NPRM* accommodated all competing interests for spectrum in the band. Furthermore, the proposal to

grandfather CellularVision's existing system in the New York Primary Metropolitan Statistical Area was supported by CellularVision as a reasonable plan to facilitate its existing operations as it phases into licensing under the new band segmentation scheme.

Description and Estimate of the Small Entities Subject to the Rules

14. The Commission has not developed a definition of small entities applicable to GSO/FSS licensees. Therefore, the applicable definition of small entity is the definition under the Small Business Administration (SBA) rules applicable to Communications Services, Not Elsewhere Classified. This definition provides that a small entity is expressed as one with \$11.0 million in annual receipts.⁵

Estimates for GSO/FSS Satellite System Applicants for the 28 GHz Band

15. At present there are no GSO/FSS satellite licensees in the band and the Commission has not adopted any final service rules for satellite systems proposing to operate in the 28 GHz band. Therefore, there are no small businesses currently providing these types of broadband interactive services in the band. However, there has been a cut-off date for applications to be considered in the first GSO/FSS processing round.⁶ There are a total of thirteen applications currently on file proposing to provide GSO/FSS services in the band. Eight of these systems propose global systems. Five systems

² See 47 CFR 25.202 (a)(1).

³ With respect to government systems, parties should take note of footnote US 334 of the Table of Frequency Allocations. See 47 CFR 2.106.

⁴ Subtitle II of the CWAAA is "The Small Business Regulatory Enforcement Fairness Act of 1996" (SBREFA), codified at 5 U.S.C. 601 *et seq.*

⁵ 13 CFR 121.201, Standard Industrial Classification (SIC) Code 4899.

⁶ See *Ka-Band Satellite Applications Accepted For Filing: Cut-Off Established for Additional Applications*, Public Notice, Report No. SPB–20, Release No. DA 95–1689, July 28, 1995.

propose regional coverage. The Commission acknowledges that a couple of these applications are start-up companies and assumes that new satellite systems may be developed in this frequency band that may qualify as small entities pursuant to the SBA's definition.

Estimates for NGSO/FSS System Applicant in the Band

16. At present there are no NGSO/FSS satellite licensees in the 28 GHz band and final service rules have not been adopted for such satellite systems proposing to operate in the band. Therefore, there are no small businesses currently providing these services in the band. However, there has been a cut-off date for applications to be considered in the first GSO/FSS processing round. Currently, there is only one NGSO/FSS application on file. The Commission assumes that new satellite systems may be developed in this frequency band that may qualify as small entities pursuant to the SBA's definition.

Estimates for NGSO/MSS Systems With Feeder Links in the 28 GHz Band

17. At present there are two licensed NGSO/MSS systems proposing feeder links for their systems in the 28 GHz band. The Commission assumes that new satellite systems may be developed in this frequency band that may qualify as small entities pursuant to the SBA's definition.

Estimates for LMDS

18. The rules adopted in this *First Report and Order* will apply to any company which chooses to apply for a license in the new services. In addition, the new rules impact fixed microwave licensees, some of whom requested that the Commission institute a channeling plan in the 28 GHz band to set standards for point-to-point microwave equipment manufacturers. With regard to both the traditional point-to-point entities and the Local Multipoint Distribution Service (LMDS), the Commission has not developed a definition of small entities applicable to such licensees. The SBA definitions of small entity for LMDS are the definitions applicable to radiotelephone companies and to pay television services. The definition of radiotelephone companies provides that a small entity is a radiotelephone company employing fewer than 1,500 persons.⁷ The definition of a pay television service is one which has annual receipts of less than \$11

million.⁸ Since the Regulatory Flexibility Act amendments were not in effect until the record in this proceeding was closed, the Commission was unable to request information regarding the potential number of small businesses interested in LMDS and is unable at this time to determine the precise number of potential applicants which are small businesses.

19. The size data provided by the SBA does not enable us to make a meaningful estimate of the number of telecommunications providers which are small entities because it combines all radiotelephone companies with 500 or more employees.⁹ The Commission used the 1992 Census of Transportation, Communications, and Utilities, conducted by the Bureau of the Census, which is the most recent information available. This document shows that only 12 radiotelephone firms out of a total of 1,178 such firms which operated during 1992 had 1,000 or more employees.¹⁰ Therefore, a majority of LMDS entities providing radiotelephone services could be small businesses under the SBA's definition. Likewise, the size data provided by the SBA does not enable us to make a meaningful estimate of the number of cable and pay television providers which are small entities because it combines all such providers with revenues of less than \$11 million.¹¹ The Commission used the 1992 Census of Transportation, Communications, and Utilities (Table 2D), conducted by the Bureau of the Census, which is the most recent information available. This document shows that only 36 of 1,788 firms providing cable and pay television service have a revenue of greater than \$10 million. Therefore, the vast majority of LMDS entities providing video distribution could be small businesses under the SBA's definition.

20. However, in the *Third NPRM*,¹² we proposed to define a small business

⁸ *Id.*, SIC Code 4841.

⁹ U.S. Small Business Administration 1992 Economic Census Employment Report, Bureau of the Census, U.S. Department of Commerce, SIC Code 4812 (radiotelephone communications industry data adopted by the SBA Office of Advocacy).

¹⁰ U.S. Bureau of the Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications, and Utilities, UC92-S-1, Subject Series, Establishment and Firm Size, Table 5, Employment Size of Firms: 1992, SIC Code 4812 (issued May 1995).

¹¹ *Id.*, SIC 4841.

¹² *In the Matter of Rulemaking to Amend parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services and Suite 12 Group Petition for Pioneer's*

as an entity that, together with affiliates and attributable investors, has average gross revenues for the three preceding years of less than \$40 million. We have not yet received approval by the SBA for this definition because the service rules for LMDS have not been finalized. A definition of small point-to-point entities have not yet received approval by the SBA because such entities have not as yet been subject to competitive bidding procedures.

21. The Commission assumes, for purposes of our evaluations and conclusions in this FRFA, that nearly all of the LMDS licensees will be small entities, as that term is defined by the SBA. Many of the competitors using LMDS to compete with LECs or cable companies could be small businesses.

22. With regard to traditional point-to-point microwave entities, the same analysis for small radiotelephone entities as made above applies to these entities. In the *First Report and Order*, the Commission declines to specify a channeling plan for point-to-point entities. It is the Commission's opinion that retaining maximum system design flexibility for LMDS licensees within their service areas precludes our specifying a point-to-point channeling plan. Entities interested in providing point-to-point service may seek other spectrum or may become LMDS licensees and configure their systems as they choose. In addition, such entities may lease spectrum, or seek partitioning or disaggregation opportunities from LMDS licensees. Moreover, the traditional point-to-point microwave equipment manufacturing industry could seek to establish standards for its members to use in the 28 GHz band. Accordingly, this *First Report and Order* does not provide direct relief requested by, e.g., the Telecommunications Industry Association, which represents fixed microwave entities, the majority of whom may be small businesses.

23. Another category of small entities affected by this *First Report and Order* are those operating in the 17.5-19.5 GHz frequency band. These entities are fixed point-to-point microwave entities of many subcategories. The same analysis for these entities as made for traditional fixed microwave entities made above applies to these entities (a definition of small point-to-point entities has not been submitted for approval by the SBA because such entities have not as yet been subject to competitive bidding procedures). The *First Report and Order* does not change the Commission's treatment of these entities, but it adds

⁷ 13 CFR 121.201, Standard Industrial Classification (SIC) Code 4812.

Preference, CC Docket No. 92-297, 11 F.C.C. Rcd. 53 (1995) (*Third NPRM*), para. 188.

potential additional satellite operators in the band with which the entities will have to coordinate in the future. The Commission has coordination procedures in effect; should they prove inadequate in the future, we will reconsider the issue at that time.

Summary of Projected Reporting, Recordkeeping and Other Compliance Requirements

24. There are some reporting requirements imposed by the *First Report and Order*. In some instances, it is likely that the entities filing the reports will require no professional skills for the preparation of such requests. In other cases, the services of persons with technical or engineering expertise may be required to prepare the reports. First, in one band segment, a satellite licensee is required to notify the one existing licensed LMDS operator, CellularVision, of its launch date six months prior to the satellite's launch date. It is also required to provide, upon CellularVision's request, updates on the satellite's status. Such a request is reasonable of CellularVision. At this time, it is not clear how many potential GSO/FSS licensees this will effect. Second, in another shared band segment, LMDS licensees are required to serve copies of their application on all NGSO/MSS applicants. At this time, it is not clear how many LMDS entities will be participating. Currently there are only two NGSO/MSS licensees who will be using this band for feeder links. Feeder links for a third NGSO/MSS system could possibly also be accommodated in this band. Third, NGSO/MSS feeder link earth stations are required to specify a set of geographic coordinates for the location of these earth stations, 15 days after the release of a public notice announcing the commencement of LMDS auctions. Finally, one NGSO/MSS licensee is required to provide its feeder link earth station locations to the GSO/FSS licensees. At this time, it is not clear how many potential GSO/FSS licensees this will effect.

Steps Taken to Minimize the Economic Impact on Small Entities

25. The Commission adopts a band plan that facilitates the accommodation of all proposed systems in the 28 GHz band. It believes this plan is a reasonable accommodation of all competing interests in this new band segment, including small entities. The band plan along with the *Fourth Notice of Proposed Rulemaking* for the 31 GHz band provides both small entities and larger businesses the same opportunity to develop and operate viable systems

within the band, and initiate competitive services. The band plan also accords, CellularVision, the only licensee in the band, flexibility during the implementation phase of the band plan.

Significant Alternatives Considered and Rejected

26. The Commission considered and rejected several alternatives to the band plan adopted.¹³ The Commission considered various band segmentation plans over the last several months with the goal of accommodating the various divergent proposals made in response to the band plan proposed in the *Third NPRM*.¹⁴ For example, the Commission considered plans which ultimately proved to require difficult inter-service sharing rules and to not completely support interactivity of LMDS systems.¹⁵ The Commission also considered a band plan that designated 1000 MHz each for GSO/FSS and LMDS service. That plan, however, would have divided LMDS among three non-contiguous spectrum segments.¹⁶ This option was not acceptable to the potential LMDS service providers, including small providers, because, they argued, it would have significantly decreased spectrum efficiency for LMDS, resulting in increased cost and delay in offering both subscriber and hub equipment.¹⁷ The Commission also considered two band plans that designated GSO/FSS systems with less than 1000 MHz.¹⁸ These options were unacceptable to the GSO/FSS applicants because, they argued, any of these plans would result in a significant loss of system capacity and revenue.¹⁹ Such loss and capacity could affect potential small entities. Another plan, resulting from a GSO/FSS applicant's proposal, was also considered. It would have designated a total of 1010 MHz to GSO/FSS applicants and 985 MHz to LMDS, but required sharing of 135 MHz between GSO/FSS and LMDS.²⁰ However, the mutually acceptable sharing principles required to implement this plan were not developed by the LMDS and GSO/FSS parties.²¹

¹³ See *First Report and Order* at ¶¶ 38–40.

¹⁴ See *ex parte* submission filed by the International Bureau to William F. Caton, Acting Secretary (Feb. 6, 1996), for diagrams of Commission Band Plan Options 1, 2, 2A, 2B, 3(a), 4 and 5.

¹⁵ See *First Report and Order* note 76.

¹⁶ *Id.* note 77.

¹⁷ *Id.* note 78.

¹⁸ *Id.* note 79.

¹⁹ *Id.* note 80.

²⁰ *Id.* note 81.

²¹ *Id.* note 82.

The Commission staff was also unable to successfully propose sharing criteria.

27. In March 1996, NASA was also asked to undertake an immediate study to assess whether its space services and LMDS could share spectrum below 27.5 GHz.²² NASA concluded three weeks later that no rules acceptable to all parties could be drafted which would guarantee protection of NASA space services from harmful interference.²³ NASA also concluded that coordination with other space service systems in the band from other administrations would make this a difficult option to implement effectively.

28. One alternative of not adopting a band segmentation plan for this spectrum is the preclusion of LMDS service or satellite service in the 28 GHz band. In the *Third NPRM*, the Commission tentatively concluded that denying one or the other of the proposed services for the band was not in the public interest and that both proposed services bring the promise of competition and innovative services to the nation's infrastructure. Moreover, preclusion of either service potentially affects small businesses on both the satellite side and the LMDS side.

Report to Congress

29. The Commission shall send a copy of this Final Regulatory Flexibility Analysis, along with this *First Report and Order*, in a report to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. 801(a)(1)(A). A copy of this FRFA will also be published in the Federal Register.

Ordering Clause

30. Accordingly, it is ordered that part 25 and part 101 of the Commission's rules are amended as specified below, effective October 28, 1996.

List of Subjects

47 CFR Part 25

Satellites.

47 CFR Part 101

Communications equipment, Radio, Reporting and recordkeeping requirements.

Federal Communications Commission.

William F. Caton,

Acting Secretary.

Rule Changes

Parts 25 and 101 of Title 47 of the Code of Federal Regulations are amended as follows:

²² *Id.* note 83.

²³ *Id.* note 84.

PART 25—SATELLITE COMMUNICATIONS

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

Authority: Secs. 101–404, 76 Stat. 419–427; 47 U.S.C. 701–744, Sec. 4, 48 Stat. 1066, as amended; 47 U.S.C. 154. Interprets or applies sec. 303, 48 Stat. 1082, as amended; 47 U.S.C. 303.

2. Section 25.203 is amended by adding paragraph (h) to read as follows:

§ 25.203 Choice of sites and frequencies.

* * * * *

(h) Sites and frequencies for GSO and NGSO earth stations, operating in a frequency band where both have a co-primary allocation, shall be selected to avoid earth station antenna mainlobe-to-satellite antenna mainlobe coupling, between NGSO systems and between NGSO and GSO systems, in order to minimize the possibility of harmful interference between these services. Prior to filing an earth station application, in bands with co-primary allocations to NGSO and GSO earth stations, the applicant shall coordinate the proposed site and frequency usage with existing earth station licensees and with current earth station authorization applicants.

* * * * *

3. A new § 25.250 is added to subpart C to read as follows:

§ 25.250 Sharing between NGSO MSS Feeder links Earth Stations in the 19.3–19.7 GHz and 29.1–29.5 GHz Bands.

(a) NGSO MSS applicants shall be licensed to operate in the 29.1–29.5 GHz band for Earth-to-space transmissions and 19.3–19.7 GHz for space-to-Earth transmissions from feeder link earth station complexes. A “feeder link earth station complex” may include up to three (3) earth station groups, with each earth station group having up to four (4) antennas, located within a radius of 75 km of a given set of geographic coordinates provided by NGSO–MSS licensees or applicants.

(b) Licensees of NGSO MSS feeder link earth stations separated by 800 km or less are required to coordinate their operations, see § 25.203. The results of the coordination shall be reported to the Commission.

4. A new § 25.257 is added to subpart C to read as follows:

§ 25.257 Special requirements for operations in the band 29.1–29.25 GHz between NGSO MSS and LMDS.

(a) Non-geostationary mobile satellite service (NGSO MSS) operators shall be licensed to use the 29.1–29.25 GHz band for Earth-to-space transmissions from

feeder link earth station complexes. A “feeder link earth station complex” may include up to three (3) earth station groups, with each earth station group having up to four (4) antennas, located within a radius of 75 km of a given set of geographic coordinates provided by a NGSO MSS licensee or applicants pursuant to § 101.147.

(b) A maximum of seven (7) feeder link earth station complexes in the contiguous United States, Alaska and Hawaii may be placed into operation, in the largest 100 MSAs, in the band 29.1–29.25 GHz in accordance with § 25.203 and § 101.147 of this chapter.

(c) One of the NGSO MSS operators licensed to use the 29.1–29.25 GHz band may specify geographic coordinates for a maximum of eight feeder link earth station complexes that transmit in the 29.1–29.25 GHz band. The other NGSO MSS operator licensed to use the 29.1–29.25 GHz band may specify geographic coordinates for a maximum of two feeder link earth station complexes that transmit in the 29.1–29.25 GHz band.

(d) Additional NGSO MSS operators may be licensed in this band if the additional NGSO MSS operator shows that its system can share with the existing NGSO MSS systems.

(e) All NGSO MSS operators shall cooperate fully and make reasonable efforts to identify mutually acceptable locations for feeder link earth station complexes. In this connection, any single NGSO MSS operator shall only identify one feeder link earth station complex protection zone in each category identified in § 101.147(c)(2) of this chapter until the other NGSO MSS operator has been given an opportunity to select a location from the same category.

5. A new § 25.258 is added to subpart C to read as follows:

§ 25.258 Sharing between NGSO MSS Feeder links Stations and GSO FSS services in the 29.25–29.5 GHz Bands.

(a) Operators of NGSO MSS feeder link earth stations and GSO FSS earth stations in the band 29.25 to 29.5 GHz where both services have a co-primary allocation shall cooperate fully in order to coordinate their systems. During the coordination process both service operators shall exchange the necessary technical parameters required for coordination.

(b) Licensed GSO FSS systems shall, to the maximum extent possible, operate with frequency/polarization selections, in the vicinity of operational or planned NGSO MSS feeder link earth station complexes, that will minimize instances of unacceptable interference to the GSO FSS space stations.

(c) NGSO MSS satellites operating in this frequency band shall compensate for nodal regression due to the oblate shape of the Earth, and thus maintain constant successive sub-satellite ground tracks on the surface of the Earth.

(d) NGSO MSS systems applying to use the 29.25–29.5 GHz band, for feeder link earth station uplink, will have to demonstrate that their system can share with the authorized U.S. GSO/FSS systems operating in this band.

PART 101—FIXED MICROWAVE SERVICES

1. The authority citation for part 101 continues to read as follows:

Authority: 47 U.S.C. 154, 202, unless otherwise noted.

2. Section 101.3 is amended by adding the following definitions, in alphabetical order, to read as follows:

§ 101.3 Definitions.

* * * * *

Local Multipoint Distribution Service Backbone Link. A point-to-point radio service link in a Local Multipoint Distribution Service System that is used to interconnect Local Multipoint Distribution Service Hub Stations with each other or with the public switched telephone network.

Local Multipoint Distribution Service Hub Station. A fixed point-to-multipoint radio station in a Local Multipoint Service System that provides one-way or two-way communication with Local Multipoint Distribution Service Subscriber Stations.

Local Multipoint Distribution Service Subscriber Station. Any one of the fixed microwave radio stations located at users' premises, lying within the coverage area of a Local Multipoint Distribution Service Hub Station, capable of receiving one-way communications from or providing two-way communications with the Local Multipoint Distribution Service Hub Station.

Local Multipoint Distribution Service System. A fixed point-to-multipoint radio system consisting of Local Multipoint Distribution Service Hub Stations and their associated Local Multipoint Distribution Service Subscriber Stations.

* * * * *

3. Section 101.109 is amended by removing the entry for 27,500 MHz to 29,500 MHz and adding the entries for 27,500 to 28,350 MHz and 29,100 to 29,250 MHz in the table in paragraph (c) to read as follows:

§ 101.109 Bandwidth.

* * * * *

(c) * * *

Frequency band (MHz)	Maximum authorized bandwidth
* * *	* * *
27,500 to 28,350 MHz	850 MHz.
29,100 to 29,250 MHz	150 MHz.
* * *	* * *

4. Section 101.113 is amended by removing the entry for 27,500 to 29,500 MHz and adding new entries 27,500 to 28,350 MHz and 29,100 to 29,250 MHz in the table in paragraph (a) and by adding a new paragraph (c) to read as follows:

§ 101.113 Transmitter power limitations.

(a) * * *

Frequency band (MHz)	Maximum allowable EIRP ¹	
	Fixed (dBW)	Mobile (dBW)
27,500 to 28,350	55
29,100 to 29,250	(7)

¹ Per polarization.⁷ See § 101.113(c).

* * * * *

(c) (1) Transmitter power limitations: Point-to-point stations in the 29.1–29.25 GHz band for the LMDS backbone between LMDS hubs shall be limited to a maximum allowable e.i.r.p. density per carrier of 23 dBW/MHz in any one megahertz in clear air, and may exceed this limit by employment of adaptive power control in cases where link propagation attenuation exceeds the clear air value due to precipitation and only to the extent that the link is impaired.

(2) Hub Transmitter EIRP Spectral Area, Density Limit: LMDS applicants shall demonstrate that, under clear air operating conditions, the maximum aggregate of LMDS transmitting hub stations in a Basic Trading Area in the 29.1–29.25 GHz band will not transmit a co-frequency hub-to-subscriber e.i.r.p. spectral area density in any azimuthal direction in excess of X dBW/(MHz-km²) when averaged over any 4.375 MHz band, where X is defined in Table 1. Individual hub stations may exceed their clear air e.i.r.p.s by employment of adaptive power control in cases where link propagation attenuation exceeds the clear air value and only to the extent that the link is impaired.

(i) The e.i.r.p. aggregate spectral area density is calculated as follows:

$$10 \log_{10} \frac{1}{A} \sum_{i=1}^N p_{gi} \text{ dBW/MHz-km}^2$$

where:

N=number of co-frequency hubs in BTA.

A=Area of BTA in km².p_i=spectral power density into antenna of i-th hub (in W/MHz).g_i=gain of i-th hub antenna at zero degree elevation angle.Each p_i and g_i are in the same 1 MHz within the designated frequency band.

(ii) The climate zones in Table 1 are defined for different geographic locations within the US as shown in Appendix 28 of the ITU Radio Regulations.

TABLE 1 1

Climate zone	e.i.r.p. Spectral Density (Clear Air) (dBW/MHz-km ²) ²
1	–23
2	–25
3,4,5	–26

¹ LMDS system licensees in two or more BTAs may individually or collectively deviate from the spectral area density computed above by averaging the power over any 200 km by 400 km area, provided that the aggregate interference to the satellite receiver is no greater than if the spectral area density were as specified in Table 1. A showing to the Commission comparing both methods of computation is required and copies shall be served on any affected non-GSO 20/30 GHz MSS providers.

² See § 21.1007(c)(i) for the population density of the BTA.

(3) Hub Transmitter e.i.r.p. Spectral Area Density Limit at Elevation Angles Above the Horizon: LMDS applicants shall demonstrate that, under clear air operating conditions, the maximum aggregate of LMDS transmitting hub stations in a Basic Trading Area in the 29.1–29.25 GHz band will not transmit a co-frequency hub-to-subscriber e.i.r.p. spectral area density in any azimuthal direction in excess of X dBW/(MHz-km²) when averaged over any 4.375 MHz band where X is defined in Table 2. Individual hub stations may exceed their clear air e.i.r.p.s by employment of adaptive power control in cases where link propagation attenuation exceeds the clear air value and only to the extent that the link is impaired.

(i) The e.i.r.p. aggregate spectral area density is calculated as follows:

$$10 \log_{10} \frac{1}{A} \sum_{i=1}^N e.i.r.p.(a_i) \text{ dBW/MHz-km}^2$$

where:

N=number of co-frequency hubs in BTA.

A=Area of BTA in km².

e.i.r.p. (a_i)=equivalent isotropic radiated spectral power density of the i-th hub (in W/MHz) at elevation angle a where a is the angle in degrees of elevation above horizon. e.i.r.p.(0°) is the hub e.i.r.p. area density at the horizon used in Section 101.113c(2). The nominal antenna pattern will be used for elevation angles between 0° and 8°, and average levels will be used for angles beyond 8°, where average levels will be calculated by sampling the antenna patterns in each 1° interval between 8° and 9015, dividing by 83.

TABLE 2

Elevation angle (a)	Relative e.i.r.p. density (dBW/MHz-km ²)
0° ≤ a ≤ 4.0°	e.i.r.p.(a) = e.i.r.p.(0°) + 20 log (sin(Πx)/(1/Πx)) where x = (a + 1)/7.5°.
4.0° < a ≤ 7.7°	e.i.r.p.(a) = e.i.r.p.(0°) - 3.85a + 7.7.
a > 7.7°	e.i.r.p.(a) = e.i.r.p.(0°) - 22.

(ii) LMDS system licensees in two or more BTAs may individually or collectively deviate from the spectral area density computed above by averaging the power over any 200 km by 400 km area, provided that the aggregate interference to the satellite receiver is no greater than if the spectral area density were as specified in Table 1. A showing to the Commission comparing both methods of computation is required and copies shall be served on any affected non-GSO MSS providers.

(4) Power Reduction Techniques: LMDS hub transmitters shall employ methods to reduce average power levels received by non-geostationary mobile satellite receivers, to the extent necessary to comply with paragraphs (c)(1) and (c)(2) of this section, by employing the methods set forth below:

(i) Alternate Polarizations. LMDS hub transmitters in the LMDS service area may employ both vertical and horizontal linear polarizations such that 50 percent (plus or minus 10 percent) of the hub transmitters shall employ vertical polarization and 50 percent (plus or minus 10 percent) shall employ horizontal polarization.

(ii) Frequency Interleaving. LMDS hub transmitters in the LMDS service area may employ frequency interleaving such that 50 percent (plus or minus 10 percent) of the hub transmitters shall employ channel center frequencies which are different by one-half the channel bandwidth of the other 50

percent (plus or minus 10 percent) of the hub transmitters.

(iii) Alternative Methods. As alternatives to paragraphs (c)(4)(i) and (c)(4)(ii) of this section, LMDS operators may employ such other methods as may be shown to achieve equivalent reductions in average power density received by non-GSO MSS satellite receivers.

5. Section 101.133 is amended by adding new paragraph (d) to read as follows:

§ 101.133 Limitations on use of transmitters.

* * * * *

(d) LMDS Subscriber Transmissions: LMDS licensees shall not operate transmitters from subscriber locations in the 29.1–29.25 GHz band.

6. Section 101.147 is amended by adding new paragraph (y) to read as follows:

§ 101.147 Frequency assignments.

* * * * *

(y) Special requirements for operations in the band 29.1–29.25 GHz:

(1)(i) LMDS receive stations operating on frequencies in the 29.1–29.25 GHz band within a radius of 75 nautical miles of the geographic coordinates provided by a non-GSO MSS licensee pursuant to paragraphs (c)(2) or (c)(3)(i) of this section (the “feeder link earth station complex protection zone”) shall accept any interference caused to them by such earth station complexes and shall not claim protection from such earth station complexes.

(ii) LMDS licensees operating on frequencies in the 29.1–29.25 GHz band outside a feeder link earth station complex protection zone shall cooperate fully and make reasonable efforts to resolve technical problems with the non-GSO MSS licensee to the extent that transmissions from the non-GSO MSS operator’s feeder link earth station complex interfere with an LMDS receive station.

(2) No more than 15 days after the release of a public notice announcing the commencement of LMDS auctions, feeder link earth station complexes to be licensed pursuant to Section 25.257 shall be specified by a set of geographic coordinates in accordance with the following requirements: no feeder link earth station complex may be located in the top eight (8) metropolitan statistical areas (“MSAs”), ranked by population, as defined by the Office of Management and Budget as of June 1993, using estimated populations as of December 1992; two (2) complexes may be located in MSAs 9 through 25, one of which must be Phoenix, AZ (for a complex at

Chandler, AZ); two (2) complexes may be located in MSAs 26 to 50; three (3) complexes may be located in MSAs 51 to 100, one of which must be Honolulu, Hawaii (for a complex at Waimea); and the three (3) remaining complexes must be located at least 75 nautical miles from the borders of the 100 largest MSAs or in any MSA not included in the 100 largest MSAs. Any location allotted for one range of MSAs may be taken from an MSA below that range.

(3) (i) Any non-GSO MSS licensee may at any time specify sets of geographic coordinates for feeder link earth station complexes with each earth station contained therein to be located at least 75 nautical miles from the borders of the 100 largest MSAs.

(ii) For purposes of paragraph (c)(3)(i) of this section, non-GSO MSS feeder link earth station complexes shall be entitled to accommodation only if the affected non-GSO MSS licensee preapplies to the Commission for a feeder link earth station complex or certifies to the Commission within sixty days of receiving a copy of an LMDS application that it intends to file an application for a feeder link earth station complex within six months of the date of receipt of the LMDS application.

(iii) If said non-GSO MSS licensee application is filed later than six months after certification to the Commission, the LMDS and non-GSO MSS entities shall still cooperate fully and make reasonable efforts to resolve technical problems, but the LMDS licensee shall not be obligated to re-engineer its proposal or make changes to its system.

(4) LMDS licensees or applicants proposing to operate hub stations on frequencies in the 29.1–29.25 GHz band at locations outside of the 100 largest MSAs or within a distance of 150 nautical miles from a set of geographic coordinates specified under paragraph (c)(2) or (c)(3)(i) of this section shall serve copies of their applications on all non-GSO MSS applicants, permittees or licensees meeting the criteria specified in § 25.257(a). Non-GSO MSS licensees or applicants shall serve copies of their feeder link earth station applications, after the LMDS auction, on any LMDS applicant or licensee within a distance of 150 nautical miles from the geographic coordinates that it specified under paragraph (c)(2) or (c)(3)(i) of this section. Any necessary coordination shall commence upon notification by the party receiving an application to the party who filed the application. The results of any such coordination shall be reported to the Commission within sixty days. The non-GSO MSS earth station licensee shall also provide all such

LMDS licensees with a copy of its channel plan.

[FR Doc. 96–21795 Filed 8–27–96; 8:45 am]

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47 CFR Part 73

[MM Docket No. 96–96; RM–8791]

Radio Broadcasting Services; Castana, IA

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: The Commission, at the request of Gene Zortman, allots Channel 298A to Castana, Iowa, as the community’s first local aural transmission service. See 61 FR 20789, May 8, 1996. Channel 298A can be allotted to Castana in compliance with the Commission’s minimum distance separation requirements without the imposition of a site restriction. The coordinates for Channel 298A at Castana are 42–04–24 and 95–54–36. With this action, this proceeding is terminated.

DATES: Effective September 30, 1996. The window period for filing applications will open on September 30, 1996, and close on October 31, 1996.

FOR FURTHER INFORMATION CONTACT: Pam Blumenthal, Mass Media Bureau, (202) 418–2180.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission’s *Report and Order*, MM Docket No. 96–96, adopted August 9, 1996, and released August 16, 1996. The full text of this Commission decision is available for inspection and copying during normal business hours in the FCC Reference Center (Room 239), 1919 M Street, NW., Washington, DC. The complete text of this decision may also be purchased from the Commission’s copy contractor, ITS, Inc., (202) 857–3800, 2100 M Street, NW., Suite 140, Washington, DC. 20037.

List of Subjects in 47 CFR Part 73

Radio broadcasting.

Part 73 of title 47 of the Code of Federal Regulations is amended as follows:

PART 73—[AMENDED]

1. The authority citation for part 73 continues to read as follows:

Authority: Secs. 303, 48 Stat., as amended, 1082; 47 U.S.C. 154, as amended.

§ 73.202 [Amended]

2. Section 73.202(b), the Table of FM Allotments under Iowa, is amended by adding Castana, Channel 298A.