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Before the
Federal Communications Commission
Washington, D.C. 20554

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In the Matter of	)	
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Amendment of the Commission's Part 90 Rules in the 904-909.75 and 919.75-928 MHz Bands	)	WT Docket No. 06-49
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	)	
	)	

NOTICE OF PROPOSED RULEMAKING

Adopted: March 1, 2006 **Released: March 7, 2006**

Comment Date: May 30, 2006
Reply Comment Date: June 30, 2006

By the Commission:

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I. INTRODUCTION

1. In this Notice of Proposed Rulemaking (Notice), we undertake a reexamination of the Commission's regulations governing the licensing and use of frequencies in the 904-909.75 and 919.75-928 MHz portions of the 902-928 MHz band.[1] This spectrum has been occupied historically by a number of spectrum users, including federal, licensed, and unlicensed operations. Most significantly, for purposes of this proceeding, this 14 megahertz of spectrum has been shared by a variety of Part 15 devices and, since 1995, has been licensed for specified uses by the multilateration Location and Monitoring Service (M-LMS) defined in Part 90 of the Commission's rules.[2] In the decade since M-LMS was established, however, there has been very limited development of M-LMS service under the existing rules. Therefore, we initiate this examination to determine whether new approaches could produce more efficient and effective use of the 904-909.75 and 919.75-928 MHz spectrum band ("M-LMS Band") by M-LMS licensees. At the same time, we seek to ensure that any changes would continue to protect federal and other licensed users and also avoid any significant increase in interference to unlicensed users in this band.

2. Although this proceeding originates partly in response to a 2002 Petition for Rulemaking filed by Progeny LMS, LLC (Progeny),[3] we initiate this proceeding to evaluate the ability of our Part 90 M-LMS rules to afford licensed service providers greater flexibility to respond to changing market conditions.[4] Specifically, we seek to determine whether our current M-LMS rules are limiting licensees from providing services that are desired in the market and that could be profitably deployed without causing harmful interference to other users. We inquire as to whether the Commission could promote the development of such services by establishing new rules that would replace certain restrictions on M-LMS operations and grant M-LMS licensees more flexibility to respond to market conditions.

3. While we consider the advantages and disadvantages of rule changes that could facilitate higher-valued licensed uses of the spectrum in the M-LMS Band, we are mindful that this band is shared by a mixture of licensed services (both federal and non-federal), amateur radio operators, and numerous unlicensed devices authorized under Part 15 of the Commission's rules. We make clear at the outset of this proceeding that we do not seek to alter the rules that govern the relationship among the various federal and non-federal licensed services in this band. Moreover, we recognize the importance of maintaining the existing accessibility of the band for unlicensed devices, which has led to a proliferation of important public, private, and consumer applications, and for amateur operators. To facilitate such access, the Commission has established a "safe harbor" rule providing that Part 15 and amateur operations that comply with certain technical parameters will not be considered to be causing harmful interference to

[1] We seek comment primarily on changes or additions to rules contained in Part 90 of the Commission's regulations (and Part 1 or other licensing rule parts, if applicable). Modifications to Part 15 rules are beyond the scope of this proceeding.

[2] *See* 47 C.F.R. §§ 90.351-90.365 (LMS rules). Although we focus on Part 15 and M-LMS operations in the 904-909.75 and 919.75-928 MHz frequency ranges, we acknowledge the many other important uses of these frequencies, including amateur use, and invite such interested parties to comment on the issues raised in this Notice. *See infra* para. 38.

[3] Petition for Rulemaking, filed by Progeny LMS, LLC (March 5, 2002) (Progeny Petition). On April 10, 2002, the Wireless Telecommunications Bureau (Bureau) issued a public notice seeking comment on the Progeny Petition under RM No. 10403. *See* "Wireless Telecommunications Bureau Seeks Comment On Petition For Rulemaking Regarding Location And Monitoring Service Rules," *Public Notice,* 17 FCC Rcd 6438 (2002). The Bureau subsequently extended the comment cycle on the Petition. *See* "Wireless Telecommunications Bureau Extends Comment Cycle On Petition For Rulemaking Regarding Location And Monitoring Service Rules," *Public Notice,* 17 FCC Rcd 8377 (2002).

[4] *See* 47 C.F.R. § 1.411. Given the length of time that has passed since the Bureau issued its Public Notice, we are terminating RM No. 10403 and invite interested parties to submit new and/or updated comments and reply comments in WT Docket No. 06-49.

M-LMS systems.[5] Given the public interest benefits associated with these uses, we tentatively conclude below to retain this safe harbor.

4. Our goal in this proceeding is to consider whether greater opportunity can be afforded M-LMS licensees to provide services while ensuring continued access for other licensed and unlicensed uses that share this band. This spectrum has desirable propagation characteristics for mobile and other applications offered by both licensed service providers and certain unlicensed users. We therefore believe it is in the public interest to evaluate whether it is possible to revise our rules in a way that would promote more efficient and effective use of this spectrum. We also view this as an opportunity to consider the spectrum access needs of multiple users and to evaluate any proposals that may improve access and use of the band by both M-LMS and Part 15 operations.

II. BACKGROUND

5. In 1995, the Commission established the Location and Monitoring Service (LMS) as a new radio service to be licensed in the 902-928 MHz spectrum band. This band is shared by a variety of users under a hierarchy of spectrum usage rights.[6] Specifically, this band is allocated on a primary basis to federal radiolocation systems and Industrial, Scientific, and Medical (ISM) equipment.[7] Federal fixed and mobile services are allocated on a secondary basis to federal radiolocation systems and ISM equipment.[8] LMS licensees are allocated on a secondary basis to federal users and ISM devices and may not cause interference to and must tolerate interference from these users and devices.[9] Amateur radio operations are allocated on a secondary basis to LMS.[10] Finally, unlicensed devices are authorized under Part 15 to use the 902-928 MHz band, but such devices are not afforded interference protection rights and

[5] *See infra* paras. 9, 36-38.

[6] Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Report and Order*, 10 FCC Rcd 4695 (1995) (*LMS Report and Order*) (adopting rules encompassing the Automatic Vehicle Monitoring (AVM) service for which the Commission had adopted "interim" rules in 1974). As explained below, this traditional framework was then calibrated to reflect a careful balancing of interests between licensed M-LMS operations and other users, including users of Part 15 devices. *See infra* paras. 8-9.

[7] 47 C.F.R. §§ 2.106, 18.301, 18.111(c). Examples of federal radiolocation systems include high-power military air surveillance radars on aircraft carriers, tracking and telemetry radar systems used in aeronautical flight testing, systems that monitor the positions of missiles, drone and manned aircraft, and land units, and perimeter protection devices for intrusion detection at military facilities. Naval radars use the band because the band's propagation characteristics enable detection of "sea skimmers," fast moving targets over water. The band is also used for radar wind profiling for weather forecasting, aviation warning, marine observations, and environmental studies. ISM equipment is defined as "equipment or appliances designed to generate and use radio frequency (RF) energy" to perform some work other than telecommunications. 47 C.F.R. § 18.107(c). ISM equipment includes industrial heaters that cure glue, inks, and rubber, welding equipment, food equipment such as bacon dryers and donut fryers, and medical equipment used for magnetic resonance imaging (MRI) and diathermy (tissue heating). In addition to the 902-928 MHz band, U.S. ISM bands include the 6.765-6.795 MHz, 13.553-13.567 MHz, 26.957-27.283 MHz, 40.66-40.70 MHz, 2400-2500 MHz, 5.725-5.875 GHz, 24-24.25 GHz, 61-61.5 GHz, 122-123 GHz and 244-246 GHz bands.

[8] Federal fixed and mobile radio systems in this band include mobile and portable radios, the transmission of images seen by bomb disposal robots, and fixed systems for such purposes as control of power utilities and video links for monitoring entry points at national borders.

[9] 47 C.F.R. § 90.353(a).

[10] 47 C.F.R. § 97.301. The amateur radio service under Part 97 of the Commission's rules provides spectrum for amateur radio service licensees to participate in a voluntary noncommercial communication service, which allows experimentation with various radio techniques and technologies to further the understanding of radio use and the development of new technologies. *See* 47 C.F.R. § 97.1.

may not cause harmful interference to LMS licensees, amateur operations, or other licensed systems.[11] These unlicensed Part 15 devices, which number in the millions, use this spectrum for a variety of purposes, including remote meter reading, utility load management, cordless telephones, wireless local area networks, and other diverse applications.

6. *Multilateration LMS.* There are two types of LMS systems: multilateration systems and non-multilateration systems. Multilateration systems track and locate objects over a wide geographic area (*e.g.*, tracking a bus fleet) by measuring the difference in time of arrival, or difference in phase, of signals transmitted from a unit to a number of fixed points, or from a number of fixed points to the unit that is to be located. The Commission uses exclusive licensing to issue M-LMS licenses on a geographic area basis.[12] Non-multilateration systems transmit data to and from objects passing through particular locations (*e.g.*, automated tolls, monitoring of railway cars). Non-multilateration LMS is licensed on a non-exclusive basis using site-by-site licensing.[13]

7. The Commission's band plan for LMS divides the 902-928 MHz band into five spectrum sub-bands, two for use by M-LMS, two by non-multilateration LMS, and one for use by both M-LMS and non-multilateration LMS.[14] The sub-bands available to M-LMS (*i.e.*, the 14 megahertz M-LMS Band) are licensed in three blocks as follows:[15]

> *Block A (6 megahertz of spectrum):* 904.00-909.75 MHz band paired with a 0.25 megahertz narrowband channel in the 927.75-928.00 MHz band;
>
> *Block B (2.25 megahertz of spectrum):* 919.75-921.75 MHz band paired with a 0.25 megahertz narrowband channel in the 927.50-927.75 MHz band; and
>
> *Block C (5.75 megahertz of spectrum):* 921.75-927.25 MHz band paired with a 0.25 megahertz narrowband channel in the 927.25-927.50 MHz band).

The sub-bands available for use by non-multilateration LMS are the 902-904 and 909.75-919.75 MHz bands, while the 919.75-921.75 MHz portion of Block B is shared equally between M-LMS and non-multilateration LMS licenses. The Commission intended that this band plan would assign non-multilateration spectrum to portions of the band where use of spectrum by Part 15 devices, amateur operations, and federal radiolocation operations was greatest.[16]

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[11] Users of Part 15 devices do not have any allocation status in the Commission's rules. Instead, the Commission makes spectrum available for Part 15 devices on an unprotected and non-interference basis. Under Part 15, unlicensed devices may not cause harmful interference to LMS licensees, amateur operations, or other licensed systems in the 902-928 MHz band. *See* 47 C.F.R. § 90.361. Users of Part 15 devices conforming to specified technical conditions under the safe harbor, however, are insulated from claims in the 902-928 MHz Band that such devices cause harmful interference to M-LMS systems. *Id.*

[12] 47 C.F.R. § 90.353(d).

[13] Municipalities or other governmental operatives may file for a non-multilateration license covering an Economic Area. 47 C.F.R. § 90.353(i).

[14] 47 C.F.R. § 90.357.

[15] The three blocks of paired M-LMS spectrum are licensed in 176 Economic Areas (EAs) for a total of 528 licenses.

[16] *LMS Report and Order*, 10 FCC Rcd at 4708-09 ¶ 24. Short range non-multilateration operations are generally less likely to cause interference to Part 15 devices (which also operate with relatively short range) than multi-lateration operations. *See id.* at 4712-13 ¶ 32.

8. To facilitate sharing of the band by multiple licensed services as well as unlicensed devices, the Commission placed certain limitations on M-LMS operations, including restrictions on the types of services that could be provided, in part to make for less-intensive location-based applications.[17] The Commission anticipated that these M-LMS service restrictions would spur the provision of new vehicle and other location services while also limiting the potential disruption to existing Part 15 operations and other users from unrestricted M-LMS system operations.[18] Specifically, the Part 90 rules circumscribe the scope of permissible M-LMS service offerings such that licensees may only use non-voice radio techniques to determine the location and status of mobile radio units and may transmit status and instructional messages, either voice or non-voice, only so long as they relate to the location or monitoring functions of the system.[19] In addition, M-LMS licensees are prohibited from using real-time interconnection with the public switched telephone network (PSTN), except for emergency communications sent to or received from a system dispatch point or public safety answering points.[20] The Commission reasoned that these restrictions would "ensure that LMS systems are utilized primarily for location service and not as a general messaging or interconnected voice or data service."[21]

9. Apart from restrictions designed to limit the scope and intensity of M-LMS services and thereby maintain the coexistence of the many varied users of the band,[22] other Part 90 provisions also seek to facilitate spectrum sharing by regulating potential interference between M-LMS operations and Part 15 devices. Thus, while unlicensed devices must generally avoid harmful interference to licensed services, the Commission adopted a safe harbor rule for unlicensed devices and amateur operations operating in the band. This rule provides that amateur and Part 15 operations conforming to specified technical standards are insulated from claims that such devices cause harmful interference to M-LMS systems.[23] Also, to facilitate coexistence of licensed and unlicensed uses, and in recognition of extensive existing Part 15 use of the band, the Commission adopted a rule requiring M-LMS licensees to demonstrate through field tests that their systems do not cause "unacceptable levels of interference to Part 15 devices."[24] The Commission, however, did not adopt a uniform testing method given the varied technologies, and

[17] *See generally id.* at 4708 ¶ 23.

[18] By its new rules, the Commission sought to promote the continued integration of spectrum based services into the nation's transportation infrastructure while safeguarding Part 15 and other operations. *Id.* at 4698-99, 4744-45 ¶¶ 6, 99. The Commission also sought to promote multiple location service providers and technologies by limiting the amount of spectrum a licensee could hold in a single market through essentially an M-LMS spectrum cap. *Id.* at 4722-23 ¶ 48.

[19] Licensees may offer non-vehicle location service, but only if their system is primarily used for vehicle location monitoring. *Id.* at 4708 ¶ 24; *see also* 47 C.F.R. § 90.353(g).

[20] Otherwise, licensees are limited to store and forward interconnection, whereby either (1) transmissions from an object being monitored are stored by the M-LMS provider for later transmission over the PSTN, or (2) transmissions received by the M-LMS provider from the PSTN are stored for later transmission to the object being monitored. *See LMS Report and Order,* 10 FCC Rcd at 4710 ¶ 27. The Commission determined that store and forward messages delayed for at least thirty seconds would be permitted, and left open the possibility that a delay of less than thirty seconds would be acceptable. Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making,* 12 FCC Rcd 13942, 13949 ¶ 15 (1997) (*LMS Memorandum Opinion and Order*).

[21] *LMS Report and Order,* 10 FCC Rcd at 4708 ¶ 23.

[22] *See id.*

[23] *Id.* at 4715-16 ¶ 36 (adopting rules "that define and clarify what constitutes harmful interference from . . . secondary operations").

[24] *See id.* at 4737 ¶ 82.

anticipated that M-LMS licensees and unlicensed users of Part 15 devices would collaborate to establish consensus on testing guidelines.[25]

10. The Commission auctioned M-LMS licenses in 1999 (Auction 21)[26] and 2001 (Auction 39).[27] With three M-LMS licenses in each of the 176 EAs, there were 528 licenses available at auction. As a result of the two auctions, six entities currently hold a total of 452 M-LMS licenses: Progeny holds 228 licenses; Warren C. Havens holds 52 licenses and an associated holding company, Telesaurus Holdings GB, LLC (Telesaurus)[28] holds 43 licenses; Helen Wong-Armijo holds 84 licenses; PCS Partners, Inc. holds 32 licenses; and FCR, Inc. holds 13 licenses. Telesaurus also has applications pending for 34 licenses.[29] The Commission announced an auction of the remaining 42 M-LMS licenses as part of a multi-service auction (Auction 43), but subsequently withdrew them prior to its commencement.[30]

11. When the Commission adopted its LMS rules in 1995, it expected that both M-LMS and non-multilateration LMS systems would play an integral role in the development and implementation of advanced radio transportation-related services.[31] Non-multilateration systems have flourished since 1995 with the Commission licensing more than 2,000 sites to state and local governments, railroads, and other entities in recent years. However, only two M-LMS licensees, Teletrac and Ituran, operate M-LMS systems, and these exist in only a small number of markets.[32] These two licensees were grandfathered when the LMS rules were adopted, and neither of them acquired geographic licenses in Auction 21 or Auction 39. Moreover, none of the six license holders that received their licenses through these auctions or by subsequent transfer or assignment are providing vehicle location services (or any other Part 90 M-LMS compliant service[33]) with their spectrum.

12. On March 5, 2002, Progeny filed a Petition for Rulemaking (Progeny Petition) in which it claims that it could deliver innovative voice and data messaging services to the public, coupled with advanced location technologies, if the Commission afforded M-LMS licensees additional flexibility under its Part 90 regulations.[34] Progeny claims specifically that: (1) the restrictive nature of the M-LMS rules has prevented it from securing capital or engaging equipment manufacturers to develop M-LMS

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[25] *Id.*

[26] "Location and Monitoring Service Auction Closes, Winning Bidders in the Auction of 528 Multilateration Licenses in the Location and Monitoring Service," *Public Notice,* 14 FCC Rcd 3754 (1999) (*Auction 21 Winning Bidders Public Notice*).

[27] "VHF Public Coast and Location and Monitoring Service Spectrum Auction Closes, Winning Bidders Announced," *Public Notice*, 16 FCC Rcd 12509 (2001) (*Auction 39 Winning Bidders Public Notice*).

[28] Mr. Havens holds a controlling interest in Telesaurus.

[29] File No. 0000506843 (Telesaurus).

[30] *See* "Auction of Licenses for Multi-Radio Service Spectrum, Status of FCC Form 175 Applications to Participate in the Auction," *Public Notice*, 16 FCC Rcd 20999 (2001).

[31] *LMS Report and Order*, 10 FCC Rcd at 4698 ¶ 5.

[32] Teletrac operates networks in Chicago, Dallas, Detroit, Houston, Los Angeles and San Diego. Ituran operates a network in parts of Florida.

[33] *See, e.g.*, 47 CFR §§ 90.351, 90.353(b)-(c), (g).

[34] Progeny Petition at iv. Progeny also argues that increased flexibility would provide incentives to M-LMS licensees to rapidly build out their networks and offer high quality service to consumers and businesses in competition with commercial mobile radio service (CMRS) providers, which are now deploying enhanced 911 technologies. *Id.* at 17-20.

equipment;[35] (2) current restrictions on the type and content of messages and limits on spectrum aggregation are unnecessary and should be eliminated,[36] (3) the Commission should phase out or, at least modify, the Part 15 safe harbor;[37] and (4) the existing M-LMS service limitations are inconsistent with the Commission's actions providing licensees with the flexibility to determine which services to offer.[38]

13. *Unlicensed Part 15 Operations.* Although M-LMS services have not developed as anticipated in the M-LMS Band, users of unlicensed Part 15 devices continue to find the 902-928 MHz environment well suited for important applications that benefit consumers. Since adoption of the LMS rules, there has been continued growth in the use of unlicensed devices in this spectrum. Consumers and businesses benefit greatly from their ability to use unlicensed devices in the 902-928 MHz band, and such devices continue to operate effectively despite the assignment of higher-priority spectrum usage rights to M-LMS and other licensed uses of the band.

14. A Commission review of Part 15 equipment authorization grants in this spectrum indicates that equipment uses have continued to trend upward in the past several years.[39] The number of grants has increased from approximately 200 per year in 1998 to 384 in 2004, and 326 grants were issued in 2005. Moreover, the types and distribution of the millions of authorized devices in use in this band have changed since the Commission originally adopted its M-LMS rules. Prior to 2000, for example, almost 40 percent of authorization grants were issued to cordless telephones.[40] In recent years, however, there has been a shift in the types of devices using this band following the introduction of spread spectrum devices and reduction of costs for standardized integrated circuits.[41] As described below, these developments are significant.

15. First, there has been major growth in a number of classes of Part 15 devices in the 902-928 MHz band. These include RFID devices, such as bar code readers, different types of tag readers, and security label readers. In addition, utility and meter reading devices (which include readers for gas and electric meters, water meters, and remote sensors for these readers) have proliferated throughout the band, such that many millions of devices are now in use.[42] There is also greater use by telemetry and security devices such as alarm devices, vehicle tracking systems, fork lift and crane control systems, traffic control systems, and home security systems.

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[35] *Id.* at 15-16. Progeny claims that manufacturers will not produce M-LMS equipment because they do not perceive sufficient market demand to support a narrow vehicle location service. *Id.* at 15.

[36] *Id.* at 23-26.

[37] *Id.* at 23, 27-29.

[38] *Id.* at 26.

[39] Our review of equipment authorization was based on the 902-928 MHz band as a whole. We do not have specific data indicating the extent of devices using the 904-909.75 and 919.75-928 MHz portion (*i.e.*, the M-LMS Band at issue here) as compared to the remaining portion of the 902-928 MHz band available for use by Part 15 devices.

[40] There is continued use of the 902-928 MHz band by these cordless phones, and there are a small number of devices classified as "others" that also use the band. These include tank level gauge monitors, tracking systems, remote controls for several different applications, among other devices.

[41] The Commission modified its rules in 1989 and 1990 to allow spread spectrum devices in this band. *See* Revision of Part 15 of the Rules Regarding the Operation of Radio Frequency Devices without an Individual License, *First Report and Order*, 4 FCC Rcd 3493 (1989); Amendments of Parts 2 and 15 of the Rules with Regard to the Operation of Spread Spectrum Systems, *Report and Order*, 5 FCC Rcd 4123 (1990).

[42] For example, Cellnet Technology recently reported that it has deployed 10 million AMR devices that use this band. *See* Cellnet Technology, Inc.'s Petition for Limited Reconsideration filed in ET Docket No. 03-201 (regarding Modification of Parts 2 and 15 of the Commission's Rules for Unlicensed Devices and Equipment Approval, ET Docket No. 03-201, Petition for Limited Reconsideration, filed by Cellnet Technology, Inc.) (October 7, 2004).

16. We have also seen modest growth in the number of other types of equipment authorizations in the band. An increasing number of medical devices (blood pressure and heart rate monitors, medical telemetry systems, fetal monitoring systems, *etc.*) use this band. In addition, there has been an increased variety of 902-928 MHz consumer electronic devices such as wireless speakers, intercom devices, wireless keypads and mouse controllers, baby monitors, and video cameras. Finally, the number of authorizations has increased for network devices that provide wireless high-speed data and Internet-type services. Such network devices are actively being used by a subset of wireless Internet service providers (WISPs) for extended-range line-of-sight applications as well as non-line-of-sight applications.[43]

III. DISCUSSION

17. Since 1995, the Commission has sought to provide for, and encourage, the coexistence of both licensed and unlicensed uses in the M-LMS Band. While the unlicensed use of this band has successfully provided consumers with numerous spectrum-based products, the licensed plan for this band has not similarly led to the development of new services. In this Notice, we seek comment on whether we can take steps to provide M-LMS licensees additional flexibility to respond to changing market conditions while protecting other licensed applications and federal applications and minimizing interference to unlicensed users.

18. We seek comment on the feasibility of modifying our Part 90 LMS rules in ways that would provide greater flexibility to M-LMS licensees while maintaining continued access for unlicensed devices and other users in this band. The current M-LMS rules place significant restrictions on M-LMS operations that were designed in large measure to limit interference among the variety of users within this band.[44] We inquire whether these restrictions might unnecessarily restrict the use of the band and impede more efficient use of spectrum. The Commission intended these restrictions to provide, among other results, a stable environment for the continued growth of this industry,[45] and believed that affording licensees additional flexibility to provide non-location based services could "detract from the intended purpose of the LMS allocation."[46] We note that these restrictions were in place at the time the licensees decided to acquire the M-LMS spectrum at auction. A consequence of these restrictions, however, has been that M-LMS licensees may be unnecessarily prevented from providing other services, even as technical advances and market demands change what may be feasible within the interference parameters established for this band. Given the history of this band and our goal to provide rules that promote licensee flexibility while protecting other users, we seek comment on whether the existing restrictions may be impeding the development of more services of greater value to the public, as well as comment on the feasibility of changing certain rules to provide licensees additional flexibility.

A. Restrictions on Permissible Communications and Interconnection

19. This section seeks comment on whether the Commission can promote more efficient use of the M-LMS Band by modifying or eliminating M-LMS restrictions on types of permissible communications (*e.g.*, vehicle location as primary operation) and interconnection, while protecting other licensed and federal applications and minimizing interference to unlicensed users. Assuming we were to adopt such changes, we then consider other possible specific rule changes to transition to and implement a regulatory framework for additional flexibility in Part 90 M-LMS.

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[43] These do not represent a large number of equipment authorizations compared to other available unlicensed bands in higher frequency ranges.

[44] *LMS Report and Order*, 10 FCC Rcd at 4744-45 ¶ 99.

[45] *Id.*

[46] *Id.* at 4708 ¶ 23. Nonetheless, we note that the LMS rules adopted in 1995 were a substantial step towards the efficient and competitive use of spectrum previously governed by outdated AVM regulations that had not kept pace with the technological evolution. *Id.* at 4696 ¶¶ 1-2.

20. We first seek comment on whether restricting M-LMS use to vehicle location and other location-based services continues to serve the public interest.[47] As discussed above, the Commission adopted the M-LMS service and interconnection restrictions to promote a location-based service in 1995. We note, however, that more recent actions by the Commission have advanced the broader development of location-based services in other bands. Shortly after adoption of the M-LMS rules, the Commission adopted its initial E-911 rules, requiring all commercial mobile radio service (CMRS) carriers to meet standards for identifying the location of emergency callers and passing this information to the relevant public safety entities.[48] In addition, there are several non-LMS service providers that offer location service to consumers and businesses, including satellite-based service providers Qualcomm (OmniTRACS® mobile communications service) and ORBCOMM (Little Low Earth Orbiting service).[49] Under these circumstances, we seek comment on whether there is any public interest benefit associated with continuing to limit M-LMS service flexibility to promote vehicle and other location-based services in the nation's transportation infrastructure? Alternatively, should we maintain these restrictions to preserve M-LMS as essentially a location-based service, but provide licensees with some additional flexibility to offer their location-based services by, *e.g.*, eliminating spectrum aggregation constraints, testing conditions, or limits on non-vehicular offerings?[50]

21. Commenters should consider whether it is possible to replace some or all of the M-LMS service restrictions with more flexible rules that would allow licensees to provide additional services, provided they would not cause any significant increase in interference to other users in the band. Specifically, we seek comment on the extent to which stricter power limits, discussed in Section III-B below, or other technical restrictions, could limit the potential for interference between more flexible licensed use and existing unlicensed use of the M-LMS Band.[51] Should M-LMS licensees be permitted to provide any type of service, whether or not it is location-based, provided they comply with such limits? Would such an approach be more effective than existing use restrictions in promoting flexibility for M-LMS licensees, protecting other licensed and federal users, and minimizing interference to Part 15 users? In addition, should we eliminate limits on real time interconnection limiting such applications to emergency communications only?

22. Assuming it is technically feasible to afford flexibility without major consequences to Part 15 devices, are there reasons why we should not extend to M-LMS additional flexibility to meet market demands? To what extent do existing restrictions impair (or not impair) the ability of M-LMS licensees to provide services that may be desired by the public? Commenters should consider whether the interference environment in the M-LMS Band has changed since adoption of the M-LMS rules in 1995

[47] *LMS Report and Order*, 10 FCC Rcd at 4708 ¶ 23 (finding it appropriate to impose limitations on the provision of non-vehicular location services); *id.* at 4708 ¶ 24 ("[W]e will allow non-vehicular location services to be rendered only by multilateration LMS systems whose primary operation involve the provision of vehicle location services."); *see also* 47 CFR § 90.353(g).

[48] Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC 18676 (1996).

[49] OmniTRACS® uses Ku-band satellite transponders to provide real-time messaging and positioning services to more than 2,000 North American trucking fleets. *See* Qualcomm, Inc., "Products and Business Solutions, OmniTRACS® Mobile Communications Solution" *available at* www.qualcomm.com/qwbs/ products/ omnitracs.html (last visited Mar. 1, 2006). ORBCOMM is a wireless telecommunications company that provides narrow band two-way digital messaging, data communications, and geo-positioning services on a global basis through a network consisting of thirty Low Earth Orbit (LEO) satellites. *See* "About ORBCOMM" *available at* http://www.orbcomm.com/ wwwroot/public/about/who.html (last visited Mar. 1, 2006).

[50] *See infra* paras. 21-25, 34-35, 39-41.

[51] *See infra* paras. 26-33.

and whether there are new technologies (such as innovations in frequency agility) that obviate the need for the M-LMS service or interconnection restrictions.[52]

23. Alternatively, if commenters believe that it would not be in the public interest to completely eliminate the restrictions on the types of services that may be offered, we ask them to comment on the degree to which we could or should relax the restrictions on permissible communications and type of interconnection. Should we permit any type of location or location-based service? Or, should we continue to limit M-LMS to vehicle location as a primary service and non-vehicular location only on an ancillary basis? Should we afford M-LMS licensees the additional flexibility to provide new non-location based services, but not permit unrestricted real time interconnection? Could limits on real time interconnection be modified, if not eliminated, such that licensees could provide additional PSTN-oriented services while not increasing the potential for interference to users of Part 15 devices in the band? If parties believe that any alteration of the *status quo* would create an unacceptable increase in the risk of interference, they should support their position with specific analysis demonstrating the degree to which other alternatives (presented here or by other parties) would impact their operations.

24. If we eliminate or modify the M-LMS service-based restrictions and afford incumbent licensees additional flexibility to provide new service offerings, we seek comment on how to implement such a service-neutral approach in the Commission's rules and regulations. We note that the Part 2 Table of Allocations for the 902-928 MHz Band does not contain a general non-federal allocation, but a footnote to the table specifically references LMS.[53] In this context, we seek comment on whether affording M-LMS licensees additional flexibility would require us to clarify or redefine the range of permissible communications by M-LMS licensees in the Table of Allocations. We stress that if this is required, we do not propose to change the fundamental relationship between ISM and federal users, on the one hand, and M-LMS licensees on the other. Rather, we only consider modification of our rules to promote additional flexibility for M-LMS while maintaining its allocation on a secondary basis to ISM devices and federal operations.

25. We also seek comment regarding whether provisions of other rule parts should govern the provision of M-LMS services. For example, if we decide to provide licensees the flexibility to provide a variety of services (*e.g.*, fixed, mobile, *etc.*) under more than one regulatory status (*i.e.*, common carrier, non-common carrier, private internal), should a M-LMS licensee then be subject to other regulatory requirements? We seek comment on any provisions in existing, Part 90 M-LMS rules that may require specific recognition or adjustment to comport with the potential definition of an expanded scope of permitted M-LMS services.[54] In addition, we seek comment on Part 1 and any other wireless radio services rules that should be modified or updated to reflect a service-neutral approach to permissible M-LMS communications.[55]

B. Power and Other Technical Limitations

26. In this section, we address ways to minimize the potential for interference to unlicensed devices that possibly may arise from licensed operations under potentially more flexible M-LMS rules. We seek comment on whether, by adopting stricter power limits for M-LMS licensees, we can better

[52] For example, by the possibility of defining the radiofrequency environment in terms of maximum allowable output, we may accommodate the unlicensed uses in the band in a manner that would be superior to the current M-LMS operational restrictions. *See infra* paras. 26-33.

[53] Note US218 to the U.S. Table of Allocations provides that the 902-928 MHz band is available for LMS provided that LMS systems do not cause harmful interference to federal stations, and that they tolerate interference from ISM devices and federal stations in the band. *See* 47 C.F.R. § 2.106 n.US218.

[54] *See, e.g.*, 47 C.F.R. § 90.155(d), (e).

[55] *See supra* note 1. In this regard, we only seek comment on non-Part 90 rule changes that relate to M-LMS operations in the M-LMS Band.

serve our goal of providing these licensees more flexibility while minimizing interference to these unlicensed devices. We also solicit comment on any other technical approaches that could be used independently, or with a reduced M-LMS power limit, including possible technical approaches that are similar to the frequency hopping and digital modulation rules set forth in Section 15.247 of the Commission's regulations.

27. We believe any proposal to provide more flexibility to M-LMS licensees in terms of permissible services requires consideration of other rule revisions that may be necessary to minimize the potential for interference to Part 15 devices in the M-LMS Band. We seek comment on whether revising existing power limits applicable to M-LMS licensees would achieve this goal. One factor in the potential for interference from M-LMS to Part 15 operations results from the difference in power between the potentially competing uses. Currently, M-LMS licensees are permitted a maximum of 30 Watts effective radiated power (ERP), which equals 49.2 Watts equivalent isotropically radiated power (EIRP).[56] Part 15 devices (utilizing spread-spectrum or wide digital emissions) may operate with parameters that result in a maximum permitted EIRP of 4 Watts in the 902-928 MHz band.[57] Because existing M-LMS licensees may operate with 12.3 times as much power as Part 15 devices,[58] more flexible M-LMS operations could result in a significant increase in interference to nearby Part 15 devices. Thus, reducing the maximum permitted M-LMS transmitter power across some minimum bandwidth could reduce the potential area around an individual M-LMS station where interference to Part 15 devices is most likely.

28. We therefore seek comment on the consequences of reducing the maximum permitted transmitter power in the three primary M-LMS band segments: 904.000-909.750 MHz, 919.750-921.750 MHz, and 921.750-927.250 MHz. We seek specific comment on whether reducing the maximum permitted transmitter power of M-LMS in these segments, from the current limit of 30 Watts ERP to a new lower limit of 6.1 Watts ERP (which equals 10 Watts EIRP), would result in an environment where M-LMS stations operate on far more comparable power levels with Part 15 devices, provided an appropriate minimum bandwidth or methodology is specified on how power would be measured for new flexible M-LMS operations.[59] Under such a rule change, M-LMS licensees would be allowed to operate their stations with only 2.5 times as much power as Part 15 device users,[60] rather than the 12.3 times now permitted under Commission rules. We seek comment on whether this would sufficiently minimize the potential for interference to Part 15 users, if the M-LMS service-based restrictions were modified or eliminated. Would reducing the maximum power from 30 Watts ERP to 6.1 Watts ERP be sufficient by itself to mitigate the potential for interference? Is such a limitation more or less restrictive than the *status quo*, especially since M-LMS licensees may be permitted under current rules to provide packet-based, voice and other services that bypass the PSTN? If a commenting party believes that lowering the transmitter power limit to 6.1 Watts ERP is insufficient to address potential interference, or too great for M-LMS licensees to provide economically viable services to the public, it should specifically state what an appropriate power limit would be.

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[56] 47 C.F.R. § 90.205(k).

[57] 47 C.F.R. § 15.247. In a spread spectrum system, information is conveyed by modulation of a carrier by some conventional means, and the bandwidth is deliberately widened by a spreading function over that which would be needed to transmit the information alone. 47 C.F.R. § 2.1(c).

[58] M-LMS licensees currently may operate at 49.2 Watts, while Part 15 devices may operate at 4 Watts, a 10.9 dB difference. *See* 47 C.F.R. §§ 15.247, 90.205(k).

[59] In this regard, we note the discussion below on the possibility of imposing a power spectral density requirement. *See infra* paras. 32-33. In commenting on these comparisons using reduced M-LMS power limits, commenters should raise and discuss minimum bandwidths or other appropriate methodologies underlying the degree of power differentials on which we seek comment.

[60] That is, M-LMS licensees could operate with 10 Watts EIRP as opposed to 4 Watts EIRP permitted for Part 15 devices – a 4 dB difference.

29. Each of the three M-LMS block licenses has an associated 0.25 megahertz channel (located in the 927.25 to 928 MHz portion of the band), which is subject to a current 300 Watts ERP (which equals 492 Watts EIRP) power limit per transmitter. We seek comment on reducing these limits to a maximum 10 Watts ERP power limit for each channel to mitigate the potential for unreasonable interference to existing Part 15 devices. We also seek comment on whether more flexible M-LMS operations could be provided at a power level higher than 10 Watts ERP on these channels without impairing the viability of unlicensed operations.[61] In addition, we seek comment on whether the current field strength limit of 47 dBuV/m at the M-LMS licensee's EA boundary would continue to be reasonable, if we adopt changes to the technical rules as contemplated herein.[62]

30. We also seek comment on other technical approaches that could be used independently or with these reduced M-LMS power limits. For example, we seek comment on whether to adopt technical rules for M-LMS operations that are similar to the frequency hopping and digital modulation rules set forth in Section 15.247 of the Commission's regulations.[63] Section 15.247 generally permits a higher than normal transmitting power for Part 15 devices that use frequency hopping or digital emissions which cause the transmitted energy to be spread out across the band rather than concentrated in a relatively narrow bandwidth. Spread spectrum emissions mitigate potential interference, particularly to narrowband operations in the same spectrum, because not only do they cause less interference by inducing less energy into the receivers of such operations, but also because spread spectrum receivers have a much greater immunity to interfering signals. Commenters should address whether we could allow the greater M-LMS service flexibility described above if stations were required to use spread spectrum or broadband digital emissions.

31. If we were to adopt rules similar to those set forth in Section 15.247 and apply them to M-LMS, these licensees (with their 10.9 dB greater power than Part 15 operations) could possibly use the same equipment (only with more power), be interoperable with Part 15-based services, and have common subscribers. We seek comment on the advantages or disadvantages of permitting M-LMS stations to provide the same types of services using the same technologies that Part 15 devices already are permitted to use in the M-LMS Band. Several entities provide unlicensed broadband service to the public in the 902-928 MHz band under the provisions of Section 15.247. To the extent that a subset or all of the spectrum in this band could be used to accelerate the deployment of broadband through new technical provisions, we seek comment generally whether the public interest would be served.

32. Under such an adaptation to the M-LMS rules, we seek comment on whether the spectral power density limit of Section 15.247,[64] adjusted for the power levels discussed above for M-LMS stations (*i.e.*, a 10 Watt EIRP limit for M-LMS stations, which represents a 4 dB increase over the existing 4 Watt EIRP limit for Part 15 devices), would satisfactorily eliminate unreasonable interference to Part 15 operations. Specifically, would a spectral power density limit of 12 dBm per 3 kHz be technically reasonable and appropriate? We also seek comment on a minimum bandwidth for digital modulation (including direct sequence spread spectrum). Would the 6 dB emission bandwidth of 500 kHz used in Section 15.247 also be technically reasonable and appropriate for M-LMS and permit Part 15 devices to continue to use the M-LMS Band without unreasonable interference? Section 15.247 also includes provisions regarding occupancy time, and separate power limits based on the number of hopping channels used for frequency hopping spread spectrum devices.[65] If we were to adopt spread spectrum

[61] We note that high-powered (3500 Watts ERP) paging operations exist in the adjacent 929-930 MHz spectrum.

[62] 47 C.F.R. § 90.359.

[63] 47 C.F.R. § 15.247. Section 15.247 provides for the use of low power digital modulation RF devices (intentional radiators) on an unlicensed basis. *Id.*

[64] In accordance with Section 15.247(d) of our Rules, the output power of a digitally modulated Part 15 transmission is limited to 8 dBm in any 3 kHz band. 47 C.F.R. § 15.247(d).

[65] 47 C.F.R. § 15.247(a)(1)(i).

rules for M-LMS that are similar to those in Section 15.247, should M-LMS licensees be permitted to use frequency hopping spread spectrum modulation? If so, what power and other technical limits would be appropriate and enable users of Part 15 devices to continue to operate in the band without unreasonable interference?

33. In order to ensure that existing Part 15 devices do not suffer any significant increase in interference from a flexible M-LMS service, we ask parties to come forward with any other technical solutions that they would support in this context. We note ideas such as limiting the number of simultaneous M-LMS spread spectrum users to reduce the potential for interference to unlicensed users of the M-LMS Band, as well as limiting the duty cycle of non-spread spectrum emissions to reduce the potential for interference to unlicensed users. Would such limits protect primary band users (*e.g.*, ISM devices and federal radiolocation service) while limiting adverse effects on users/services allocated on a secondary basis? We invite comment on these and any other proposals. Besides power-related limits and measures, we will consider any other proposals that would provide more flexibility to M-LMS than current rules. We also seek comment on whether allowing these stations to operate using such technologies at higher power levels than permitted generally under Section 15.247 would raise any questions related to human exposure to electromagnetic radiation and whether they therefore should be subject to the procedures of Sections 2.1091 and 2.1093.[66]

C. M-LMS Spectrum Aggregation Limit

34. The Commission's Part 90 M-LMS rules provide that within an EA, a licensee may aggregate M-LMS spectrum in Blocks B (2.25 megahertz) and C (5.75 megahertz), for a total of 8 megahertz, but spectrum Block A (6 megahertz) may not be aggregated with these other blocks.[67] We note that when the Commission adopted this aggregation restriction in 1995, it reasoned that the restriction would foster multiple M-LMS location service providers and technologies.[68] Today, numerous types of location services exist using a variety of bands and technologies.[69] We therefore seek comment on whether the original rationale for restricting aggregation of M-LMS licenses remains valid in the current communications marketplace.

35. We also seek comment on whether eliminating the M-LMS aggregation limits has the potential to reduce interference to other users of the M-LMS Band and facilitate the provision of new M-LMS services. For example, would eliminating this restriction increase the potential for unlicensed use and reduce the potential for interference by giving M-LMS licensees greater flexibility to choose among a greater pool of available frequencies? Or would permitting one provider to control all 14 megahertz of M-LMS spectrum in an EA make access for unlicensed devices in the 902-928 MHz band more difficult? For example, would it be more difficult for unlicensed users to frequency-hop,[70] especially if PSTN interconnection by the M-LMS licensee were permitted? Finally, in considering whether to allow M-LMS aggregation, to what degree should the continued availability to Part 15 operations of the 12 megahertz of non-multilateration LMS spectrum be a factor in our analysis?

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[66] 47 C.F.R. §§ 2.1091, 2.1093 (covering the Commission's evaluation requirements for the radiofrequency radiation exposure of mobile and portable devices).

[67] 47 C.F.R. § 90.353(d), (f). Each spectrum block has an associated 250 kilohertz narrowband channel.

[68] *See LMS Report and Order,* 10 FCC Rcd at 4722-23 ¶ 48.

[69] *See supra* para. 5.

[70] Frequency-hopping refers to the repeated switching of frequencies during a radio transmission according to a specified algorithm, to minimize unauthorized interception or jamming of telecommunications. The overall bandwidth required for frequency hopping is much wider than that required to transmit the same information using only one carrier frequency.

D. Part 90 Safe Harbor for Secondary Operations

36. In the *LMS Report and Order*, the Commission adopted a safe harbor for unlicensed users of Part 15 devices and licensed amateur operations,[71] within which they are legally insulated from M-LMS operators' claims of harmful interference.[72] As stated at the outset of this Notice, we tentatively conclude that the Section 90.361 safe harbor provision should be retained. We believe this rule effectively delineates rights and responsibilities such that the efficient sharing of the band can occur with limited potential for interference.[73] The safe harbor provides a bright line for all parties, licensed and unlicensed, operating in this band. Although Progeny argues that the safe harbor creates an uncertain regulatory framework for users of the 902-928 MHz band,[74] we believe that defining the scope of unlicensed operations legally protected from claims of harmful interference by M-LMS licensees has served the public interest. In originally adopting this standard, the Commission explained that the safe harbor rule was the result of an extensive rulemaking record and careful consideration of all parties' interests.[75] We do not believe that there have been sufficient changes in the 902-928 MHz interference environment, or our policy objectives regarding use of the band by unlicensed Part 15 devices and amateur radio licensees, to support a repeal of the safe harbor.

37. Moreover, to provide M-LMS licensees with the flexibility of use described above,[76] we do not believe it is necessary to eliminate a provision that adds certainty for the multitude of users of Part 15 devices in this band. We are cognizant of the competitive impact that elimination, or substantial modification, of the safe harbor standard could have on the large number of manufacturers and users of existing Part 15 devices in the M-LMS Band. Elimination of the safe harbor provision could come at great cost to Part 15 manufacturers and systems that have made investments in developing and deploying equipment within the safe harbor provision.[77]

38. Thus, we propose to retain the Section 90.361 safe harbor provision as an effective standard that precisely defines Part 15 and amateur radio operators' rights relative to M-LMS licensees. We seek comment on this tentative conclusion. Parties who oppose this tentative conclusion should provide arguments that identify specific, alternative mechanisms that would provide the existing level of access for Part 15 and amateur operations in this band, and they should provide specific economic and technological evidence supporting their proposals and views. In addition, parties supporting any modifications to the safe harbor that would be based on proximity to M-LMS sites or other factors should offer proposed rules and specifically explain how such provisions would ensure the same degree of access for Part 15 devices that exists today.

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[71] *LMS Report and Order*, 10 FCC Rcd at 4715-16 ¶ 36.

[72] The safe harbor rule defines technical parameters involving antenna location, gain, and height as well as transmitter power. *See* 47 C.F.R § 90.361.

[73] 47 C.F.R § 90.361 (rule providing, in part, a safe harbor for Part 15 and amateur operations from claims of harmful interference by M-LMS systems operating in one of the three EA sub-bands).

[74] Progeny argues that the adoption of the safe harbor provision created an unprecedented regulatory framework where primary users lack the necessary assurances against harmful interference and are required to provide interference protection to secondary users. *See* Progeny Petition at 7; *id.* at 28 ("Section 90.361 . . . inappropriately shifted interference protection from more primary users in the band to secondary users. . . . [A] more primary user of the band needs assurance that its operations will not be interfered with by secondary users"). Progeny claims that the safe harbor rule allows secondary users to cause more than insignificant interference to the operations of primary M-LMS services. *Id.* at 7.

[75] *See, e.g.*, *LMS Memorandum Opinion and Order*, 12 FCC Rcd at 13956 ¶ 32.

[76] *See supra* paras. 19-25.

[77] *Id.*

E. M-LMS Testing Condition

39. Section 90.353(d) of the Commission's rules requires M-LMS licensees to "demonstrate through actual field tests that their systems do not cause unacceptable levels of interference to 47 CFR part 15 devices."[78] Progeny asserts that implementation of this M-LMS testing requirement is hindered by uncertainty regarding the identity of the affected Part 15 users in the 902-928 MHz band and the absence of rule-defined engineering standards for conducting such testing.[79] Accordingly, we seek comment on modifying or eliminating this Part 90 regulation. In the *LMS Report and Order*, the Commission conditioned the grant of each M-LMS license on the licensee's ability to demonstrate that it had performed additional testing that would provide data to users of the band and that could contribute to the "fine-tuning" of system operations and facilitate band sharing.[80] The Commission determined that it was not appropriate to adopt a uniform testing method given the varied technologies and anticipated that M-LMS licensees and unlicensed users of Part 15 devices would collaborate to establish testing guidelines.[81] The Commission explained that the testing requirement would not entitle Part 15 systems to any protection from interference, but would ensure that M-LMS licensees considered the Commission's goal of minimizing interference to systems of Part 15 devices.[82]

40. Given our proposals above to consider revisions to the M-LMS rules designed to facilitate shared use of the band, as well as our tentative conclusion to retain the Part 15 safe harbor, we seek comment on whether the interference-testing requirement is necessary. Can reliance on well-defined technical limits, instead of the testing requirement, facilitate the introduction of new services by M-LMS licensees without jeopardizing the ability of users of Part 15 devices to continue to operate in the M-LMS Band? To what extent can technologies such as dynamic frequency selection, spread spectrum, and others be adequate to avoid interference instead of field tests? Given these considerations, what would be the impact to Part 15 operations of repealing the testing requirement? If we decided to repeal the testing requirement, are there other technical limits (other than those described above) that we should consider to mitigate interference concerns?

41. We also seek comment on the costs and benefits of developing a more specific rule in place of the Part 15 interference-testing requirement. The testing requirement requires M-LMS licensees to consider existing systems of Part 15 devices when designing and constructing their systems to minimize interference. Is this burden warranted given that users of Part 15 devices do not have priority over M-LMS operations, and there is no database identifying the actual unlicensed users and operators? What effect would a modified and more specific testing condition have on the development and deployment of more flexible M-LMS equipment and services? Parties who favor retention of the testing requirement should explain why it remains necessary, and how it could be defined so that M-LMS licensees could readily assess whether they would cause unacceptable levels of interference to Part 15 devices.

F. Other Issues and Measures

42. We seek comment generally on any further proposals that could allow greater flexibility while avoiding any significant increase in interference to Part 15 operations. We note that the technical limitations discussed above are specifically intended to reduce the potential for interference in the band.

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[78] 47 C.F.R § 90.353(d).

[79] *See* Progeny Petition at 27-28.

[80] *LMS Report and Order*, 10 FCC Rcd at 4737 ¶ 82.

[81] Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Order on Reconsideration*, 11 FCC Rcd 16905, 16912 ¶16 (1996).

[82] *LMS Memorandum Opinion and Order*, 12 FCC Rcd at 13968 ¶ 69.

Nonetheless, the potential remains, and conflicts among competing uses could result, because no one technical rule can guard against all interference, whether or not it is classified as legally harmful.[83]

43. Thus, we seek comment on how to maintain, and clarify or augment if necessary, the ability of M-LMS licensees and operators of Part 15 devices to coexist in the M-LMS Band. Given our belief that the best course is to facilitate objective measurement of currently subjective assessments as to what may be "harmful," we seek comment generally on any other proposals that would be appropriate to reach an appropriate balance between multiple users. Would prior notification or other coordination measures be beneficial and appropriate to reach a balancing of interests? What about industry-run solutions or additional safe harbors? For example, should we adopt a reciprocal safe harbor for M-LMS whereby M-LMS licensees would have some assurances against objections from operators of Part 15 devices, yet included in the safe harbor could be certain conditions that M-LMS licensees would have to meet to ensure that they considered existing Part 15 devices before deploying new services?

44. In addressing the possible rule changes in this Notice, we ask parties to comment on the degree to which the Part 15 devices of interest here are operating in the 14 megahertz of spectrum in the M-LMS Band compared to operations in other portions of the band. As described above, the Commission intended to assign the 12 megahertz of non-multilateration spectrum to portions of the band where amateur, federal, and Part 15 use of the band is the greatest. Accordingly, we request information (*e.g.*, including data points and relevant percentages of use where available) from interested parties using or manufacturing Part 15 devices for operation in the M-LMS Band. For example, what percentage of a party's Part 15 devices used to read meters, support WISP operations, *etc.* are designed or programmed to operate on the 904-909.75 and 919.75-928 MHz portions of the 902-928 MHz band? If such data is available, it would also be helpful if parties, including those parties using authorized frequency-hopping devices, could provide information regarding the intensity, duration, *etc.* of actual operations on the 904-909.75 and 919.75-928 MHz as compared to other portions of the 902-928 MHz band.

IV. PROCEDURAL MATTERS

A. Regulatory Flexibility

45. As required by the Regulatory Flexibility Act, 5 U.S.C. § 603, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and rules addressed in this Notice. The IRFA is set forth in the Appendix. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments filed in response to the Notice, and must have a separate and distinct heading designating them as responses to the IRFA.

B. Paperwork Reduction Act of 1995

46. This document does not contain proposed information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It does not, therefore, contain any new or modified "information collection burden for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198.[84]

C. Other Procedural Matters

1. *Ex Parte* Presentations

47. The rulemaking this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[85] Persons making oral *ex parte*

[83] We note that parties encountering interference impacting their operations (but that may not be legally "harmful") may be required to bear the costs of, *e.g.*, employing upgraded receivers with tighter standards.

[84] *See* 44 U.S.C. § 3506(c)(4).

[85] 47 C.F.R. §§ 1.200 *et. seq.*

presentations are reminded that memoranda summarizing the presentations must contain summaries of the substance of the presentations and not merely a listing of the subjects discussed. More than a one or two sentence description of the views and arguments presented generally is required.[86] Other requirements pertaining to oral and written presentations are set forth in Section 1.1206(b) of the Commission's rules.[87]

2. Comment Filing Procedures

48. Pursuant to Sections 1.415 and 1.419 of the Commission's rules,[88] interested parties may file comments and reply comments regarding the Notice on or before the dates indicated on the first page of this document. All filings related to this Notice of Proposed Rulemaking should refer to WT Docket No. 06-49. Comments may be filed using: (1) the Commission's Electronic Comment Filing System (ECFS), (2) the Federal Government's eRulemaking Portal, or (3) by filing paper copies.[89]

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: http://www.fcc.gov/cgb/ecfs/ or the Federal eRulemaking Portal: http://www.regulations.gov. Filers should follow the instructions provided on the website for submitting comments.
    - ECFS filers must transmit one electronic copy of the comments for WT Docket No. 06-49. In completing the transmittal screen, filers should include their full name, U.S. Postal Service mailing address, and WT Docket No. 06-49. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions, filers should send an e-mail to ecfs@fcc.gov and include the following words in the body of the message, "get form." A sample form and directions will be sent in response.
- Paper Filers: Parties who choose to file by paper must file an original and four copies of each filing. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). All filings must be addressed to the Commission's Secretary, Marlene H. Dortch, Office of the Secretary, Federal Communications Commission, 445 12th Street, S.W., Washington, DC, 20554. Parties who choose to file by paper should also send a copy of their comments to: Michael Rowan, Special Counsel, Spectrum & Competition Policy Division, Wireless Telecommunications Bureau, Federal Communications Commission, 445 12th Street, S.W., Portals I, Room 6315, Washington, DC, 20554.
    - The Commission's contractor will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, NE., Suite 110, Washington, DC 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.
    - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
    - U.S. Postal Service first-class, Express, and Priority mail should be addressed to 445 12th Street, S.W., Washington DC 20554.

[86] *See* 47 C.F.R. § 1.1206(b)(2).

[87] 47 C.F.R. § 1.1206(b).

[88] 47 C.F.R. §§ 1.415, 1.419.

[89] *See* Electronic Filing of Documents in Rulemaking Proceedings, 63 FR 24121 (1998).

49. Parties shall serve one copy with the Commission's copy contractor, Best Copy and Printing, Inc. (BCPI), Portals II, Room CY-B402, 445 12th Street, S.W., Washington, D.C. 20554, (202) *488-5300, or via e-mail to* fcc@bcpiweb.com.

50. Documents in WT Docket No. 06-49 will be available for public inspection and copying during business hours at the FCC Reference Information Center, Portals II, Room CY-A257, 445 12th Street, S.W., Washington, D.C. 20554. The documents may also be purchased from BCPI, telephone (202) 488-5300, facsimile (202) 488-5563, TTY (202) 488-5562, e-mail fcc@bcpiweb.com.

3. Accessible Formats

51. To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to FCC504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY). Contact the FCC to request reasonable accommodations for filing comments (accessible format documents, sign language interpreters, CARTS, *etc.*) by e-mail: FCC504@fcc.gov; phone: 202-418-0530 (voice), 202-418-0432 (TTY).

V. ORDERING CLAUSES

52. Accordingly, IT IS ORDERED that, pursuant to the authority contained in Sections 1, 4(i), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), and 303(r), this NOTICE OF PROPOSED RULEMAKING is hereby ADOPTED.

53. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this NOTICE OF PROPOSED RULEMAKING, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX

INITIAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules considered in this Notice of Proposed Rulemaking (*Notice*),[2] WT Docket No. 06-49. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Notice* provided on page one of this *Notice*. The Commission will send a copy of this *Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[3] In addition, this *Notice* and IRFA (or summaries thereof) will be published in the Federal Register.[4]

A. Need for, and Objective of, the Proposed Rules

2. This rulemaking proceeding considers possible measures that could introduce greater flexibility for licensees in the multilateration Location and Monitoring Service (M-LMS) for the purpose of enabling greater responsiveness to changing market conditions, more efficient and effective use of the M-LMS Band, and more robust secondary markets in radio spectrum usage rights.[5] M-LMS licensees provide service in the 904-909.75 and 919.75-928 MHz portions of the 902-928 MHz band. This 14 megahertz of spectrum has been shared by a variety of Part 15 devices and, since 1995, has been licensed for specified uses by M-LMS defined in Part 90 of the Commission's rules.[6] Multilateration systems track and locate objects over a wide geographic area (*e.g.*, tracking a bus fleet) by measuring the difference in time of arrival, or difference in phase, of signals transmitted from a unit to a number of fixed points, or from a number of fixed points to the unit to be located.

3. In the decade since M-LMS was established there has been very limited development of M-LMS under the existing rules. Specifically, when the Commission adopted its LMS rules in 1995, it expected that both M-LMS and non-multilateration LMS systems would play an integral role in the development and implementation of advanced radio transportation-related services.[7] However, only two M-LMS licensees, Teletrac and Ituran, operate M-LMS systems, and these exist in only a small number

[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 – 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *In re* The Matter of Amendment of the Commission's Part 90 Rules in the 904-909.75 and 919.75-928 MHz Bands, *Notice of Proposed Rulemaking*, WT Docket No. 06-49, FCC 06-24, (rel. Mar. 7, 2006) (*Notice*).

[3] *See* 5 U.S.C. § 603(a).

[4] *Id.*

[5] *See* 47 C.F.R § 1.411. Given the length of time that has passed since the Bureau issued its first Public Notice seeking comment on Progeny's Petition for Rulemaking, the Commission terminates RM No. 10403 and invites interested parties to submit new and/or updated comments and reply comments in WT Docket No. 06-49. *See* "Wireless Telecommunications Bureau Seeks Comment on Petition for Rulemaking Regarding Location and Monitoring Service Rules," *Public Notice*, 17 FCC Rcd 6438 (2002); *see also* "Wireless Telecommunications Bureau Extends Comment Cycle on Petition for Rulemaking Regarding Location and Monitoring Service Rules," *Public Notice*, 17 FCC Rcd 8377 (2002) (extending the deadline for comments on the petition).

[6] *See* 47 C.F.R. §§ 90.351-90.365 (LMS rules).

[7] Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Report and Order*, 10 FCC Rcd 4695, 4698 ¶ 5 (1995) (*LMS Report and Order*).

of markets.[8] Given these present circumstances, the Commission initiates this proceeding to determine whether new approaches could produce more efficient and effective use of the 904-909.75 and 919.75-928 MHz spectrum band by LMS licensees.

4. Through this *Notice*, the Commission seeks to determine whether current M-LMS rules are limiting licensees from providing services that are desired in the market and that could be profitably deployed without causing harmful interference to other users. Specifically, the Part 90 rules circumscribe the scope of permissible M-LMS service offerings such that licensees may only use non-voice radio techniques to determine the location and status of mobile radio units and may transmit status and instructional messages, either voice or non-voice, only so long as they relate to the location or monitoring functions of the system.[9] In addition, M-LMS licensees are prohibited from using real-time interconnection with the public switched telephone network (PSTN), except for emergency communications sent to or received from a system dispatch point or public safety answering points.[10]

5. The Commission seeks comment on whether it can promote more efficient use of the M-LMS Band by modifying or eliminating M-LMS restrictions on types of communication and interconnection, while avoiding any significant increase in interference to unlicensed users. The Commission also seeks comment on whether interference that might result from expanded service M-LMS offerings could be mitigated by adopting stricter power limits for M-LMS licensees, introducing frequency hopping, or altering digital modulation rules.

6. In addition, the Commission seeks comment on whether eliminating the M-LMS aggregation limits has the potential to reduce interference to other users of the M-LMS Band and facilitate the provision of new M-LMS services. The Commission also seeks comment on its tentative conclusion that it should retain the Part 90 safe harbor provision. Furthermore, the Commission seeks comment on whether reliance on well-defined technical limits, instead of the testing requirement, can facilitate the introduction of new services by M-LMS licensees without jeopardizing the ability of users of Part 15 devices to continue to operate in the M-LMS Band.

7. The Commission makes clear at the outset of this proceeding that it does not seek to alter the rules that govern the relationship among the various federal and non-federal licensed services in this band. It also recognizes the importance of maintaining the existing accessibility of the band for unlicensed devices and for amateur operators. The Commission's goal in this proceeding is to consider whether greater opportunity can be afforded M-LMS licensees to provide services while ensuring continued access for other licensed and unlicensed uses that share this band. In the following paragraphs, the Commission discusses the potential impact on small entities of proposals made in this *Notice* to accomplish this goal.

B. Legal Basis

8. The potential actions about which comment is sought in this *Notice* would be authorized pursuant to the authority contained in Sections 1, 4(i), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), and 303(r).

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[8] Teletrac operates networks in Chicago, Dallas, Detroit, Houston, Los Angeles and San Diego. Ituran operates a network in parts of Florida.

[9] Licensees may offer non-vehicle location service, but only if their system is primarily used for vehicle location monitoring.

[10] Otherwise, licensees are limited to store and forward interconnection, whereby either (1) transmissions from an object being monitored are stored by the M-LMS provider for later transmission over the PSTN, or (2) transmissions received by the M-LMS provider from the PSTN are stored for later transmission to the object being monitored. The Commission determined that store and forward messages delayed for at least 30 seconds would be permitted, and left open the possibility that a delay of less than 30 seconds would be acceptable.

C. Description and Estimate of the Number of Small Entities Subject to the Rules

9. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[11] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[12] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[13] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[14]

10. This *Notice* could result in rule changes that, if adopted, would create new opportunities and obligations for M-LMS licensees as well as operators and manufacturers of Part 15 devices for unlicensed uses on the fourteen megahertz of spectrum that is shared with M-LMS in the 902-928 MHz band. An estimate of the number of small entities in each of these categories is discussed below.

11. Multilateration Location and Monitoring Service (M-LMS). For purposes of auctioning LMS licenses, the Commission has defined a "small business" as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding $15 million.[15] A "very small business" is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding $3 million.[16] These definitions have been approved by the SBA.[17] The Commission auctioned M-LMS licenses in 1999 (Auction 21)[18] and 2001 (Auction 39).[19] As a result of the two auctions, six entities currently hold a total of 452 M-LMS licenses.[20] Each one of these entities qualified as either a small business or a very small business.[21]

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[11] 5 U.S.C. § 603(b)(3).

[12] *Id.* at § 601(6).

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

[14] 15 U.S.C. § 632.

[15] *See* 47 C.F.R. § 90.1103(b)(1).

[16] *See id.* § 90.1103(b)(2).

[17] *See* Letter to Thomas Sugrue, Chief, Wireless Telecommunications Bureau, Federal Communications Commission, from Aida Alvarez, Administrator, Small Business Administration, dated February 22, 1999.

[18] "Location and Monitoring Service Auction Closes, Winning Bidders in the Auction of 528 Multilateration Licenses in the Location and Monitoring Service," *Public Notice,* 14 FCC Rcd 3754 (1999) (*Auction 21 Winning Bidder PN*).

[19] "VHF Public Coast and Location and Monitoring Service Spectrum Auction Closes, Winning Bidders Announced," *Public Notice,* 16 FCC Rcd 12509 (2001) (*Auction 39 Winning Bidder PN*).

[20] *See Auction 21 Winning Bidder PN; see also Auction 21 Winning Bidder PN* at http://wireless.fcc.gov/auctions/default.htm?job=release&id=44&y=1999 (last visited Feb. 2, 2006) (*Auction 21 Winning Bidder PN* version that includes Attachment A); *Auction 39 Winning Bidder PN,* 16 FCC Rcd at 12516 (Attachment A).

[21] *See id.* The size status is derived from comparing the differential between data presented for the "gross bid" amount and the "net bid" amount for the licenses. A small business with a winning bid receives a 25 percent discount, and a very small business with a winning bid receives a 35 percent discount. *See* 47 C.F.R. § 90.1103(b)(1)-(2).

12. Part 15 Device Operators. The SBA has developed a small business size standard for "Cellular and Other Wireless Telecommunications" (CWT), which consists of firms having 1,500 or fewer employees.[22] According to the latest Census Bureau data for this category, there are a total of 1,378 *firms that have 999 or fewer employees.*[23] *The Census does not provide data for the number of firms with* 1,500 or fewer employees, but does indicate that nineteen firms have 1,000 or more employees.[24] Consequently, even if all nineteen of these firms are Part 15 device operators and have more than 1,500 employees, the Commission estimates that the majority of businesses in the CWT category are small businesses that may be affected by rules and policies that could be adopted in this rulemaking.

13. Part 15 Device Manufacturers. The SBA has developed small business size standards for two pertinent Economic Census categories, "Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing" (RTB) and "Other Communications Equipment Manufacturing," (OCE) (NAICS code 334290), both of which consist of all such companies having 750 or fewer employees.[25] According to the latest Census Bureau data, there are a total of 1,041 establishments in the RTB category.[26] Of this total, 1,010 establishments have 499 or fewer employees, thirteen establishments have between 500 and 999 employees, and eighteen establishments have 1000 or more employees.[27] Consequently, even if all thirteen establishments with between 500 to 999 employees have more than 750 employees, the Commission estimates that the majority of businesses in the RTB category are small businesses that may be affected by the rules and policies that could be adopted in this rulemaking. Concerning the OCE category, the latest Census Data show that there are a total of 503 establishments.[28] Of this total, 493 establishments have 499 or fewer employees, seven establishments have between 500 and 999 employees, and three establishments have from 500 to 2,499 employees.[29] Consequently, even if all seven establishments with 500-999 employees have more than 750 employees, the Commission estimates that the majority of businesses in the OCE category are small businesses that may be affected by rules and policies that could be adopted in this rulemaking.

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[22] 13 C.F.R. § 121.201 (2005), NAICS code 517212.

[23] U.S. Census Bureau, "Table 5 – Employment Size of Firms for the United States: 2002," *2002 Economic Census, Information Series – Establishment and Firm Size: 2002* (issued Nov. 2005), *available at* http://www.census.gov/prod/ec02/ec0251sssz.pdf (last visited Jan. 26, 2006).

[24] *Id.*

[25] 13 C.F.R. § 121.201 (2005), NAICS codes 334220, 334290.

[26] U.S. Census Bureau, "Table 4 - Industry Statistics by Employment Size: 2002," *2002 Economic Census, Industry Series - Manufacturing: Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing: 2002* (issued Dec. 2004), *available at* http://www.census.gov/prod/ec02/ec0231i334220t.pdf (last visited Jan. 26, 2006). For these NAICS categories, the Census does not provide data on the number of establishments with 750 or fewer employees. Note also that the Census provides detailed employment data for "establishments," but not "firms" in these NAICS categories. The number of "establishments" is a less helpful indicator of small business prevalence in this context than would be the number of "firms" or "companies" because the latter take into account the concept of common ownership or control. Any single physical business location is an establishment, and that location and others may be under the common ownership of a given firm. Thus, the numbers given in text may reflect inflated numbers of businesses in this category, including the numbers of small businesses. Census data in this context are available only for establishments.

[27] *Id.*

[28] U.S. Census Bureau, "Table 4 - Industry Statistics by Employment Size: 2002," *2002 Economic Census, Industry Series - Manufacturing: Other Communications Equipment Manufacturing: 2002* (issued Dec. 2004), *available at http*://www.census.gov/prod/ec02/ec0231i334290t.pdf (last visited Jan. 26, 2006).

[29] *Id.*

14. Amateur Radio Operators. Amateur radio operators are not small businesses or small entities as defined by the RFA and the Commission's rules.[30]

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

15. The Commission seeks comment on reducing or eliminating certain record keeping obligations for M-LMS operators. Section 90.353(d)-(g) requires that M-LMS licensees operating in the 902-928 MHz band "maintain whatever records are necessary" and make such records "available to the Commission upon request" that demonstrate compliance with specified operating parameters designed to limit interference with Part 15 devices.[31] In particular, M-LMS operators must "demonstrate through actual field tests that their systems do not cause unacceptable levels of interference to 47 CFR Part 15 devices."[32] The Commission seeks comment on whether such testing and associated recordkeeping and reporting requirements are necessary if well-defined technical limits are put in place and the Part 15 safe harbor provision is retained. The Commission does not seek comment on specific reporting or recordkeeping requirements, but, it seeks comment on whether M-LMS licensees should adhere to stricter power limits as a condition for relaxing the restrictions on the scope of services that M-LMS providers are permitted to offer.

E. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

16. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[33]

17. The Commission invites comment on a number of alternatives to the current LMS rules that could modify or eliminate certain restrictions on the M-LMS service in order to provide M-LMS licensees greater flexibility to respond to changing market conditions. The Commission addresses alternative approaches to flexibility that it has discussed above in Section A. These alternatives, which are discussed below, have been grouped according to five aspects of the current M-LMS service rules that affect flexible use for M-LMS licensees: (1) restrictions on the scope of permissible communications and interconnection; (2) power and other technical limitations; (3) the M-LMS spectrum aggregation limit; (4) the Part 90 safe harbor for operations under Parts 15 and 97; and (5) the M-LMS testing requirement and associated record keeping obligations.

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[30] *See* 5 U.S.C. §§ 601(2), 603 (defining the term "rule" as it applies to the RFA and setting forth the scope of an IRFA); *id.* § 601(3)-(6) (defining the term "small entity" and its constituent elements: "small business," "small organization," and "small government jurisdiction"); *id.* § 603 (IRFA analysis); *see also* 47 C.F.R § 97.3(a)(1) (defining "amateur operator" as a "person named in an amateur operator/primary license station grant on the ULS consolidated licensee database to be the control operator of an amateur station."); *id.* § 97.3(a)(4) (defining "amateur service" as a "radiocommunication service ... carried out by amateurs, that is, duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest").

[31] 47 C.F.R § 90.353(d)-(g).

[32] *Id.* § 90.353(d).

[33] 5 U.S.C. § 603(c)(1) - (c)(4).

18. With respect to the limits on the scope of M-LMS services, which are summarized in Section A, above, the Commission seeks comment on whether there are any public interest benefits associated with relaxing or eliminating M-LMS restrictions on permissible communications (*e.g.*, vehicle location as primary operation) and interconnection. The Commission seeks comment on alternatives ranging from partial to complete replacement of M-LMS service restrictions that prevent the provision of additional services. In particular, the Commission seeks comment on the benefit that each alternative could provide to M-LMS licensees (all of which qualify as small businesses), and how each alternative might impact small businesses that use or manufacture Part 15 devices.

19. The Commission seeks comment on alternative approaches to satisfying an expanded range of M-LMS service offerings while avoiding any significant increases in interference. For example, the Commission seeks comment on whether any such interference could be mitigated by reducing the allowable power levels at which M-LMS services could be offered. Another alternative to increase M-LMS licensee flexibility while reducing the likelihood of accompanying interference might be a relaxation or elimination of the M-LMS aggregation limit. The Commission seeks comment on the likely effect of this alternative on M-LMS licensees (all of which qualify as small businesses), and any impact to small businesses that use or manufacture Part 15 devices.

20. Regarding the Part 90 safe harbor provision, within which authorized operations under Parts 15 and 97 of the Commission's rules will not be considered to be causing interference to a M-LMS operator, the Commission seeks comment on its tentative decision to retain this provision.[34] The Commission states in this *Notice* that it tentatively concludes that the safe harbor fosters efficient sharing of the band with limited interference, and it asks all parties that disagree to provide arguments that identify specific, alternative mechanisms that would provide the existing level of certainty in this band, and to provide specific economic and technological evidence supporting their proposals.

21. Another alternative approach to increasing flexibility for M-LMS licensees is to eliminate the testing and recordkeeping obligations associated with demonstrating that there is no unacceptable interference to Part 15 devices.[35] While these obligations previously have been deemed essential, the Commission seeks comment on whether they would be necessary if the testing rules were replaced by well-defined technical limits while retaining the safe harbor provision, discussed above.

22. In addition to the discussion above regarding specific alternative approaches for expanding flexibility to M-LMS licensees while avoiding any significant increases in interference to Part 15 devices, the Commission seeks comment on any additional approaches to accomplishing these dual goals. These include any other techniques and approaches that would better optimize the goals of this proceeding.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

23. None.

G. Ordering Clause

24. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Notice* of Proposed Rulemaking, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

[34] *See Notice* at ¶ 2.

[35] 47 C.F.R § 90.353(d)-(g).