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

In the Matter of	)	
	)	
Progeny LMS, LLC	)	RM No. 10403
	)	
Amendment of Part 90 of the Commission's	)	
Rules Governing the Location and Monitoring	)	
Service to Provide Greater Flexibility	)	

To The Commission

Reply Comments of
Warren C. Havens and Telesaurus Holdings GB, LLC

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June 3, 2002

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1. Introduction

Herein, "LMSW" means the captioned and undersigned parties; "LMS-M" means of or relating to Multilateration LMS licenses.

For reasons made clear below, while this is addressed primarily to the Commission, it also is a proposal to the Part-15 related entities involved in 902-928 MHz: those who commented in this proceeding and some who did not.

LMSW believes that its "ATLIS" proposal outlined in Part 2 of its Comments represents the only proposal for a long-term highest and best use of the 902-928 MHz band.[1] It targets a need that could not be more important: critical wireless for the nation's Critical Infrastructure[2] and natural resources and environment. This is they sort of coherent long-term spectrum planning and action that the FCC and Congress has increasingly seen as *essential*—to be encouraged and facilitated—especially in the wake of "9-11."

As noted below, LMSW seeks to pursue this plan *in cooperation with* vendors of equipment in this band which are, at this time, all *vendors of Part 15 devices*. LMSW is also engaged in discussions with CI trade associations and businesses, as well as with elected political offices dealing with CI, with regard to its ATLIS proposal and will, in future filings with the FCC, seek to have their views expressed.

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[1] LMSW suggested in its Comments that it would be helpful for Progeny to describe its plan for its LMS-M licenses.

[2] See definition in LMSW Comments.

After review of Comments in this proceeding, LMSW maintains all of the views and suggestions made in its own Comments (nothing in other parties' Comments are relevant or persuasive to the contrary: see below), but herein submits an important addition— that LMS-M licensees and Part 15 vendors and network operators (the "Part 15 Entities") should directly explore possibilities to cooperate in serving US Critical Infrastructure (and other applications). They should explore how to optimize use of this band: under LMS-M licensed operations (under rules as may be amended), by use of LMS-M along with Part 15-device operations in separate or coordinated networks, or via dual-mode end-user devices, etc. Rather than conclude that the operations and interests are mutually exclusive, a substantial attempt should be made to creatively look for synergistic relationships. Even if full agreement is not reached, as is likely, there are ample reasons, as noted below, to believe that substantial common interests and conclusions may be agreed upon, and what cannot be agreed upon can then in a more efficient fashion be contended with before the FCC.[3]

LMS-M systems may use higher power and transmitter height than Part 15 operations, and have no limitations as to duty cycle and traffic. LMS-M systems may also use lower power and lower height in cases this is warranted, either doing so under LMS-M license parameters, or via integration of Part 15 devices and modes. On the other hand, entities using only Part 15

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[3] LMSW maintains, as per Part 2 of its Comments, that the 902-928 MHz band can best serve CI if Part 15 devices (not vendors of such devices for this band) are phased out for reasons given. However, where lower power and lower height *are* a best solution, then such operations on LMS-M licenses or under Part 15 may be workable. However, even in such cases, there is no control over proliferation of use under Part 15. In the shorter term, that may be considered good for the market since end-user can use the spectrum at no cost and deploy quickly, but in the longer run, that will lead to degradation of service which is particularly a problem for CI (and any major commercial application). Thus, in sum, LMSW maintains its position that for this band to be used for CI, it is best to phase out Part 15. That would be best for these applications and markets, and thus also best for vendors of equipment for such applications.

devices and modes must stay within or amend to be within the Safe Harbor if LMS-M finds any interference, and thus, in the face of upcoming deployment of LMS-M, it is a major risk for any end-user or network operator to deploy Part 15-device systems outside the Safe Harbor. A combination of high-tier and low-tier makes sense in many cases.[4] For these and other reasons, LMSW seeks to explore with Part 15 device vendors the above matters. Such discussion, at minimum, is appropriate for commencement of communications called for under §90.353(d)'s last sentence (regarding certain "testing" by LMS-M of interference to Part 15 operations), *as interpreted by* the Commission in PR Docket No. 93-61, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, FCC 97-305 (released September 16, 1997), ¶ 69.

LMSW has commenced the above-suggested dialog with Part 15 Entities already (long before to this filing). *To further this purpose, LMSW proposes that Progeny, LMSW, and interested Part 15 Entities meet during the annual UTC meeting in Las Vegas the last week of June, 2002 (see www.utc.org).*[5]

Summary of Comments and Responses Thereto:
Rules Do Not Vest Rights in or Protect Part 15 Entities, Etc.

LMSW's goal is to serve US Critical Infrastructure and related environmental monitoring and protection, as described in its Comments. LMSW believes this presents a good business

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[4] See, e.g., Don C. Cox, *Wireless Personal Communications: A Perspective*, in *The Mobile Communications Handbook*, 2nd Ed. (IEEE Press, 1999). Mr. Cox discussed "high-tier" such as mobile systems using higher power and height as may be operated on LMS-M, as well as "low-tier" wireless, as per unlicensed low-power devices. He discussed advantages to integration of both in many cases.

[5] Some of the Part 15 Entities, being UTC members, will probably be at this meeting. LMSW will also be at this meeting. UTC represents a large share of US Critical Infrastructure entities, and is heading a coalition of CI associations (see UTC Comments in FCC DA 02-361). Thus, this meeting is an especially appropriate place for the proposed dialog.

case, and is also important for the nation. LMSW has no objection per se to Part 15 devices and vendors, and as noted above, seeks to explore synergistic ways to serve this important market. While desiring to establish this constructive approach and tone, LMSW also must object at this time[6] to Comments by Part 15 Entities as being often inaccurate under FCC rules and largely unsubstantiated.

Comments by other parties than the undersigned, except for one party discussing Amateur Radio operations, were by Part 15 Entities (the "Part 15 Commentators."). LMSW responds to the Part 15 Commentators as follows.[7]

1. They suggest that they have vested rights to the 902-928 MHz band, and are entitled to protection from interference from LMS-M, but the rules simply do not provide either.[8]

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[6] This proceeding was initiated by Progeny with no coordination with LMSW. LMSW was proceeding with certain research and planning related to its ATLIS plan described in Part 2 of its Comments in this proceeding, and when such was completed, LMSW had planned to propose rule making for the entire 902-928 MHz band. Due to the Progeny petition, LMSW had to protect its interests by submitting Comments and Reply Comments.

[7] To simply, LMSW is responding in each point made below to a number of same or similar comments from more than one Part 15 Commentator, and for this purposes, by use of "they" or Part 15 Commentators," LMSW means those parties who made the subject point to which LMSW responds. (LMSW does not imply that the Part 15 Commentator all made each of the below noted points.)

[8] See Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, PR Docket No. 93-61, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, FCC 97-305 (released September 16, 1997), ¶ 69, and ¶32, citing in footnotes 47 CFR Part 15 rules 15.5(a) and (b). See also FCC 95-41 ¶ 35, citing §15.5 (a), (b), and (c)]:

> Section 15.5 General conditions of operation.
>
> (a) Persons operating intentional or unintentional radiators shall not be deemed to have any vested or recognizable right to continued use of any given frequency by virtue of prior registration or certification of equipment, or, for power line carrier systems, on the basis of prior notification of use pursuant to Section 90.63(g) of this chapter.

In relation thereto, such parties have, at best, a voice in this proceeding to argue for what they may feel are public interests of Part 15 operations in this band, and not for their self interests since they have no vested rights and standing regarding self interests.[9] If they want vested rights and interference protection, and such standing in rulemaking and legal proceedings, they may, like anyone else, acquire such rights at FCC spectrum license auctions or on the secondary market. They can demonstrate no injury by way of proposed rule changes suggested by Progeny, or by LMSW in its Comments, since they have paid no consideration and have no vested rights and standing.

The Part 15 Commentators paid no consideration for use of the frequencies they assert rights to use protected from LMS-M. Further, none were participants in the LMS rulemaking resulting in the current rules. Part 15 entities who did comment on past rulemaking, including Metricom and Cellnet Data Systems, failed, and now a new crop of Part 15 Entities are

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> (b) Operation of an intentional, unintentional, or incidental radiator is subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by the operation of an authorized radio station, by another intentional or unintentional radiator, by industrial, scientific and medical (ISM) equipment, or by an incidental radiator.
>
> (c) The operator of a radio frequency device shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected.

[9] While comments of such parties with no vested spectrum rights have been accepted by the Commission as a practice, they do not have standing in formal legal proceedings. See, e.g., *SunCom v. FCC*, US Court of Appeals, DC Circuit, Decided July 9, 1996. Commission rules and rulemaking pertaining to Part 15 operations, including the "Safe Harbor" under §90.361, are for public interest purposes, not to benefit any vendor of or operator of Part 15 devices. Accordingly, the Commission may change rules pertaining to such Part 15 devices when in the public interest (including lessening or phasing out access to a spectrum band by such devices) and in so doing may not properly consider erroneous suggestions by Part 15 Entities as to vested spectrum rights or formal legal standing regarding rules of such spectrum based on such right.

commenting, which is indicative of the lack of viability of Part 15 systems for wide-area or wide-scale commercial applications. Indeed, also reflecting such lack of viability or even conceptual soundness, the rulemaking proceedings in this matter do not reflect the FCC considering such wide-area Part 15 system applications, only *local*-area networks or individual device operations.[10] Further, as noted in the LMSW Comments, and contrary to suggestions by Part 15 Commentators otherwise, such proceedings did indeed, in many places, explain an *essential assumption* behind the current Safe Harbor, which is that Part 15 devices would not be located, or rarely be located, in close proximity to LMS transmitters (discussed further below),[11] and resting on this assumption, the Safe Harbor established power and height limitations.

2. They suggest that the FCC carefully considered and crafted the current rules, while in fact the "Safe Harbor" rule resulted from extraordinary pressure from the Part 15 Community for such a "Safe Harbor" that does not exist in other bands where Part 15 may operate, and this Safe Harbor *is clearly defective* in the purpose for which the FCC conceded to establish it, since it only deals with antenna height and power and not proximity as well (see below and LMSW Comments) (see also below regarding another clear defect: use of AGL rather than HAAT).

3. The Part 15 Commentators do not quantify clearly the numbers and types of units actually in service in this band, what traffic is involved, where such units are in operation,

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[10] See, e.g., Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, PR Docket No. 93-61: (1) *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, FCC 97-305 (released September 16, 1997), ¶ 4, and (2) *Report and Order*, FCC 95-41 (released February 6, 1995), ¶ 34.

projections of future use, etc., nor even point to verifiable sources for the general usage quantifications some of them do give. Without this, they lack a sound basis for their claims which all rest upon such actual usage. There is no record on file with the FCC, including the OET, of such Part 15 use of this band. If, in this proceeding, the Part 15 Entities do not clearly describe, quantify, and verify their usage, then no one else can, and claims of substantial use may reasonably be called into question.

Further, the Commission noted in past LMS-M rulemaking that Part 15 (and Amateur) use of 902-928 MHz is less in LMS-M bands than in the non-Multilateration band.[12] Also, the Commission noted in such past rulemaking that Part 15 entities concerned about interference to LMS-M operations (resulting in having to stay within the Safe Harbor) may look to use of the other, non-multilateration bands.[13] They should not now act or comment otherwise. LMSW suggests that, at minimum, to be forthcoming with the Commission as this proceeding continues (assuming it does), Part 15 Commentators should disclose clearly and document their past and ongoing use of the LMS-M bands, and separately, of the non-multilateration bands.

4. They suggest that LMS-M operations may not become more than low-data-rate or niche services. In fact, there is no limitation to the amount of traffic that LMS-M systems may employ under current rules, and the FCC contemplated heavy use by LMS-M operators of the substantial spectrum allocations involved to serve a host of then-current and contemplated future

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[11] See Comments by LMSW in this proceeding wherein, in the text and in referenced sections of the attachment, LMSW cites particular language from Commission rulemaking on this matter.

[12] FCC 97-305, ¶ 64, citing *LMS Report and Order* at 4708-09.

[13] FCC 95-41, ¶ 39. (Here, the Commission also suggested that Part 15 device entities may look to the then-newly allocated 2.4 GHz unlicensed band.)

ITS applications essential for safety and efficiency of the nation's land transportation systems and uses.[14] In any case, they are entitled to no protection from LMS-M operations.

5. They oppose any liberalization of rule requirements and restrictions regarding LMS-M since that may make LMS-M more viable, yet they have no such requirements and restrictions on their operations,[15] and Part 15 vendors regularly seek and get liberalization of FCC rules for their operations (including the just adopted new rules allowing for various forms of modulation, to which no LMS-M licensee objected). The Part 15 "community's" own seeking and grant of substantial liberalization for increased viability for Part 15 operations argues persuasively against their position in this proceeding.

6. They suggest that Progeny (and LMSW) cannot suggest rule changes since the rules were known when the licenses were bought and since there are other users (themselves). But licensees regularly propose rule changes after auctions (there is hardly any licensed band

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[14] See, e.g., FCC 95-41, ¶ 18:

> We conclude not only that the 902-928 MHz band should continue to be made available for LMS services, but that the 8 MHz within the band not previously allocated to AVM should also now [be] available. . . . we have always regarded the band as a permanent home for AVM. . . . ideally suited . . . due to the propagation characteristics of the band that permit widespread coverage of a market without inordinate number of base stations. . . . This will allow development of diverse LMS services and technologies . . . and future designs may surpass the capacity of systems available today . . . . a diversity . . . to promote competition and continued technological advances. . . . The demand and need for greater capacity, capabilities, and alternatives will grow. Thus, providing additional spectrum for LMS systems within the 902-928 MHz band allows for development of the full scope of location and monitoring techniques.

[15] For example, unlike LMS-M, Part 15 operations may provide non-emergency real-time interconnection, do not have to provide multilateration location service, may provide fixed wireless applications unrelated to any location function, etc. It is at least odd that an unlicensed service with secondary use allowance in a band is far less constrained than a licensed one with the more primary rights. The purpose of "primary" and "secondary" is lost as such disparity increases, and the disparity is large under current rules with respect to many applications that have been proven viable in the marketplace to date.

where substantial changes are not proposed and made), and regular FCC review and consideration of such changes is a standing FCC policy, and Part 15 secondary use is meant to be non-interfering, regardless of how viable LMS-M becomes.

7. They write as if they do want LMS-M to become viable, or more than nominally viable, since that may cause them interference. That is tuning the intent of the rules on their head. Again, if they want primary, vested, interference-protection rights, they can go to auctions or the secondary market and buy such rights. In short, if they want systems that can be relied upon by the end users, and that are not subject to modifications (if commenced outside the Safe Harbor, modifications may be required later on), then they should not be using this band. The fact that LMS-M has not yet deployed significantly, while there are large numbers of Part 15 devices claimed as sold or in service, does not create any grounds for claims of rights or protection other than in the rules, nor a basis to diminish the valuable services the FCC intended for LMS-M and that can otherwise be served by LMS-M, including via reasonable rule changes.

8. Some Part 15 Commentators object to the Progeny proposal to lift the spectrum cap. LMSW understands that Progeny will be addressing in Reply Comments the faulty basis of such objections. However, LMSW maintains its position stated in its Comments that it is premature to lift the spectrum cap for the reasons LMSW gave. See also footnote herein leading with the reference to FCC 95-41, ¶ 18, wherein the Commission's original basis for the competition with LMS-M is set forth.

9. Contrary to suggestions by some Part 15 Commentators,[16] LMS-M has no obligation to minimize interference to Part 15 *devices*, and with regard to Part 15 *systems* (not

[16] Also, LMSW understands that Progeny will comment on this matter in Reply Comments. LMSW believes that Progeny misconstrues the burdens imposed by this rule (§90.353(d)'s last

defined by the FCC) §90.353(d)'s last sentence means only what the Commission described in PR Docket No. 93-61, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, FCC 97-305 (released September 16, 1997), ¶ 69, namely, that LMS-M must "take into consideration a goal of minimizing interference to existing deployments or systems of Part 15 devices . . . ." There are no standards for such minimizing goals. It certainly cannot mean that LMS-M may not chose the best technology and system deployment for its purposes, nor that it undertake any commercially unreasonable measures for such goal. And it only applies where there are existing Part 15 systems in a given area.

In addition, no Commentator contended directly with the rationale for LMSW's proposal that LMS-M be used for US Critical Infrastructure ("CI"). LMSW believes that the best and highest use of this band is for mobile and wide area systems for CI. While some Commentators point out that 900 MHz is better for some Part 15 links than 2.4 GHz and 5 GHz Part 15 bands, they do not argue against that fact that to optimize the propagation advantages of 900 MHz, higher power and antenna heights are needed than permitted under the Safe Harbor but which are permitted LMS-M operations.

Also, while not noted in their Comments, many Part 15 systems have not been operated within the Safe Harbor,[17] and once LMS-M systems are in operation, if harmful interference is

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sentence) and that, as interpreted by the Commission (as noted above), it does not impose nearly the burdens Progeny seems to believe is imposed. As LMSW noted in its Comments, Metricom's former CTO and LMSW agreed on what this practically mean, and were proceeding accordingly prior to Metricom bankruptcy.

[17] LMSW was informed of this by the former President of Teletrac, which tracked certain Part 15 operations including those of Metricom's Ricochet systems. Also, LMSW was informed of this by a manger of American Towers which leased antenna site space to Metricom's Ricochet systems. Further, use of portable and mobile Part 15 devices on a system such as Metricom Ricochet, or Ricochet Networks, are also subject to the Safe Harbor when used outdoors (see

found, the Part 15 device system must eliminate such or reduce operations to be within the Safe Harbor.

Regarding Amateur Radio operations, one party, REC Networks, filed opposing Comments. REC does not dispute LMSW comments that there is little use of 902-928 MHz by Amateurs for open repeaters (the principal type of Amateur radio operations in the nation), but notes that certain mountain top links are used for Amateur Television and certain point-to-point links. These video links are outside of the Safe Harbor and thus have no protection from claims of interference by LMS-M.[18] REC describes the point-to-point links as used for voice or data, but it doesn't say if this involves video or not: They may also be outside of the Safe Harbor.[19] REC notes a certain meeting with Teletrac, a former LMS-M licensee, but any such meeting and results therefrom have no effect on FCC rules or current LMS-M licensees. REC does not quantify Amateur use of 902-928 MHz except for an attached list of approximately 50 Amateur

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discussion in text below). The problem is that the network operator cannot easily or directly (short of termination of service) control their subscribers use of the devices to comply with the Safe Harbor if LMS-M experiences interference.

It is also apparent by a description of some of the Part 15 vendor products that attempt longer-range links, including for wireless Internet and point-to-point or point-to-multipoint links. While under the current rules, transmit sites with higher height-power combinations than those within the Safe Harbor are permitted, the Part 15 operator must accept the risk of being required to reduce height and power to the Safe Harbor levels if a LMSM operator experiences interference. This is a major risk, especially for links used for a major commercial or critical infrastructure operation.

[18] §90.361, first paragraph.

[19] If they are video links, they are outside of the Safe Harbor (see preceding footnote). If they are other links, and on a mountain tops as REC notes, then they are probably on a tower structure and may be at a height exceeding the Safe Harbor for a power level that is effective from such a high HAAT site for the purposes REC describes: long range links between mountain top locations.

TV Repeaters in the nation, and this list is undated and from another source than REC with no details provided to substantiate. Its other attachments are dated 1990 or earlier.

In general, LMSW does not seek at this time to lessen use of the LMS-M spectrum by Amateur operators: such use, after many years, does not appear to be substantial or a likely cause of interference to LMS-M. Rather, see Part 2 of LMSW Comments in this proceeding where LMSW suggests that Amateur operators may play a beneficial role, even via operations outside of the Safe Harbor, in various emergency communications that would be facilitated by the proposed ATLIS networks.[20]

LMS-M Used for Critical Infrastructure Warrants
Curbing Harmful Unlicensed Operations, at Minimum,
Fixing the Safe Harbor per its Intent *to Maintain* the
Fundamental Rules of Unlicensed Devices in §15.5

As noted above, Part 15 Commentators do not address or effectively refute LMSW's argument that the highest and best use for the 902-928 MHz band would be for the nation's Critical Infrastructure (including ITS and Homeland Security applications) and that for this, the higher power and height of LMS-M licenses are needed, and that control of usage proliferation and consequent system congestion/ degradation, not possible via unlicensed operations but possible and likely under licensees, is also needed. Low power, low-antenna-height devices, that can proliferate in any region with no restriction (except when system degradation/ end-use frustration level is reached) may be acceptable, or at least a fair market experiment, for LAN's and PAN's (personal area networks) for consumer and other non-mission-critical applications, but do not provide sound, stable long-term solutions for CI or even wide-area CMRS or fixed wireless for key commercial applications. If there is some success to date with such systems in

[20] This idea is consistent with Commission comments in FCC 95-41, ¶ 34.

902-928 MHz, it is because thus far there has been little LMS-M deployment and traffic, a decrease in other options, and short-term attractiveness of "free" spectrum. None of these make for a sound case for CI, including since LMS-M systems and traffic will increase greatly.

For reasons given by LMSW in its Comments, the Safe Harbor should be either eliminated or at least fixed. The fundamental basis of the Safe Harbor, upon which its protections against claims of interference are afforded, as reflected in the rule making proceedings and in the first sentence of §90.361, is that Part 15 devices not cause harmful interference to LMS-M operations. See above text and footnotes citing Commission pronouncements on this matter in LMS rulemaking and in Part 15 rules, including §15.5 (a), (b), and (c). However, the Safe Harbor pushed through by the Part 15 entities clearly fails in this regard since it deals only with power and height, with no restriction on proximity of Part 15 transmitters to LMS-M system transmitters. See LMSW Comments in this proceeding for more discussion of this.[21]

Further, not mentioned in LMSW Comments, another fundamental defect in the Safe Harbor is that §90.361(c)(2), deals with transmitter height above ground level ("AGL"), not height above average terrain ("HAAT"). Clearly, AGL is inappropriate for the above-noted

[21] See also FCC 97-305. ¶ 40: the Commission notes that the Safe Harbor will *not* be extended to LMS non-multilateration ("LMS-N") operations since they operate, relative to LMS-M operations, in much smaller areas of coverage, and thus there is far less likelihood of Part 15 and amateur devices being in the area of coverage and causing interference. Again (along many other cases of Commission comments given in LMSW's Comments), this demonstrates the above-noted assumption by the Commission that Part 15 devices will not be in close proximity to LMS-M transmitters when operating in the shelter of the Safe Harbor (with presumed non-interference), and also, generally, that there will not be a wide-area mesh of closely spaced Part 15 transmitters over major metro areas (or other areas to be served by LMS-N and LMS-M systems, which by definition and design are for covering major metro and other areas of the nation through which highways run).

fundamental basis of the Safe Harbor, founded in §15.5 (b), which is that Part 15 devices not cause harmful interference to licensed radio stations, in this case, LMS-M operations.[22]

Thus, at minimum, the Safe Harbor must be amended to add a "proximity" restriction, and to substitute an appropriate HAAT limitation for the current AGL limitation.

Also, it should be clarified as to whether mobile Part 15 devices used outdoors are subject to the Safe Harbor. It appears that they are not.[23]

As noted in its Comments, LMSW intends to propose rule making based on its CI ATLIS proposal in the near future. At that time, it may propose a phase out of Part 15 in the 902-928 MHz band, or pursuant to communications with Part 15 Entities noted above, it may have an alternative proposal if a better solution is found to optimize the band for its best and highest use for CI.

LMS-M Will Provide for Far Superior Technology and Markets—Including for Equipment Vendors— to Serve Critical Infrastructure (and Other Applications) Verses Unlicensed Operations

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[22] For example, consider a transmitter, on top of mountain or precipice, with 10 feet AGL (within Safe Harbor AGL limits to employ the full 1 watt) (assume no vegetation or other obstructions) that affords 1,000 feet HAAT with respect to a major metro area at its base: this will cause more interference over such metro area than a transmitter with 100 feet AGL on a man-made structure at the bottom of such geological "structure" (even if the 1 watt did not have to be reduced, as it severely would have to be per the Safe Harbor rule, and even if such structure location did not pose, as can be assumed, far greater radio-path obstructions to line of site transmissions to surrounding areas than the mountain-top site). Thus, an appropriate HAAT should be substituted for the current AGL in this Safe Harbor rule.

[23] First, as noted above, there would be no way for a system operator providing or using such mobile devices to control them: to keep them inside the Safe Harbor. Second, Metricom posed this question and the Commission responded that it would make no changes: see FCC 97-305, ¶¶ 30 in which the question is posed, and subsequent paragraphs where the Commission discussed its basis for no changes.

As noted above, LMSW believes that there is no situation where a market, especially CI, cannot better be served, with the subject 902-928 MHz spectrum, by having rights to higher power, higher-height base transmit sites, and the control over spectrum use, afforded under LMS-M licenses verses what is permitted under Part 15 operations (with or without any "fix" of the Safe Harbor as proposed above, and with or without any relief granted per the Progeny or the LMSW proposals). If the FCC provides reasonable relief to LMS-M, including to provide fixed wireless,[24] then the only advantage of Part 15 systems would provide is that there is no *apparent* and immediate cost[25] for spectrum usage and there may be quicker time to deployment. But this is more than offset by increased cost of coverage (using low power and height) and the longer-term uncertainty of spectrum congestion and system degradation via uncontrolled potential proliferation of Part 15 systems and devices.

Part 15 Vendors and LMS-M Licensees Should Explore Cooperatively Addressing Critical Infrastructure in the 902-928 MHz Band

LMSW believe that there is much to be mutually gained by LMS-M licensees and Part 15 Entities discussing, as noted above, various ways to work together to optimize for the long run the use of this valuable spectrum. Most Part 15 Commentators are serving CI applications. LMSW would like to explore building on their experience and enhancing their technology and

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[24] In its Comments, LMSW noted other relief it proposed as appropriate, either in its Part 1 or Part 2.

[25] It is not at all clear that no cost of spectrum translates into less cost of operational (spectrum enabled) wireless products. If spectrum use is free, a vendor of unlicensed spectrum may price its products accordingly, adding a premium to what it or a competitor may charge for products on licensed spectrum. Naturally, the end-user market will look at the combination of spectrum and product pricing (and from that point, adjust for other differences, including the less immediate costs to be later borne or at least clearly risked: see text).

products to take advantage of LMS-M for the shared goals of serving CI. By such communications, LMSW also wants to minimize premature contention before the FCC.

Thus, LMSW asks Part 15 Entities to consider LMS-M as an opportunity[26] and potential partner, not an adversary, and asks Progeny to consider this approach as well. *Part 15 Entities: Please see above regarding proposed meeting in late June.*

The FCC Should Either Lift all Restrictions in LMS-M or Optimize Rules for Critical Infrastructure as per the ATLIS plan

In its Comments, LMSW suggested its ATLIS plan as the highest and best use of 902-928 MHz. As noted therein, LMSW will formally propose rule making consistent with this plan in the near future.

With regard to what Progeny has proposed and Comments thereupon, LMSW suggests that the FCC should either consider LMS-M spectrum as to be used for whatever purposes and services licensees may want to pursue, and for any class of end-users, in which case it should remove all restrictions other than those imposed upon other large-band services opened up to any use and end-users,[27] or as LMSW proposes, *it should, using its new Spectrum Task Force and other resources, consider a highest and best use of LMS-M, for the nations' CI and environmental resources*, and optimize the band for such purposes along lines LMSW proposed in Part 2 of its Comments. LMSW believes the latter is the far better choice.

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[26] Most of the LMS Entities are equipment vendors or wireless system operators. Part 15 mode is merely one way to access their markets, not an end in itself. LMS-M licensed mode, as noted herein, may present better, longer-term opportunities for such entities and solutions for their customers. If combination mode or dual-mode is best, that also can be explored.

[27] Along with any conditions it finds appropriate regarding Part 15 and Amateur operations, at least involving "fixing" the Safe Harbor as discussed above.

Respectfully submitted,

Warren Havens

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D.B.A., LMS Wireless

June 3, 2002