RECEIVED
APR - 9 2002
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
DOCKET FILE COPY ORIGINAL
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of	)	
Part 90 Rules Governing	)	
Location and Monitoring Service to	)	File No. _____
Promote Greater Utilization to Serve	)	
Critical Infrastructure (including ITS),	)	
Public Resources and Facilities,	)	
And Homeland Security	)	

To The Commission

Petition for Rule Making

(the ATLIS 900 MHz Petition)

Based on the LMS Wireless Proposal
for a nationwide multi-band

Advanced Technology Land Infrastructure Service
– ATLIS –

Warren C. Havens and
Telesaurus Holdings GB, LLC
D.B.A., LMS Wireless

2509 Stuart Street
Berkeley, CA 94705

Phone: 510-841-2220
Fax: 510-841-2226

Dated April 9, 2002

No. of Copies rec'd 0+4
List ABCDE
WTB
02-109

Contents

Exhibits

Introduction:
Petitioner, Purposes, ATLIS, Stakeholders, Summary

1. Petitioner and Purposes:
   902-928 MHz LMS Rule Making, and
   Multi-Band 4G ATLIS Concept Forum
   Supplements to this Petition to be posted at www.lmswireless.com.

Petitioner. Petitioner, Warren C. Havens and Telesaurus Holdings GB LLC (together doing business as "LMS Wireless, "LMSW" herein) hold LMS geographic licenses for the A-Block, a 6 MHz block, covering approximately 78% of the US population, acquired at two FCC auctions. (See Exhibit 1 below.) LMSW also holds or has interest in other wireless licenses: geographic VPC (156/162 MHz) and 220-222 MHz licenses, acquired at four FCC auctions, covering the western half of the nation, as well as multi-site AMTS 217-222 MHz licenses for major areas in the Rocky Mountain states. (See Exhibit 1 below.)

Proposed Amendments Purpose. This Petition proposes major amendments to the Commission's Rules for the Location and Monitoring Service for the entire 902-928 MHz band (for the three spectrum blocks, 14 MHz in total, currently assigned to "Multilateration" licenses for wide-area mobile-services, as well as the other 14 MHz currently assigned to "Non-Multilateration" licenses for short-range communications along highway, railways, etc.)[1] These proposed amendments are designed to allow LMS to be a viable service, in particular, to form the core-spectrum basis of ATLIS, noted next.

Stakeholder Forum Purpose. This Petition (the "ATLIS 900 MHz Petition") is also meant to commence Commission rule making that will provide a forum for parties with existing

[1] The 2-MHz-wide "Block B" is shared by Multilateration and Non-Multilateration. Each is assigned 12 MHz exclusively, and 2 MHz shared: 26 MHz combined total.

or potential participation in the 902-928 MHz band (including spectrum licensees, users, and equipment providers) ("Stakeholders," described below) regarding the ATLIS proposal.[2]

Supplements to this Petition will be posted at www.lmswireless.com. While this Petition is the official document for FCC purposes, LMSW will present supplementary information relating to this filing, including the ATLIS proposal, at the above-noted web site.

2. ATLIS:
Advanced Technology Land Infrastructure Service:
902-928 MHz Core:
Summary, and Related FCC Filings

LMSW proposes *permanent dedication, for primary exclusive*[3] *use*, to the nation's critical infrastructure ("CI") industries, including roadway,[4] rail, utilities, pipelines, airports, etc., as well as to public facilities, lands, and environmental resources (together, "Critical Infrastructure and Resources," or "CIR"), of (i) all of the 26 MHz in the 902-928 MHz Location and Monitoring Service ("LMS") band, (ii) most of 6 MHz in the 216-222 MHz band, and (iii) all of the 75 MHz in the 5.9 GHz ITS band, along with some of the 4.9 GHz federal transfer band, for nationwide multi-band "Advanced-Technology Land Infrastructure Service" or "ATLIS" (the "ATLIS Proposal"). *This ATLIS 900 MHz Petition concerns the 902-928 MHz component of this ATLIS Proposal.*

---

2 LMSW understands that the FCC has received another petition for rulemaking concerning the 902-928 MHz band, from Progeny LMS, LCC ("Progeny"), which will be placed on public notice with this ATLIS 900 MHz Petition. LMSW and Progeny have not coordinated their respective petitions, but have exchanged initial views on each other's petitions.

3 In this regard, with respect to the 902-928 MHz band, by "primary exclusive use" we mean of the use rights assigned to the LMS licenses under this ATLIS Petition, which does not propose to eliminate all other uses of this band.

The spectrum proposed is largely available at this time, including the vast majority of the 26-MHz wide 902-928 MHz band which would provide the core spectrum for ATLIS. With reasonable changes in FCC rules for these bands, well within precedent, this ATLIS Proposal is entirely feasible and would provide most if not all of the spectrum much needed for CIR.

This need is well documented, including in (i) FCC Docket DA 02-361, in the matter of NTIA Docket 0010327080-1080-01, regarding the NTIA Report on Current and Future Spectrum Use by the Energy, Water, and Railroad Service Industries, and (ii) various publications by the Intelligent Transportation Society of America (ITS America), e.g., see Exhibit 7 below.

The security and efficiency of the nation's interconnected nationwide Critical Infrastructure and Resources, CIR, is central to "Homeland Security." A coherent wireless service employing advanced technology dedicated to CIR and interoperable with next-generation public safety wireless—as per the ATLIS Proposal— is essential for both Homeland Security and the advancement of CIR, which together provide the foundations of the economy, environmental protection, and quality of life.

In the last two years, LMSW (Warren C. Havens and Telesaurus Holdings GB LLC) have submitted proposals to the FCC in dockets involving the ITS 5.9 GHz and the 217-222 bands setting forth the central ideas in what is herein called ATLIS.[5] (The Commission has yet to

---

[4] Primarily for Intelligent Transportation System ("ITS") applications, both public, private, and shared. The US roadway system is one of the most extensive and important infrastructure networks. All of the nation's critical infrastructure components are interrelated.

[5] Comments and/or Reply Comments in FCC dockets: (i) DA 02-361noted above, regarding the NTIA study on spectrum needs of Critical Infrastructure industries, (ii) DA 01-686 regarding the 75-MHz-wide 5.9 GHz band allocated for Intelligent Transportation System ("ITS") uses, (iii) PR Docket No. 92-257 regarding 217-220 MHz AMTS (Automated Marine Telecommunications System) Service (for maritime and land services), and (iv) WT Docket No. 02-08 regarding "Reallocation of the . . . Government Transfer Bands" including spectrum in 216-220 MHz.

decide upon the issues in these dockets.) In addition to this ATLIS 900 MHz Petition, LMSW intends to submit to the FCC and the NTIA in this year 2002 other requests needed to enable and facilitate the ATLIS Proposal, including: (i) to the FCC, a proposal for rule making in the 217-225 MHz bands, and a proposal concerning licensing and services in the 5.9 GHz ITS band, and (ii) to the NTIA, a proposal concerning amending certain Federal use rights of the 902-928 MHz band to enable ATLIS and to secure benefits thereunder for Federal agencies.

In this regard, while we outline herein this planned request to the NTIA for purposes of a complete outline of the ATLIS Proposal, such Federal use rights are outside the scope of a petition to the FCC. LMSW will seek comment by NTIA and various Federal agencies on this ATLIS 900 MHz Petition to the FCC for purposes of developing a feasible proposal to the NTIA (see Stakeholders, below).

3. Stakeholders:
Current and Potential Stakeholders:
Contacts to Date and Plan for Participation

In the past month, LMSW has presented, and had or invited communications concerning, its outline of the ATLIS Proposal contained in its Reply Comments in DA 02-361noted above (regarding the NTIA study on spectrum needs of Critical Infrastructure industries) with representatives of a large percentage of entities with current or potential participation in the subject matters of the ATLIS Proposal: see footnote.[6]

---

[6] (i) CI Associations: (a) Energy and Water: United Telecom Council (UTC) (for itself and representing the Critical Infrastructure Communications Coalition), National Rural Telecommunications Cooperative (NRTC), American Petroleum Institute. (b) Transportation: Intelligent Transportation Society of America, American Automobile Association (AAA), American Association of State Highway and Transportation Officials (AASHTO); Association of American Railroads, ARINC. (ii) Spectrum holders in the ATLIS-target bands: Progeny LMS LLC, FRC Inc., NRTC. (iii) Public safety: APCO International, AASHTO, AAA. (iv)

Via the forum provided by the FCC placing this ATLIS 900 MHz Petition on Public Notice for comments, and via further direct communications, LMSW will continue to seek participation by Stakeholders in the issues presented herein.

Also, as noted in Section 8 below, LMSW will separately seek amendment of Federal use rights in the subject 902-928 MHz band via communications with and requests to NTIA and Federal agencies.

4. Petition Summary

A summary is provided by the extensive section headings in the table of Contents above.

Equipment and Service Providers: SAIC, Motorola, Microwave Data Systems, Nortel-EADS, Tait Electronics, Industrial Telecommunications Association. (iv) Federal Entities (concerning use rights to 902-928 MHz, and users of ATLIS as planned): NTIA (including IRAC), NOAA, EPA. (v) DARPA: the Advanced Technology Office's "XG" Next-Generation 4G wireless technology project. (vi) the American Amateur Radio League.

Background:
902-928 MHz Band

5. Background: 902-928 MHz: LMS and Other Users

a. 902-928 MHz LMS:
LMS Multilateration and Non-Multilateration
LMS History and Purpose

The LMS (Location and Monitoring Service) is composed of Multilateration and Non-Multilateration licenses described and regulated in Subpart M of Part 90 of the Commission Rules. See Exhibit 1 below. Site-based Multilateration license systems involve very wide-area-coverage for location and monitoring of (and related voice and data communications to) vehicles, persons, and assets. They were attempted in past years but did not succeed.[7] Non-multilateration license systems are used successfully at a substantial number of locations throughout the nation, mostly along roadways for automatic toll collection from vehicles equipped with a system "tag" or transponder, and along railroads for identification of rail traffic so equipped. They typically have a very short range of under several hundred yards. Accordingly, the Non-multilateration spectrum involved is used in a very small percentage of the nation's urban and rural areas.

---

[7] Teletrac was the only company that operated Multilateration systems providing service to the public. Teletrac deconstructed most of these systems, returned to the Commission the licenses involved, transferred other licenses to Ituran (who had supplied the LMS equipment to Teletrac), filed for bankruptcy, and was acquired by Traffic Masters. Traffic Masters is maintaining a small number of Multilateration systems, but is primarily using GPS units along with CMRS wireless (such as CDPD and Cellemetry) for its location based wireless services in the United States. Teletrac cancelled its equipment contract with Ituran and this equipment is no longer being marketed, at least in the United States. The technology involved is not viable and is

As described throughout PR Docket No. 93-61 (the "LMS Docket"): LMS was established for a wide range of Intelligent Transportation System ("ITS") wireless applications. These include uses by the vehicular fleets and mobile workforces of utilities, railroads, pipelines, and other "critical infrastructure" entities, as well as Federal and other public entities. LMS rules do not restrict LMS operations to ITS applications, but require "multilateration" (certain network-based) location services, and allow certain voice and data service related to such location service (see Exhibit 1). Including Telematics applications, the ITS market and location-services markets, while still in early stages, are projected to grow considerably and eventually involve a majority of all wireless users, individual and enterprise. As described in the LMS Docket, LMS 900 MHz spectrum is ideal for the wide-area coverage needed for such services, as noted by the FCC in LMS rulemaking.

b. 902-928 MHz Other Users:
Federal Radiolocation and ISM,
Federal Fixed and Mobile,
Amateur,
Part 15

See Exhibit 1 below for rules concerning these users, and summaries of the rules regarding the hierarchy of these users, including the Part 15 "Safe Harbor."

As noted in Section 8 below, and further discussed in Exhibit 2 below, there is very light use by all of the above classes of uses except by Part 15 devices.

Part 15 devices used in this band are primarily consumer devices such as cordless phones, along with some wireless LANS, and some point-to-point and point-to-multipoint

---

limited to location and status messaging. No other technology or equipment is currently available for LMS Multilateration systems.

systems. As discussed below, there is a migration of Part 15 devices out of this band to the wider 2.4 and 5 GHz UNII bands.

The Problem in 902-928 MHz:
Its Background, and Its Assessment in Current Environment

6. Problem: Spectrum Encumbrances:
Other-Use Interference Cloud and Rule Restrictions
Force Non-Competitive Niche Technology for Mirage Market

a. Other-Use Interference Cloud, and Study of Shared-Spectrum System-Deployment Battles

While, as noted above, use is slight by the other, non-LMS Licensee, entities and devices, their potential use creates a cloud of unpredictable and possible major interference. This impedes development of LMS Multilateration technology, equipment, systems, and services.

See Exhibit 6 (extensive confidential proprietary materials filed concurrently with this Petition filing under §0.459): LMSW commenced and co-funded with Metricom and joint study to simulate the interference between its Ricochet network of Part 15 devices and a LMS Multilateration network, assuming various types of Multilateration technology and architecture was employed. This study was suspended due to the bankruptcy of Metricom. Before suspension however, much of the work was completed, and it revealed, as was expected, that the higher-power higher-height (network transmitters' height) LMS network could be constructed to overpower the lower-power Part 15 network. However, the Part 15 network would use more closely spaced transmitters and could decrease this spacing to compensate as the LMS network was built out. In turn, the LMS network could decrease its transmitter spacing and increase power (up to permitted levels)—and so on, back and forth. This would be a costly exercise for both sides, very possibly leading to commercial failure due such costs, time delays, and poor and disrupted quality of service, and unpredictability of the other user.

b. Rule Restrictions: Requirements, Prohibitions, and Lack of Clarity

The current rules for Multilateration LMS require use of a particular type of location technology (see §90.7) to provide required location services, allow only certain voice and data communications related to such location services, prohibit interconnection except in emergencies or via store-and-forward methods, etc. These are severe impediments for any wireless service, including a service that is intended to provide an array of ITS applications.

Moreover, the current rules are vague as to the meaning of both these restrictions and the permitted services. While vague governmental rules may be interpreted in favor of the subject, when they form the basis of a business, such lack of clarity poses a further hindrance.

c. Forced Non-Competitive Niche Technology and Networks

Due to these severe rule requirements and restrictions, there is no technology and equipment available. See Exhibit 6 as to details why, and extensive due diligence by LMSW to assess technical solutions for LMS Multilateration. For several years, LMSW has had substantial discussions with most first-tier wireless vendors and many others and none were willing to undertake the work needed develop the technology and products.

Due to such rule requirements and restrictions, and to the need to build-in powerful interference excision techniques (to withstand interference by the noted other users), new techniques not employed in any commercial wireless technology are needed. (Again, see Exhibit 6 for details.) No vendor is willing to undertake such work since, with such unfavorable rules and other-user interference issues, the products that would be produced and restricted services they would provide can not be reasonably projected as competitive, even with the large theoretical capacity of networks employing the substantial-size LMS Multilateration spectrum.

d. Mirage Market: ITS Location and Monitoring a Mirage Market; Critical Infrastructure Wireless (including ITS) a Bedrock Market

The "location and monitoring" market, even the entire ITS wireless market, is a mirage market in that it involves still-early-stage evolving definitions and applications. There are few entities that need, per se, only location and monitoring, or ITS, applications. Any market is ultimately entities who will transact business, not applications.

On the other hand, the "Critical Infrastructure and Resource Entities" defined in Section 8 below, are a bedrock market in that they have well clear need for more spectrum, a broad array of particular wireless services, and advanced wireless technology to deliver such services. This need is discussed in Exhibit 2 and 7 below.

e. Result: Waste of Excellent Band in Mobile Spectrum Drought

As a result of the above-noted restrictions and encumbrances, the 902-928 MHz spectrum is largely wasted and will remain so absent rule changes as proposed in section 8 below. This is an especially great waste considering the well-know spectrum drought in the ranges suitable for wide-area mobile systems.

In this regard, Part 15 devices, even networks of them, do not need the propagation capabilities of 900 MHz. The are better suited to the 2 to 5 GHz ranges, and in fact, are migrating there. See Exhibit 5. It is a waste to encumber 900 MHz that is ideal for wide-area mobile applications with Part 15 rights and devices.

7. Assessing the Problem and a Solution in the Current Environment: FCC, LMS, Other (Non-LMS) Users, Market and Technology, NTIA and Public Wireless Exigencies

a. FCC Environment Favorable: Flexibility, Parity, 4G, Critical Infrastructure, Homeland Security, Secondary Markets, Priority and Interoperability, Market Rules but US Infrastructure and 4G Require a Plan.

The above-noted Progeny petition addresses FCC regulatory flexibility and parity as a basis for appropriate changes in rules for LMS Multilateration licenses. I refer to their presentation in these matters. The other FCC regulatory principals and interests noted above are well known and need not be discussed here, except to note that, as is described herein, this ATLIS 900 MHz Petition and the multi-band ATLIS Proposal are justified by and serve all these principals and interests.

"4G" wireless technology is becoming an important interest of the Commissioners. It is critical for the US Communications market as well as national defense and Homeland Security. 4G as a main component of ATLIS is discussed in Exhibit 2. LMSW has discussed the ATLIS Proposal with the head of the DARPA (Defense Advanced Research Projects Agency) 4G development project and head of the FCC Spectrum Task Force. The idea being considered is the use of LMS spectrum and the mission-critical applications targeted by the ATLIS Proposal as a test bed for the DARPA 4G technology.

While generally the market should determine the highest and best use, thus calling for broad regulatory flexibility policy, when it comes to critical infrastructure and resources and Homeland Security, there needs to be a plan, and the plan should be secured. The ATLIS Proposal is a major effort in this regard, and the rule changes outlined in Section 8 are needed to enable this proposal.

b. Other Non-LMS Use Slight/ Migrating: Slight Past Federal and Amateur Use, and Migration Off by Part 15: Show Lack of Need and Yet Cloud Best Use of Spectrum

As noted elsewhere herein, there is slight use by Federal entities of 902-928 MHz. See section 8, last item. See also Exhibit 2.

There is also slight use by Amateur Radio operators. For example, at the AARL website, and in the popular Amateur Radio magazines and product guides, there is very slight mention of this band, and in publications listing all Amateur open repeaters, in most states, out of hundreds of repeaters listed, there are none in this frequency range, and in the minority of states where there are any, there is only one or a few.

As noted above, Exhibit 5 discusses trends by Part 15 devices off this 900 MHz band. With Bluetooth, Wi-Fi, Home RF and other advanced Part 15 technologies all made for the 2.4 band and the 5 GHz UNII bands (and not this 900 MHz band) and with the inevitable spread of LMS systems in this 900 MHz band, the trend for Part 15 devices and applications will be increasingly off of 902-928 MHz.

c. LMS 26 MHz Available: Petitioner's and Other's LMS Multilateration Spectrum Not Developed; and Non-Multilateration Spectrum Used Only in Microcells: 26 MHz Coordinated Service Possible and Best Spectrum Use: Feasible Under Current Rules but Far Superior Under Proposed Rules

The LMS Multilateration spectrum, thought almost fully licensed, is not developed at all (except, as noted above, in a few site-based systems). It is thus available for the ATLIS Proposal: If there is sufficiently positive response to this proposal, including this ATLIS 900 MHz Petition, then, while LMSW can only speak for itself, the other licensees should also take interest.

In addition, as noted above, the Non-Multilateration spectrum (see Exhibit 1, first page) is used in only a very small percentage of urban and rural land mass of the nation. It is thus available for the proposed spectrum sharing described in item 7 of section 8 below, by which LMS Multilateration licensees would be able to use Non-Multilateration spectrum for wide-area systems "in exchange for" for making Multilateration spectrum available for Non-Multilateration systems.

d. State of the Market and Technology Demand ATLIS Approach; LMS as Core ATLIS Spectrum, Other Targeted Spectrum Available; Critical Infrastructure Wireless Demands 4G (More than Does CMRS); LMS as Ideal Test-Bed for DARPA 4G Technology; 4G Needed by US

See Exhibit 2: while the ATLIS Proposal proposes use of much of 216-225 MHz and the 5.9 GHz ITS spectrum for ATLIS, the 902-928 MHz spectrum would provide the essential core spectrum. As noted in Exhibit 2, this other spectrum is largely available at this time, and if the ATLIS Proposal gains sufficient support among the FCC and the Stakeholders (see above), then securing this other spectrum is likely.

Critical Infrastructure and Resource Entities (defined in Section 8) need the capabilities and security of 4G wireless technology more than does the general consumer market.

See section 8: footnote regarding the greater range of services required by these entities. This full range needs 4G to implement well.

As noted above, "4G" wireless technology is becoming an important interest of the Commissioners. It is critical for the US Communications market as well as national defense and Homeland Security. 4G as a main component of ATLIS is discussed in Exhibit 2. LMSW has discussed the ATLIS Proposal with the head of the DARPA (Defense Advanced Research Projects Agency) 4G development project and head of the FCC Spectrum Task Force. The idea being considered is the use of LMS spectrum and the mission-critical applications targeted by the ATLIS Proposal as a test bed for the DARPA 4G technology. Europe is generally ahead of the US in wireless, including via its highly successful GMS, and in terms of 3G. The 902-928 MHz band, if suitable mended as proposed herein, can provide excellent undeveloped soil for testing and cultivating 4G in the US, bypassing 3G which is designed for the general consumer market.

e. Conclusion: ATLIS Warranted, Calls for LMS Rules Amendment

These are presented in the following section.

Solution for 902-928 MHz:
Amend LMS Rules to Enable and Test in the Marketplace ATLIS: Advanced Technology Land Infrastructure Service

8. LMS Rules: Specific Proposed Minimum Amendments

Introductory notes: (i) Current principal LMS rules (for licenses of Multilateration and Non-Multilateration LMS spectrum, together encompassing 902-928 MHz) are set forth in Exhibit 1 below. (ii) The below numbered items present the concepts and basic substance of proposed new rules for all LMS Licenses (each, below, a "License"). Terms and definitions given below, while intended as adequate to present the proposed concepts, would need additions and amendments to constitute suitably precise and enforceable rules to implement such concepts.[8]

1). Primary Use Obligation: LMS licenses, for their "primary use," "*restricted to serve*" Critical Infrastructure and Resources: 902-928 MHz LMS licenses, currently allocated for Intelligent Transportation System (ITS) applications (the transportation sector of US critical infrastructure), would be permitted to serve, and for its "*Primary Use*" (defined below) "*Restricted to Serve*" (defined below) any or all "*Critical Infrastructure and Resources Entities*" ("*CIR Entities*," defined below).

"CIR Entities" is defined as:[9] private and public entities directly providing or managing:

---

[8] LMSW intends to comment on such implementing language within the rule making proceeding requested by this ATLIS 900 MHz Petition after substantial comment from the Stakeholders and other interested parties.

[9] LMSW requests comments by Stakeholders on an appropriate precise definition.

(i) Critical Infrastructure (a) *Transportation*: roadways, railroads, airports and other transportation terminals, and other transportation infrastructure, and (b) *Energy and Water*: utilities and pipelines.

(ii) Critical Resources: (a) *public facilities*[10] including entertainment, sports, and convention facilities, (b) *public lands* including Federal USFS, NPS, and BLM, and State and Local equivalents, and (c) *environmental monitoring and protection* programs of Federal, State, and local government agencies and private non-profit entities.

"Restricted to Serve" any or all CIR Entities means limiting use, for the Primary Use (defined below), as follows: either

(i) The licensee may be a CIR Entity using the spectrum for its internal purposes, or

(ii) The licensee may be non-CIR entity such as LMSW who may use any legal instrument to (a) provide use rights to the subject 902-928 MHz LMS spectrum to CIR Entities for their internal use, including via spectrum leases, band-manager type sub-licensing, or rights defined in a joint-venture or build-lease contract (that may also include equipment vendors and network integrators), or (b) provide wireless services to a CIR Entities on dedicated or virtual-private networks employing the subject 902-928 MHz spectrum.

"Primary Use" means either:

(i) With respect to the a License, greater than 50% of the "*License Spectrum Capacity*" (defined below) is used by or reserved for use by CIR Entities; or

(ii) With respect to an operating system using the License spectrum, greater than 50% of any "*License System Capacity*" (defined below) is used by or reserved for use by CIR Entities.

---

[10] Public facilities as listed may be considered infrastructure more than resources. But we include them in "Critical Resources" since by that term we mean publicly owned.

"License Spectrum Capacity" means:

(i) For a geographic-area License,[11] the "*License MHz-Pops*" calculated as the total population in the License's geographic area multiplied by the amount of spectrum authorized for use by the License. (For example, a License for 6 MHz of spectrum for a geographic area containing one million residents would have a License Spectrum Capacity of 6 million MHz Pops.)

(ii) For a site-based License,[12] for each site, the amount of spectrum authorized for use at such site.

"License System Capacity" means:

(i) For a geographic-area License, the "*System MHz-Pops*" calculated as the aggregate of the MHz Pops of each "*Component Site.*" "Component Sites" means the System's fixed-location transmitters communicating with end-user terminals. The MHz Pops for each Component Site is the population in its coverage area[13] (area of acceptable radio coverage) multiplied by the amount of spectrum used at that site.

(ii) For a site-based License, for each site, the amount of spectrum authorized for use at such site.

---

[11] The current Multilateration licenses issued via auctions are "geographic" licenses for "Economic Areas.

[12] Pre-auction Multilateration licenses and current Non-multilateration licenses are site based licenses.

[13] This is easy to determine using GIS software available at reasonable cost, and such calculations are required in other FCC wireless services. For example, in the AMTS service, an applicant must calculate the number of TV households within certain coverage contours of a proposed AMTS station. (Havens has submitted many AMTS applications demonstrating such determinations.)

2). Secondary Use Allowance: Subject to fulfilling the above Primary-Use condition, and the below Public-Safety priority condition, LMS Licenses would be allowed to serve non-CIR entities ("Secondary Use"). (See next footnote.)

3) Public-Safety Priority:[14] LMS Licenses would be obligated to provide priority access to Public Safety entities in emergencies. To be defined: To involve priority access to all LMS License systems, other than (i) reserved defined emergency-condition use by the CIR Entities, and (ii) access to Non-Multilateration systems used for identification of passing vehicles and similar purposes not involving communications of the type used by Public Safety entities (basically, two-way, dispatch, and broadcast, voice, data, and video).

4) Any class of service. Any type of mobile or fixed wireless service would be permitted, including any "traffic class."[15] No requirement for any class of service, including (as is currently required) location services.[16]

---

[14] Public Safety entities may also be served under the Secondary Use Allowance, providing to them non-emergency services to supplement their internal wireless systems, for redundancy, additional coverage (in cases), interoperability with CIR Entities.

[15] Including the four classes defined for UMTS. See Holma and Toskala, *WCDMA for UMTS* (Wiley, 2001), p. 12: (1) Conversational" class (real-time two-way voice and videotelephony, etc.), (2) "Steaming" class (one-way streaming multimedia), (3) "Interactive" class (two-way: SCADA, interactive work projects, Web browsing, etc.), and (4) "Background" class (one- and two-way: background download and receipt verification of email, meter reading, Telemetry, etc.).

In addition to what is planned for UMTS, ATLIS would include the additional classes for which mission-critical dispatch mobile communications are designed, and those needed for various ITS applications: (5) "Broadcast" class (broadcast by a supervisor or other person to a work groups, or to all users on the system in emergencies), (6) "Dispatch" class (instant key-up, two or more persons), (7) "Location" class (event-based [emergencies, etc.] as well as constant or periodic [Fleet location, asset tracking, etc.], network based and/or GPS-mobile-unit based).

5) Interconnection via the Public Switched Network would be permitted, as well as non-interconnected service (which is currently allowed) including via the Internet or other public or private Internet-Protocol-based networks.

6) Part 15 phased out of 902-928 MHz. No new consumer devices would be permitted on the market after the end of year 2005, and no external Part 15 systems operations (via fixed antennas outside buildings or intended to transmit outside) would be permitted after end of year 2005.

7) LMS Multilateration and Non-Multilateration Spectrum Sharing: Block-A and Block-C LMS Multilateration licensees would be permitted to use in their operating systems covering a particular area (the "Area"), a quantity of Non-multilateration spectrum (the "Quantity"), subject (i) to allowing use of the same Quantity of their Block-A or Block-C spectrum for use by any Non-multilateration systems in the same Area, and (ii) to protecting such Non-multilateration system from harmful interference by their system, and accepting any harmful interference from such Non-multilateration system.

8) ISM devices. No change in current rules proposed. (If operated under FCC rules, these devices would virtually never cause interference to LMS operations as planned by LMSW, nor would LMSW-planned LMS operations cause interference to such ISM devices.)

9) Amateur status, comment sought. Under current rules, amateur radio license operators may use 902-928 MHz spectrum subject to accepting interference from and not

---

Petitioner submits that Critical Infrastructure and Resource entities need the first four classes *more than* the general public, needs the other classes as well, and should have them all provided via an integrated service and network.

[16] While location services will in many or perhaps most cases be desired, the mix of services should be up to the CIR Entities being served, and in some cases, such as some rural applications, there may not even be a demand for mobile services.

causing interference to[17] operations of Federal systems, ISM device, and LMS systems. There has been very slight use of this band by Amateurs. Petitioner seeks comments by the Amateur Radio community on the matters of this petition, including (i) the extent of their current and predicted use of this band, and (ii) whether they may play a contributing role, under current *or amended* Part 97 rules, in the proposed ATILS service to Critical Infrastructure and Resource Entities under rule changes proposed herein.

For example, Amateurs play roles, via standing arrangements (ARES, RACES, etc.) or ad-hoc arrangements in civil defense emergencies and other public-service matters. Given the proposed primary use of this band for Critical Infrastructure and Resource applications (both critical day-to-day and emergency applications), and the wealth of amateur radio operators across the nation, LMSW believes it is worth exploring whether amateurs may play supporting roles in such ATLIS services, at least in certain times and places, and whether such roles warrant permitted operations outside of the current Safe Harbor (see preceding footnote) or any changes in Part 97 rules.

10) Technology, modulation, channelization: Any would be permitted, subject to protecting adjacent-band licensees. Such protection should be re-examined.

11) Fixed-site Transmitter Power: Current power limits would be increased to an appropriate level to best accommodate the other changes proposed herein. For comment by Stakeholders.

---

[17] There is a "safe harbor" setting forth technical conditions under which Amateur radio operations (and Part 15 devices) may operate and be considered as not causing harmful interference to LMS Multilateration operations.

12) Spectrum cap: In the context of the rule changes proposed herein, which would (i) result in ATLIS, a unique radio service for Critical Infrastructure and Resources, and (ii) allow more spectrum for wide-area licenses (currently called "Multilateration" licenses, although as proposed above, the requirement to provide "multilateration" location service would be eliminated), it should be examined what spectrum cap, if any, there should be for wide-area LMS licenses.

An additional factor is consideration of the ATLIS Proposal's plan to include much of the 216-225 MHz bands and the 75-MHz-wide 5.9 GHz ITS band in multi-band ATLIS networks and services.

LMSW also notes that currently, LMSW and Progeny LMS LLC hold the vast majority of all LMS Multilateration licenses (especially if measured by licenses' population). Thus, if they so chose, for good cause, they could seek a waiver of the current spectrum cap (8 MHz per Economic-Area ["EA"] license area) cap for any EA in which they both hold licenses. And if they do not so choose, there may be insufficient cause for a change in the spectrum cap.

LMSW will comment further on this issue after comments by Stakeholders on the ATLIS Proposal in the expected forthcoming 902-928 MHz rule making proceeding.

12) Not for FCC action, but *for a separate proposal to NTIA*: (i) New, *additional* Federal primary-use rights on major Federal lands and facilities, (ii) coupled with Federal use caps in geographic areas outside these major lands and facilities.

(i) Use cap: A use cap would be established based on the existing and current projected Federal uses. There appear to be few uses outside of major Federal facilities, and little use even at such

facilities.[18] The purpose of the cap would be, while preserving actual and projected uses (the "Preserved Uses"), to lift the cloud created by the current nationwide (anytime, anywhere) Federal *radiolocation* primary-use rights in 902-928 MHz and the Federal co-equal use rights in this band with LMS licensees, and by such, to assure availability of this spectrum and to make it available on a primary basis, away from the areas of such Preserved Uses, to LMS operations for Critical Infrastructure and Resource Entities, *including Federal entities*.

(ii) New rights: "In exchange" for this cap, for non-radiolocation wireless (where currently Federal rights are co-equal with those of LMS licensees) the Federal entities would be moved up to primary-use status, above LMS licensees, for use on their major lands and facilities (to be defined). As noted above, (i) they would also retain primary-use status for radiolocation under the noted cap.

[Execution follows.]

---

[18] Federal use has been very light: some Navy ship radar, some land-based radar, and some land-based fixed and mobile uses. The Federal entities with rights to use LMS spectrum submitted no comments in past LMS rulemaking, reflecting their light use in this band. Petitioner was informed by NTIA recently that it is not getting from agencies with authorizations to use 902-928 MHz much information on actual use (although such use is supposed to be reported), and to obtain such information may require agency-by-agency inquiry.

Respectfully submitted,

Warren Havens

Warren C. Havens,
for himself and as President of
Telesaurus Holdings GB, LLC

2509 Stuart Street, Berkeley, CA 94705
Ph: 510-841-2220 Fx: 510-841-2226Holdings GB LLC

April 9, 2002

2509 Stuart Street, Berkeley CA 94705

Phone (510) 841 2220 Fax (510) 841 2226