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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

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September 12, 1994

DOCKET FILE COPY ORIGINAL

EX PARTE

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: PR Docket No. 93-61
Automatic Vehicle Monitoring Systems

Dear Mr. Caton:

On Friday, September 9, 1994, Gary Green, Michael Pettus and George Flammer, of Metricom, Inc., and Larry Solomon and I, of this firm, met with Ruth Milkman, Senior Legal Advisor to the Chairman, Rudolfo Baca, Legal Advisor to Commissioner Quello, Calpak Gude, an intern to Commissioner Quello, James R. Coltharp, Special Advisor to Commissioner Barrett, Jane Mago, Senior Legal Advisor to Commissioner Chong, and David Siddall, Legal Advisor to Commissioner Ness, to discuss Metricom's operations, and its views on various proposed solutions and compromises in this proceeding. The attached materials were used in connection with our discussions.

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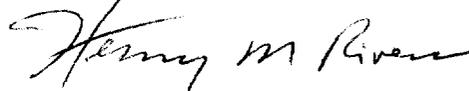
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Mr. William F. Caton
September 12, 1994
Page 2

Two copies of this letter are being submitted to the Secretary of the Commission pursuant to § 1.1206(a)(1) of the Commission's Rules. Because these meetings ran late into Friday afternoon, it was not possible to file these materials on Friday.

Sincerely,



Henry M. Rivera

HMR:lmc

Attachments

cc: Ruth Milkman, Esquire
Rudolfo Baca, Esquire
James Coltharp, Esquire
Jane Mago, Esquire
David Siddall

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Part 15 Perspective on AVM/LMS Proceeding

Metricom, Inc.

September 9, 1994

Part 15 Applications

Many Applications in the Public Interest:

- Wireless computer communications networks
- Remote meter reading
- Security and alarm devices
- Anti-theft devices
- Digital cordless phones
- Wireless PBX systems
- Wireless headphones, speakers and video

Metricom

Metricom Network Applications:

- Utility distribution automation
 - Improved service and reduced costs to ratepayers
 - Energy conservation; reduced pollution
- Industrial communications
 - Waste water districts
 - Gas well field monitoring
- Wide-area data communications networking
 - Access to corporate resources
 - Wireless Internet/NII
 - Low cost for schools and individuals

Metricom

Advantages offered Metricom users:

- High speed performance
 - Not possible on most licensed bands
- Low cost service
 - Cost of spectrum will preclude this in PCS bands
- High capacity
 - Amount of spectrum not available elsewhere
 - Regional area networks

(Not possible with unlicensed PCS)

Spread Spectrum Bands

Bands Presently Authorized:

- 902-928 MHz
- 2400-2483.5 MHz
- 5725-5850 MHz
- Only the 900 MHz band permits:
 - Low cost equipment
 - Acceptable range and performance for wide-area systems

Spread Spectrum Operation

Spreading the Signal Provides:

- Shared use of spectrum
 - Systems designed to co-exist with other systems
- Immunity to interference from other spread spectrum systems
 - All are required to conform to demanding Part 15 regulations
- License-free installation and operation
 - Systems can be installed anywhere, anytime without cost to users or FCC

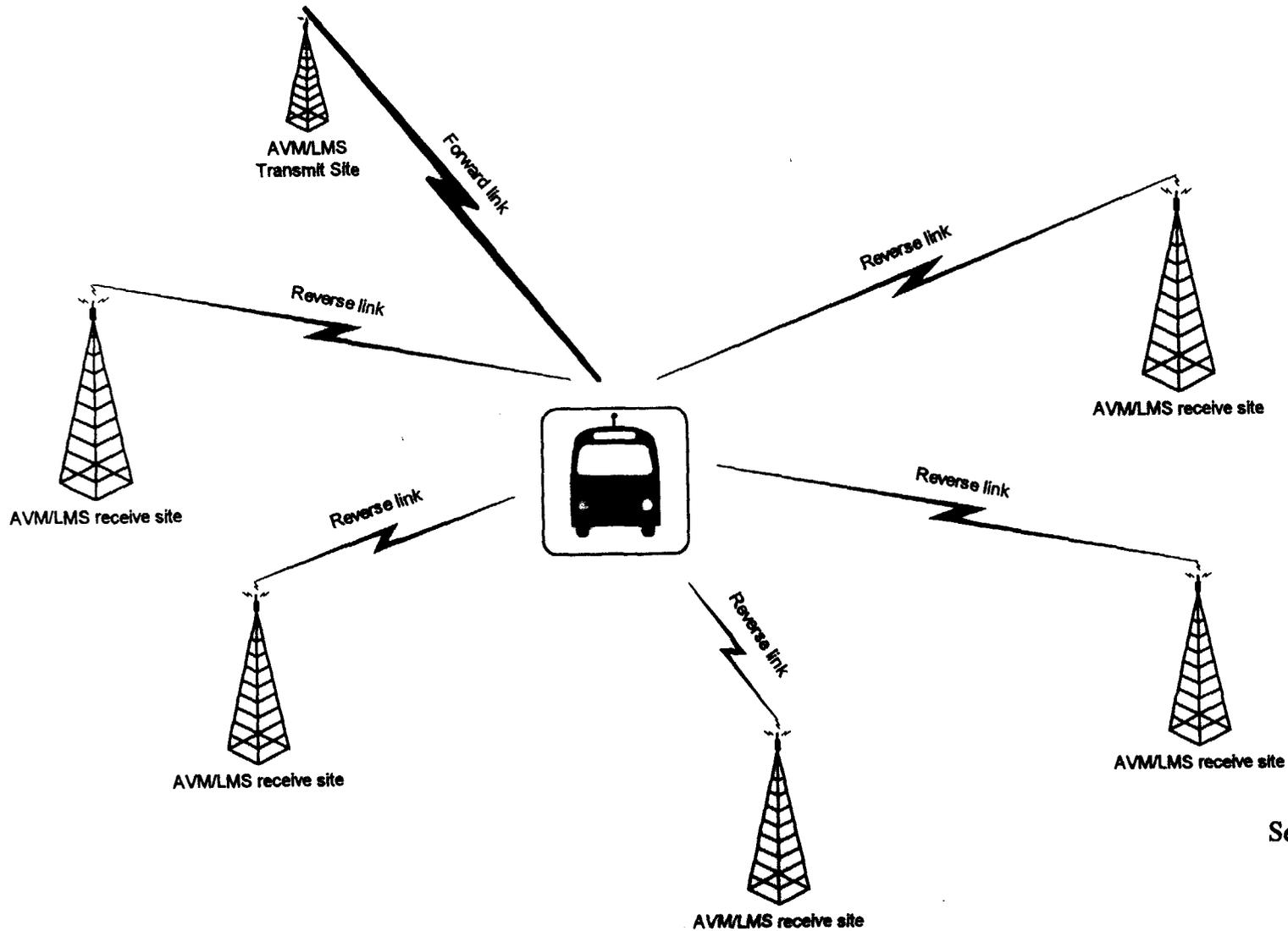
A VM/LMS Operation

Wideband A VM/LMS 902-928 MHz

Receivers:

- Efficient interference collectors
- Sited to optimize receipt of all in-band signals
- Very sensitive to ALL in-band signals

AVM/LMS System Diagram



Interference Sources

902-928 MHz Transmitters:

- Many and varied
 - Government and Parts 15, 18, 90, 97
 - Narrow and wideband
 - High-powered
 - Mobile
- Very densely located
- Many owned by consumers
- Have only begun to appear in quantity

The Operational Problem

Part 15 and AVM/LMS can not co-exist as presently proposed without harm to both:

- Part 15 transmissions will interfere with AVM/LMS receivers
- Band hierarchy enables AVM/LMS to force Part 15 devices to cease operation
- Wideband forward links will interfere with ALL in-band operations.

The Enforcement Problem

Forcing Part 15 devices to cease operation will not work:

- Identification of interference source
- Forcing cessations of operation
- Public outcry
 - To FCC
 - To Congress
- Elimination of Part 15 applications

Fairness of Proceeding

Part 15 manufacturers and users have relied on FCC policy:

- Encouragement of Part 15 in 902-928 MHz band
- No reason to expect a new licensed service requiring extremely quiet RF environment in the band
- No reason to expect that Part 15 operation in the band would be placed in jeopardy

Part 15 Community Proposal

- Upper band-edge location of narrowband forward links
- No wideband forward links
- Presumption of non-interference to AVM/LMS by Part 15 devices
- Development of technical limitations on AVM/LMS reverse links

Part 15 Community Proposal

A True Compromise:

- Permits LMS to be established as a new service
 - Initial position was to maintain the *status quo*
- Requires Part 15 to accept significantly more interference
- Permits Part 15 to continue to operate
- Requires development of the best technology
- Encourages cooperation between Part 15 and LMS

Alternative Courses of Action

- Terminate the rulemaking
- Implement AVM/LMS at the expense of Part 15 operations
- Adopt Part 15 Community compromise

Part 15 Perspectives on AVM/LMS Proceeding

Metricom, Inc.

TIA Consumer Radio Section

September 9, 1994

Interference

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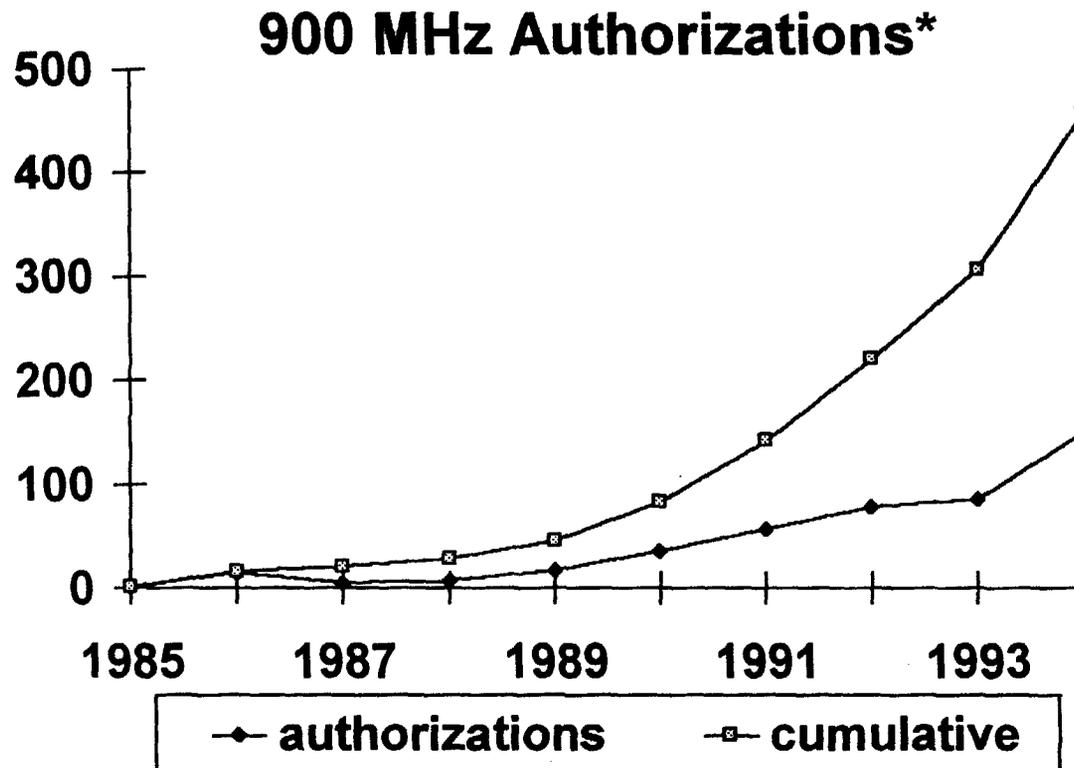
Interference

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Interference

Part 15 Certifications Increasing:



*Lovette, "Darwinism and the ISM Bands," DOC: IEEE P802.11-94/mar

Interference

Now widely recognized as a major issue in this proceeding:

- Compromises are being proposed
 - By parties to the proceeding
 - By the FCC
- Progress is very slow
- Very resource intensive

Staff Proposal

Non-Interference Presumption:

- Generally acceptable to Part 15 community*
- Disagreement is over thresholds
 - Antenna height
 - Effective radiated power
 - Field disturbance sensors
- Non-functional if rebuttable

*assuming no wide-band LMS forward links

Staff Proposal

Threshold Issues:

- Makes Part 15 resemble licensed service
 - Each antenna location must be identified, scrutinized
 - Results in increased cost to consumers
- Imposes significant enforcement and legal burdens
 - Which specific device is causing interference?
 - House-to-house searches?

Staff Proposal

Height Restrictions Inappropriate

- Technically meaningless
 - Fail to consider terrain and structures
 - LMS receivers located and optimized to receive from street-level and in-building LMS transponders
- Affect many Part 15 systems
 - Ademco, Cylink, Metricom, Tetherless Access, Western Multiplex, etc.
 - Inter-building LAN links, cordless telephone on a 5th floor balcony, PBX base station on parking garage, etc.