

miles from the site of abduction. Similarly, the use of devices in the Personal Location and Monitoring Service for offender monitoring would require nationwide application to be effective in locating offenders who have violated their travel restrictions.

- **The service should be limited to terrestrial based systems or uplink only satellite systems.** Terrestrial systems offer the greatest potential for providing low cost service within the reach of users for individual applications capable of working while deep within buildings or when hidden in assets or body worn. Mixing terrestrial and downlink, space-based applications would pose a potential for destructive interference while losing the location ubiquity available with terrestrial services. A terrestrial system allows for low power applications with scalable receive sites capable of providing nearly limitless locates per day. Moreover, adequate spectrum has already been allocated for satellite radiolocation type services. In this case, a terrestrial limitation will actually foster innovation and competition. While MicroTrax™ believes that a terrestrial system maximizes the PLMS potential, it would not prohibit satellite systems, such as AeroAstro's SENS system, which would use the PLMS spectrum only for the up-link portion of its service.

- **Transmission of voice must be prohibited.** There has already been a multitude of bands and resulting communications services made available for voice. The contemporary user has The Cellular Telephone Service, Personal Communications Service (PCS), Business Radio, Specialized Mobile Radio Service (SMRS) and many others to choose from for this purpose. The availability of spectrum for those services has already spawned a host of innovative services capable of providing voice communications. Restricting voice in these limited size bands would foster similar innovation in a location and tracking service.

- **Transmission of data must be restricted** to that associated with monitoring the location, security, or safety of the person or property associated with the device. Similarly, this restriction would foster innovation and development for a badly needed, but overlooked service. Other spectrum bands, such as LMDS and MMDS, have been allocated for video and data services. Paging and some satellite systems have been designated for data distribution. This restriction would allow the development and implementation of spectrum for new and innovative location and tracking services.

Furthermore, to realize the full potential of the intended Personal Location and Monitoring Service, MicroTrax™ believes that a qualified provider must offer all three of the following capabilities to qualify for the service:

- **Locally commanded locator-tracker:** At least one type of mobile unit must be able to be activated or controlled locally by the user.
- **Remotely commanded locator-tracker:** At least one type of mobile unit must be able to be activated or controlled remotely by a user trying to locate the person or property being monitored.
- **Embedded Location and Tracking:** The capability to integrate personal location and monitoring technology into other applications, such as cellular telephones, PCS devices and pagers.

MicroTrax™ proposes service rules attached to the appendix to implement this proposal.

VII. CONCLUSION

MicroTrax™ believes strongly that the time has come for the Commission to adopt a Personal Location And Monitoring Service. PLMS would serve the public interest in hundreds of ways already identified and hundreds more only being imagined today. To meet its goals, PLMS requires an exclusive 5 MHz band. 1670-1675 MHz is ideally suited for this purpose. Unencumbered by substantial government relocation costs, 1670-1675 MHz can provide a cost-effective solution to the personal location and monitoring needs of average citizens for everyday non-business purposes and contains the potential to substantially enhance the quality of their lives. There are substantial economic externalities in PLMS that must be recognized by the Commission and dealt in the spectrum allocation process.

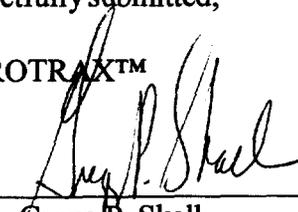
Should the Commission decline to adopt a PLMS with rules such as those appended to these comments and allocate 1670-1675 MHz to that service, MicroTrax™ strongly urges it to consider the spectrum proposal contained in these comments for the 1.4 GHz band. The MicroTrax™ 1.4 GHz proposal advances previously declared purposes of the Commission and respected telecommunicationseconomists more fully than the plan proposed in the Notice.

Finally, it is important that a PLMS on this allocation be made on a nationwide basis. It simply makes no sense to provide for a PLMS that is not highly mobile across our nation.

MicroTrax™ also strongly endorses service and technical rules to maximize the service efficiency and utility of PLMS to average citizens.

Respectfully submitted,

MICROTRAX™

By: 

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March 8, 2001

PROPOSED RULES

PART 90

SUBPART - Y

PERSONAL LOCATION AND MONITORING SERVICE (PLMS)

90.1201 **SCOPE**

This subpart sets out the regulations for the Personal Location and Monitoring Service (PLMS).

90.1202 **DEFINITIONS**

(a) **Average Transmit Power.** The average power obtained by multiplying the Peak Transmit Power by the fraction of time that the transmitter is on during any continuous 60-second interval.

(b) **Embedded User Device:** A mobile PLMS User Device capable of being integrated with other devices or applications, such as cellular telephones, PCS devices and pagers.

(c) **Emission bandwidth.** For purposes of this subpart, the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Compliance with the emissions limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

(d) **Locally Commanded User Device:** A mobile PLMS User Device that is capable of initiating the location and monitoring function in response to a stimulus created within the immediate vicinity of the user device, or capable of activating or controlling itself.

(e) **Peak Transmit Power.** The peak power output of a transmitter as measured over an interval of time equal to the frame rate or transmission burst of the transmitter under all conditions of modulation. Usually this parameter is measured as conducted emission by direct connection of a calibrated test instrument to the equipment under test. If a direct connection cannot be achieved, alternative techniques acceptable to the Commission may be used. Peak Transmit Power must be measured using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity,

etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

(f) **Personal Location and Monitoring Service (PLMS).** The use of non-voice signaling methods to locate or monitor any legal entity, person or property. PLMS systems may transmit and receive only non-voice transmissions and instructional information related to such units.

(g) **Personal Location and Monitoring Service User Device (PLMS User Device)** [Unlicensed]. Mobile or portable intentional radiators operating in the frequency bands _____ MHz that provide a wide array of mobile location and tracking communication services as defined by the provisions of this Subpart Y.

(h) **Portable Application.** PLMS Service offered through a PLMS User Device that can be worn by a person and hidden from plain view, rather than used in a vehicular, mobile application.

(i) **Remotely Commanded User Device:** A PLMS User Device capable of being activated or controlled by commands received from a person or entity away from the PLMS User Device trying to locate or monitor a person or property in the immediate vicinity of the PLMS User Device.

90.1203 EQUIPMENT AUTHORIZATION REQUIREMENT

(a) PLMS devices operating under this subpart shall be verified under the provisions of Subpart J of Part 2 of this chapter before marketing.

90.1204 GENERAL TECHNICAL REQUIREMENTS

(a) The ___ - ___ MHz band is limited to use by PLMS service providers and devices under the requirements of this Part.

(b) Average Transmit Power of a transmitter operating pursuant to this subpart shall not exceed 0.25 watts.

(c) Adjacent Channel Limit

i. Out of band emissions in any 1 MHz bandwidth must be attenuated below P by $55+10\log(P)$ dB where (P) is the Peak Transmit Power in Watts of the transmitter inside the authorized bandwidth.

ii. The resolution bandwidth of the instrumentation used to measure the emission power must be 100 kHz, except that a minimum spectrum analyzer resolution bandwidth of 300 Hz must be used for measurement center frequencies within 1 MHz of the edge of the authorized sub-band. If a video filter is used, its bandwidth shall not be less than the resolution bandwidth. Emission power shall be measured in peak values.

(d) A PLMS device must comply with IEEE C95.1-1991, (ANSI/IEEE C95.1-1992), "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz." Measurement methods are specified in IEEE C95.3-1991, "Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave." Copies of these standards are available from the IEEE Standards Board, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331. Telephone 1-800-678-4333. All equipment shall be considered to operate in an "uncontrolled" environment. The application for certification must contain a statement confirming compliance with IEEE C95.1-1991. Technical information showing the basis for this statement must be submitted to the Commission upon request. The ANSI/IEEE standard uses the term "radiated power" as meaning the input power to the antenna.

90.1205 PLMS Device Requirements

PLMS Devices may be operated only as part of a PLMS system that complies with the following characteristics:

(a) **Size:** PLMS services providers must demonstrate that a substantial portion of the services they provide are for Portable Applications in which the PLMS User Devices are small enough to be body worn or hidden in small personal assets.

(b) **Location:** PLMS services providers must demonstrate the ability to locate User Devices that are located indoors or outdoors without materially affecting performance.

(c) **Accuracy:** PLMS User Devices must provide location accuracy that complies with the Enhanced 911 accuracy requirement of 125 meters or less using a Root Mean Square (RMS) methodology, as provided at Section 20.18 (e) of Part 20 of the Commission's Rules.

(d) **Nationwide Service:** The service must achieve coverage for 25 metropolitan areas with a combined population of 150 million people within 5 years of the date service is first initiated. PLMS service providers must notify the Commission of their Service initiation date.

(e) **Voice:** Transmission of voice within the PLMS service is prohibited.

(f) **Data:** Transmission of data within the PLMS service is restricted to that associated with monitoring the person or property associated with the device.

90.1201 PLMS System Device Requirements

PLMS User Devices may be offered for use to the public only with a PLMS system that offers each of the following types of PLMS User Devices:

- (a) Locally Commanded User Device
- (b) Remotely Commanded User Device
- (c) Embedded User Device

EXHIBIT A

See Attached

ORIGINAL

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

September 6, 2000

Shaun White, Esq.
OET Policy and Rules Division
Federal Communications Commission
445 12th Street, SW
Washington DC 20554

Re: RM 9797, RM 9267, RM 9854

Dear Mr. White:

As you know, ArrayComm, Inc. has been exploring every feasible avenue to identify spectrum that could be utilized effectively for TDD operations.

We understand that OET is in the process of preparing a Notice of Proposed Rule Making that, if adopted by the Commission, would make available certain segments of spectrum for non-Government use. This spectrum consists of various small amounts that the Federal Government transferred to the FCC.

No single one of these segments would satisfy the medium or long-range needs of the TDD community. In fact, the sum total of all the spectrum that will be under consideration, given that a portion of each band will be to some degree, unusable, is probably inadequate.

ArrayComm's engineers, however, believe that its TDD system is so spectrally efficient that with careful engineering a sufficient portion of each band may yield enough utility to enable ArrayComm to initiate service.

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Shaun White, Esq.
September 6, 2000
Page 2

Because each band needs to be investigated, we hope that the Commission's Notice will be sufficiently flexible to allow ArrayComm, and others of course, to pursue the potential of each.

Thus, we want to underscore our interest in the bands referenced in the above RMs as well as other spectrum, larger or smaller in size, that could be used for TDD operations.

As appropriate, please make this letter part of the record in your forthcoming proceeding.

Very truly yours,

Leonard S. Kolsky

Leonard S. Kolsky

STEPTOE & JOHNSON LLP
Counsel for ArrayComm, Inc.

cc: Chairman William E. Kennard
Commissioner Susan Ness
Commissioner Harold Furchtgott-Roth
Commissioner Michael K. Powell
Commissioner Gloria Tristiani
Dale Hatfield
Thomas Shgrue
D'Wana Terry
Julius Knapp