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September 29, 1995

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

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Mr. William F. Caton
Acting Secretary
Federal Communications Commission
Washington, D.C. 20554

Re: Petition for the Establishment of a
New Messaging and Location Tracking Service

Dear Mr. Caton:

Flash Comm, Inc., by its attorney, herewith files an original and ten copies of its Petition for Rule Making to establish a new Part 15, Subpart E of the Commission's Rules and Regulations which would govern a new service entitled "Messaging and Location Tracking Service". The rules would govern the user devices which may be used in connection with this service.

Flash Comm proposes that the service be established as a secondary use of the high-frequency (HF) band with full protection afforded to primary HF users. The petition also requests that the devices be permitted by the Commission on an unlicensed basis. However, any permitted user device would be required to be type accepted by the Commission staff.

Flash Comm respectfully requests that the Commission process this petition on an expedited basis. Should there be any need for further information or should you have any questions in this connection, kindly contact the undersigned.

Sincerely,

Gregg Skall
Counsel for Flash Comm, Inc.

GK/af

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In re:	)
Amendment of Part 15	)
of the Rules to Establish	)
a New Sub Part E --	)
Messaging and Location	)
Tracking Service Devices	)

PETITION FOR RULE MAKING

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September 29, 1995

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SUMMARY

Flash Comm is an information products and service company formed by an instrument of Harris Corporation and Lexmark International, Inc. By this Petition, it seeks the creation of a new messaging and location tracking service ("MLTS") which will permit low cost, real-time data communications for many new services.

The MLTS is composed of a system of mobile remote units operating within the high frequency (HF) 3-30 MHz band. It is proposed that these units be permitted to operate on a secondary non-interfering basis with HF primary users. Interference protection will be guaranteed by a combination of techniques which include:

1. Examination of potential transmit frequencies for use by others before transmission.
2. Limited transmissions of five second bursts.
3. Long and random intervals between consecutive transmissions on the same frequency.
4. Very low transmit power.

The MLTS will offer the benefits of a terrestrial based system that provides ubiquitous geographic coverage, a highly maintainable service, and affordable infrastructure and user device costs, among many others.

The MLTS is proposed as an unlicensed service. As such, it will permit prompt implementation of the system while affording all necessary regulatory controls through the type acceptance process.

Accordingly, Flash Comm requests that the Commission expeditiously issue a Notice of Proposed Rule Making to adopt the message and location tracking service attached to this petition as Appendix A.

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Before the
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In re:	)
Amendment of Part 15	)
of the Rules to Establish	)
a New Sub Part E --	)
Messaging and Location	)
Tracking Service Devices	)

PETITION FOR RULE MAKING

Flash Comm, Inc. (Flash Comm), by counsel and pursuant to Section 1.401 of the Commission's Rules, hereby petitions the Commission to commence a rule making proceeding for the purpose of amending Part 15 of the Commission's rules and regulations to create a new Sub Part E -- Messaging and Location Tracking Service Devices ("MLTS"). The public interest would be served by the commencement of such a proceeding and the ultimate establishment of the proposed service. The following is shown in support thereof:

I. BACKGROUND

Flash Comm is an information products and service company recently formed by an instrument of Harris Corporation and Lexmark International, Inc. to provide wide area messaging systems to various sectors of the North American economic community. Harris Corporation (Harris), an international communications company, and Lexmark International, Inc. (Lexmark), a high tech manufacturer of electronic computer peripherals, are both well known to the Commission. Harris is a recognized provider of FM radio station broadcast and High Frequency (HF) communications equipment, including some of the equipment which will be utilized by Flash Comm in providing MLTS services. Lexmark, the former manufacturing arm of IBM for typewriters, printers and other computer

peripherals, has years of experience in the design and manufacture of high volume electronic products. Flash Comm and its parents have developed HF technology that, in concert with many available alternative outbound technologies, will permit low-cost, nation-wide, wireless, two-way data communication services. These applications can benefit a variety of industries including transportation, security and monitoring to provide crucial communications for shipments, oil wells, seismologic sensors and other remote fixed and mobile needs. Examples may include:

- Fleet asset management
- Remote meter or sensor reading
- Stolen car tracking
- Ship/boat tracking
- Communications for long haul trucking
- Shipment tracking
- Buoy monitoring
- Seismologic sensor monitoring

The types of products and services envisioned by Flash Comm for the Messaging and Location Tracking Service will permit low-cost, real-time data communications on a scale not before possible. In addition, adoption of the MLTS will allow the Commission to achieve a high level of spectrum efficiency and re-use consistent with its own long-held policies and objectives.

A. Essential Characteristics of the Message and Location Tracking Service

MLTS consists of two integrated components: (i) an outbound system, i.e., fixed to remote, which uses capacity from existing services, and (ii) an inbound system, i.e., remote to fixed, operating within the High Frequency (HF) 3-30 MHz band. A number of techniques are available to transmit outbound messages to remote subscriber units (e.g., satellite, FM/SCAs, paging, etc.), but few alternatives exist to get messages back from low

power battery operated devices. Advanced HF communications is the solution. The inbound messages will be sent by low power mobile transmitters, using frequencies in the 3-30 MHz band on a secondary, non-interfering basis, which will communicate with one of several regional receive sites connected to a network hub which will then process the data and distribute the message to system users. As set forth below, because of standards to be adopted by the Commission in this rule making proceeding, there will be no interference to primary, licensed HF radio users from the inbound system's operation in the 3-30 MHz band.

The MLTS will be required to utilize a combination of techniques that have been accepted by the FCC as providing interference protection to primary users.[1/] By combining these multiple features, the system will provide redundant safeguards, assuring that there will not be interference. These safeguards are:

1. Examination of potential transmit frequencies in use by others before transmission.

2. Transmissions limited to short bursts on the order of 5 seconds and the use of an advanced "noise like" digital wave form.

3. Long and random time intervals between consecutive transmissions on the same frequency.

4. A very low transmit power.

[1/] See e.g., §15.247 of the Commissions Rules establishing requirements for Spread Spectrum technologies. 47 C.F.R. §15.247; See generally, First Report & Order in the Matter of Authorization of Spread Spectrum and Other Wide Band Emissions Not Presently Provided for in the FCC Rules & Regulations, 101 FCC 2d 419 (1985); recodified, First Report & Order, 4 FCC Rcd 3493 (1989); amended, Report & Order in the Matter of Amendments to Parts 2 and 15 of the Commission's Rules with Regard to the Operation of Spread Spectrum Systems, 5 FCC Rcd 4123, paras. 2-3 (1990) (Hereinafter, Spread Spectrum Order).

As envisioned, an MLTS User Unit may transmit on any one of the 9000 three kilohertz channels in the 3-30 MHz band that the system identifies as clear.[2] The Commission has favored systems that first identify a clear transmit frequency.[3] The remote device will be required to transmit on that open frequency only in a short burst and then immediately vacate the frequency leaving it available for primary users. The time between an MLTS User Unit having an identified clear channel and its subsequent transmission on that channel must be small, minimizing the chance that a primary user will operate on the frequency before the transceiver has used and vacated it. Even if the transceiver inadvertently chose a frequency in use, the MLTS transmit time must be so short and at such low power as to render the interference virtually inconsequential to the primary channel user.

Through this combination of techniques and restrictions, the MLTS will be designed to co-exist invisibly with existing HF users in the 3-30 MHz band.

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[2] See Sections IIB and IIIC on Inbound Technology, infra.

[3] See, §15.321 establishing requirements for ansynchronous unlicensed "data-PCS" devices. 47 C.F.R. §15.321. Second Report & Order in the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services, 8 FCC Rcd. 7700, paras. 88 - 92 (1993); modified, Memorandum Opinion & Order, 75 RR 2d. 491, para 241 (1994) (Hereinafter, PCS MO&O) (efficient use of spectrum through use of techniques such as listen before talk is favored). Note that although unlicensed PCS devices, are primary users of the 1910 - 1920 MHz band, and utilize the listen-before-talk technology as among themselves, Flash Comm's technology would permit cross-band sharing on a secondary basis.

B. Regulatory Framework

Flash Comm is requesting herein an amendment to Section 2.106 of the Commission's Rules and, as previously stated, an amendment to Part 15 of the Commission's Rules. Section 2.106 contains the Table of Frequency Allocations. Pursuant to section 2.106, frequencies in the 3-30 MHz band are allocated at present for a variety of government and non-government uses. These include maritime, aeronautical and land mobile, radio location, amateur, broadcasting and fixed point-to-point. Overwhelmingly, the band is shared by government and non-government users, although parts of the band are allocated at present for government use alone. Flash Comm seeks an amendment to Section 2.106 that would allow MLTS user devices to utilize these frequencies on a secondary, non-interfering basis.

Part 15 of the Commission's Rules set forth regulations for unlicensed transmitters. MLTS Transmitter devices would be subject to Part 15 rules that govern "intentional radiators".[4] Flash Comm proposes that the MLTS be provided as an unlicensed service pursuant to Part 15 of the Commission's Rules for the following reasons:

1. The inbound spectrum identified by Flash Comm as most advantageous for the MLTS is already licensed to primary users for specific purposes. These users are natural "private attorneys - general" regulators of the spectrum who will monitor for unwarranted interference in violation of Commission rules.

2. Flash Comm is proposing equipment certification rules that are so protective of primary users as to virtually assure that equipment will be incapable of causing harmful interference provided that it is manufactured according to FCC regulations.

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[4] These rules define an "intentional radiator" as any unlicensed device that intentionally generates and emits radio frequency (RF) energy by radiation or induction. Section 15.3(o) of the Commission's Rules, 47 C.F.R. §15.3(o).

3. The natural characteristics of the HF 3-30 MHz band, such as reflection by the ionosphere over long distances on the earth's surface, make it ideally suited for the return link communications envisaged by the MLTS.[5]

II. TECHNOLOGY

As previously described, Flash Comm envisions the MLTS as utilizing available outbound technologies and the HF frequency band for inbound on a secondary, unlicensed, non-interfering basis. As such, the MLTS fits comfortably within the FCC's regulatory framework and will further the Commission's fundamental regulatory goals.

The Communications Act of 1934, as amended, charges the Commission with a fundamental mission "to make available so far as possible, to all the people of the United States a rapid, efficient, nation-wide and world-wide wire and radio communications service with adequate facilities at reasonable charges... " 47 U.S.C. §151. The Communications Act further proclaims that it is "the policy of the United States to encourage the provision of new technologies and services to the public" and places the burden upon an opponent of a proposed new technology or service to demonstrate the inconsistency of such a proposal with the public interest. 47 U.S.C. §157. Specifically, the Commission is empowered to: "... generally encourage the larger and more effective use of radio in the public interest." 47 U.S.C. §303(g).

Flash Comm's spectrum proposals are consistent with and further each of these Communications Act goals.

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[5] See Goodman, John and Aarons, Jules, Ionospheric Effects on Modern Electronic Systems Proceedings of the IEEE Vol. 78 No. 3, March 1990.

A. Outbound Technology

Flash Comm is requesting a modification in the Rules only for the inbound side of the MLTS. The outbound transmission will occur over existing FCC approved technologies. The possibilities include television, satellite and FM radio subcarriers and digital modulation techniques over these and other services.

B. Inbound Technology HF Band

Because of its propagation characteristics, the HF band is the ideal location for the inbound signal side of the MLTS service. Even with the very low power levels relative to the primary users envisioned for MLTS, an HF signal is capable of reception over very long distances because of its ability to reflect off the ionosphere. Accordingly, Flash Comm proposes that MLTS devices utilize the 3-30 MHz band on a secondary, non-interfering basis, to transmit digital data to one of several geographically dispersed receive-only sites throughout the continental United States.

In the HF band, signals are reflected off the earth's ionosphere and can travel long distances to provide nationwide coverage. Thus, the HF band is uniquely viable for such long-range applications because it offers the best propagation characteristics for a low-cost terrestrial based system. Flash Comm's proposed technology capitalizes on this quality, while permitting only unobtrusive, transparent sharing of the band between government and non-government services authorized to use it. At very low power levels, small nomadic user transceivers would operate under principles very similar to those accepted by the Commission for spread spectrum and unlicensed PCS to ensure use of multiple frequencies

without causing harmful interference.[6] Through the use of a "dynamic clear channel assessment device," (CCA) the Flash Comm MLTS user unit is virtually capable of "listening" for an available frequency, transmitting the information in short bursts less than 5 seconds in duration, and then leaving the frequency for its regularly licensed use. The system will analyze the band and choose a frequency within several seconds, thus minimizing cases where frequencies appear clear during assessment but later become occupied.

In the unlikely event that the system mistakes a channel in use for a clear channel, the system's low power greatly reduces the harmful effects within an average air-time of about 2 seconds, and a maximum air-time of 5 seconds. The worst case interference is thus perceived to a voice user as a short burst of low level noise, much like a common channel fade. Interference to data users would also be minimal, as existing data systems must also contain an effective means of dealing with channel fades. Flash Comm proposes that the MLTS be adopted with a peak transmission power of 10 dBw. With this low power level, interference to any primary user would be minimized. Virtually all non-MLTS interferers encountered by a licensed user in the HF band would have higher transmission powers than 10 dBw.

Although Flash Comm has developed this technology for its own use, it anticipates that when the MLTS is adopted other manufacturers will develop similar transmit devices and systems for a competitive array of service providers.

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[6] See, note 1 infra.

C. Technology Benefits

Adoption of the MLTS serves the Commission's fundamental responsibility to encourage the larger and more effective use of the radio spectrum in the public interest because the MLTS will provide significant new user capability and spectral efficiency by use of spectrum already allocated and in use by other services. The MLTS will exist strictly on a secondary basis, without the necessity to reclaim spectrum from other users or relocate existing users.[7]

In that posture, MLTS offers tremendous benefits:

1. Ubiquitous Geographic Coverage

MLTS receive sites communicate with remote user devices located anywhere in the Continental United States. In many urban environments, the system might have even better availability than satellite or microwave links because it would not have a "line of sight" constraint. Similarly, it will have superior performance in rural areas and under shaded conditions such as dense foliage.

2. Maintainability

Since MLTS envisions only terrestrial infrastructure, the system will be easily maintainable and in this regard, is much superior to satellite systems.

3. Low Infrastructure and User Device Cost

The infrastructure cost required to provide ubiquitous communication for the United States consists of the construction of a few low cost base stations. Using state of the art integration techniques, user

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[7] In contrast, see the elaborate spectrum refarming requirements to establish Personal Communications Services. See, First Report & Order and Third Notice of Proposed Rulemaking in the Matter of Redevelopment of the Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, ET Docket No. 92-9, 7 FCC Rcd 6886 (1992); modified, Third Report & Order and Memorandum Opinion & Order, 8 FCC Rcd 6589 (1993).

devices can be reduced to relatively small size also at low cost in moderate quantities. Consequently, user service fees will be broadly affordable to a new segment of users.

4. Low Power User Devices

Because of their extremely low power, the user devices can be designed to operate from an inexpensive battery or solar power both of which are ideal for applications where external power is not available for long periods of time.

5. Optional Covert Installation

The small size of the user device and the non line-of-sight characteristics of the HF frequencies allow for "invisible" installations necessary for crime prevention services.

III. SECONDARY SERVICE

Flash Comm is proposing that the MLTS be regulated under Part 15 of the Commission's Rules as an unlicensed secondary service. It is convinced that the technology exists to allow this service without causing harmful interference to any co-channel users and that it can flourish while being required to accept interference from all co-channel users. Indeed, Flash Comm believes the MLTS can succeed only if the remote user devices can be implemented on an unlicensed basis.

MLTS can exist on a co-channel non-interfering basis because it incorporates the multiple system design features discussed above that offer redundant safeguards against interference. They include:

1. Examination of potential transmit frequencies for other users before usage of the frequencies by the MLTS user device.

2. Average burst transmissions on the order of 2 seconds. (5 second maximum)

3. The time between consecutive transmissions on the same frequency is long and random.

4. The wave form is noise-like in the receive bandwidth of other users.

5. The low transmit power and advanced wave form used by the system result in reception of MLTS transmissions by other users below, at, or near the received noise floor.

Each of these factors has been incorporated into the Rules proposed for adoption and attached hereto as Appendix A. They will now be discussed in detail:

A. MLTS Looks for Clear Frequencies

MLTS will have a high probability of finding a frequency which is not occupied by another user. Assuming a worst case time, (sunrise in February with a sun spot number (SSN) equal to zero) about 2 MHz of the HF spectrum propagates effectively. Based on many years of empirical observations by Harris, Flash Comm estimates that average HF channel occupancy is at about a 30% rate. Under such worst case circumstances, MLTS should have 467 three kilohertz channels available to it.[8]

Moreover, MLTS user devices must transmit on clear frequencies because all other on channel HF user transmissions would appear as noise or interference to the MLTS system. Therefore, a useful MLTS system must be self policing and will require that MLTS user devices transmit on frequencies which are unused.

Minimizing the time between observing a clear frequency and transmitting on it is a key to avoiding a case where a frequency appears simultaneously clear to an MLTS device and to a primary user and where the other user may utilize the frequency before the MLTS system can. Thus, the MLTS regulation should provide that a device be designed to initiate

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[8] See Section IIIC Infra. Under best case circumstances, MLTS would have as many as 2520 (28% of 9000) channels available to it. Thus, at any given time, the number of 3 kHz channels available to an MLTS user device would be a number between 467 and 2520.

transmissions on the chosen frequency within five seconds. Based on measurements conducted in Europe where the HF Spectrum is much more congested than in the U.S., the probability that a frequency will be utilized by another user, after the MLTS system has identified it as clear and before the MLTS transmission concludes, is less than 6%.[9] It should be emphasized that the probability would be considerably smaller in the U.S. environment.

B. Short Duration of MLTS Messages

Occasionally it is possible, although uncommon in the HF environment, that the system could miss another user and mistakenly think that a channel was clear when actually it was in use. For example, this case could occur when the signal from the other user had faded during the measurement time or the other user had stopped transmitting during the measurement time. Flash Comm's MLTS design anticipates such a situation by requiring a transmission which reduces the harmful effects of possible interference by having a low-power noise-like digital wave form with an average on-air time of 2 seconds and limited to no more than 5 seconds.

MLTS interference to a voice user would be minimal since the noise burst from an MLTS user device would be similar to a channel fade which, in HF, can be on the same order of duration. Data users in HF must also experience channel fades and have implemented techniques to deal with them. Voice users also cope with channel fades. Thus, present users in HF are already able to overcome the worst-case type of interference

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[9] A.J. Gibson and Dr. P.A. Bradley HF Spectrum Occupancy Measurements in Southern England. 3rd International Conference on HF Communication Systems and Techniques IEEE 26-28 February, 1985. P. 71

that might be caused by MLTS and should not even notice that MLTS devices have transmitted - even in the unlikely event that such a transmission occurs simultaneously with that of a co-channel primary user.

C. Revisit Probability

Complaints of interference in HF occur when the interference is continuous or repeats on a consistent basis. Flash Comm proposes that MLTS contain features to greatly reduce this chance. The selection of an MLTS user device transmit frequency will have a random component which when combined with the clear-frequency search, further reduces the average revisit rate.

The MLTS system is better than frequency hopping from a pseudo random list constrained to a handful of frequency choices because it will search the entire band in ***real time*** looking for unoccupied 3 kHz channels. Thus, in essence, if the entire 27 MHz were propagating and clear (admittedly a rare condition) the system could utilize potentially 9000 3 kHz channels![10/]

Moreover, since the MLTS system will be required to choose clear frequencies on a near real-time basis, the likelihood of hitting a co-channel primary user multiple times in a short period of time is highly unlikely. First, the next time a frequency is being selected, the system will most likely determine correctly that the frequency is used and not choose that particular frequency again. Also, since the initial frequency choice was made, another frequency may be predicted to have a better propagation effectiveness. Therefore, the

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[10/] But See Footnote 8 supra.

system would not choose the same frequency again, thus further minimizing the probability of revisiting occupied frequencies.

In comparison, Section 15.247 of the Commission's rules requires that frequency hopping systems not revisit a single frequency more than 0.4 seconds within any given 20 second period. This revisit rate is given for frequencies well above HF where wideband, very short duration signals propagate in a line-of-sight mode. In HF, where only relatively narrowband signals refract effectively off the ionosphere, time durations are more sluggish than for wideband frequency hopping systems. However, this sluggishness is more than compensated for by the increased available frequency pool and the lower expected message density. Given the expected traffic generated by an MLTS user device (e.g., typically less than 5 messages per day) and a maximum single MLTS message length of 5 seconds, an MLTS user device will occupy the channel in a potentially interfering way far less than frequency hopping systems. For example, if an MLTS user device transmits 12 maximum length messages per day (far beyond typical traffic conditions for nearly all MLTS applications), then the average frequency revisit rate could be at most 0.4 seconds within any given 576 second period, and only then if the same frequency were chosen for each successive transmission. The MLTS system requires that it be determined that a frequency is clear before transmitting. As long as it is clear, an MLTS user device could revisit the channel, which means that although the revisit rate may be higher, the actual probability of interfering with an authorized transmission is much lower than with frequency hopping systems. In this way, the MLTS would be much more reliable than even the pseudo-random methods already approved by the Commission since they simply transmit "in the blind" on

whatever frequency the random code list calls for at any given instant in time, whether or not that frequency is occupied by another user.

D. Low Power Levels

Even though the MLTS user devices' on-air time is short, limiting transmitted power further reduces the probability of interference. Accordingly, Flash Comm proposes that the MLTS user devices be restricted to transmission at 10 watts out of the final power amplifier (PA) into a perfect 50 ohm load, or +10 dBw (+40 dBm) using a maximum 3 kHz wide signal. The effective radiated power out of the MLTS user device antenna is typically less than 10 watts -- more on the order of 2 watts at the peak of the antenna pattern, due to the use of manageable antenna lengths on mobile platforms. Accordingly, in the unlikely event that an MLTS transmission occurs in an interference mode and arrives at an unintended receive station above the noise floor at that station, it will often be sufficiently below the intended signal level so as to be imperceptible.

IV. UNLICENSED SERVICE

Mature MLTS systems may result in hundreds of thousands of remote user devices implemented across the United States. As previously noted, these devices may be used in a variety of applications from fleet management to stolen car tracking to buoy monitoring and seismologic sensor monitoring. The requirement to license such a large universe of user devices would severely tax the Commission's resources while adding substantial delay to the implementation of any MLTS service for no real benefit. Therefore, Flash Comm believes that the MLTS should be authorized on an unlicensed basis.

The MLTS service possesses all of the characteristics deemed by the Commission to justify an unlicensed service. Unlicensed operation in the MLTS service is warranted because it differs from other private radio stations in the following ways:

1. MLTS user units would be implemented by a broad array of eligible users, none of whom would be assigned specific frequencies, or hours of operation.

2. All MLTS unit users would be authorized to operate in the entire HF band with legal power at any time of the day.

3. Users would not be required to show financial or technical qualifications or meet eligibility requirements. (Indeed, it is envisioned that the MLTS service should be utilized by all users and system implementors for any suitable legal purpose, often in an unmanned mode).

4. Spectrum management in the MLTS service can be accomplished by type acceptance of the MLTS user units and through operating rules.

5. Because of the extremely large number of MLTS units envisioned for field operation, effective regulation by policing individual users would be administratively impossible. Rather, type acceptance will assure that MLTS user units will be operated on legal frequencies with legal power.

6. Compliance may be assured by treating persons violating the MLTS rules by using modified or non-type accepted equipment as operating without proper authorization in violation of Sections 301 and 302 of the Act. Enforcement under Section 401 of the Act would provide civil and criminal penalties.[11/]

As the Commission recognized in Personal Radio Services:

"... it is not the licensing function that accomplishes assignment of frequencies, power limitations or equipment standards in these services. Rather, in these services ... [a] user may operate on every one of the frequencies allocated to each service with equipment and at powers set forth in the Rules ...."

[11/] See In the Matter of Amendments of Parts 1 and 95 of the Commission's Rules to Eliminate Individual Station Licenses in the Radio Control (R/C) Radio Service and the Citizens Band (CB) Radio Service, 53 RR 2d 1479 (1983). (Hereinafter "Personal Radio Services").

In other services such as GMRS the licensing function is used to determine the most spectrum efficient assignment to the particular applicant in the service, and to make that assignment. No such frequency assignment function would be served by the requirement to license MLTS transmitters. Rather, as in Personal Radio Services, any violation of the MLTS rules must have been caused by a violation of type acceptance or operating rules applicable to all MLTS operation. "In such a situation, the cudgel of spectrum management is wielded not by licensing function, but by type acceptance and operating rules." Personal Radio Services at paragraph 18.

In the First Report and Order in General Docket No. 81-413, the Commission, inter alia, authorized the operation of low power, non-licensed spread spectrum systems under Part 15 of the Rules.[12] The Commission permitted non-licensed spread spectrum operation because of its low interference potential. While the MLTS system proposed by Flash Comm may not be described as either a classical direct sequence or frequency hopping spread spectrum system, the foregoing discussion demonstrates that the MLTS service would possess the same characteristics that led the FCC to authorize spread spectrum technologies as unlicensed services. Specifically, the low power operation of the MLTS service will reduce the power density of the signal at any given frequency within the transmitted bandwidth and thereby reduce the probability of causing interference to other signals occupying the same spectrum. Further, the special modulation techniques that Flash

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[12] See, note 1 infra.

Comm will employ will suppress undesired signals and will enable it to tolerate strong interfering signals.[13]

V. CONCLUSION

By this Petition, Flash Comm proposes an extremely sound implementation of the HF spectrum which will allow for many creative and useful applications fully consistent with the Commission's principal charge under the Communications Act to foster the larger and more effective use of radio in the public interest and to encourage the provision of new technologies and services to the public. In a completely unobtrusive way, the MLTS service would harness the HF spectrum to provide new services with tremendous benefits including:

1. Ubiquitous Geographic Coverage
2. Maintainability
3. Low Infrastructure and User Device Cost
4. Low Power User Devices
5. Optional Covert Installation
6. Efficient Use of Spectral Resources

Adoption of the proposed rules attached here as Appendix A, would allow these benefits to reach the American people while providing technical protection to all primary users. Such protection would be assured by requiring listen-before-use of the frequency, and limiting the transmission burst to five seconds at very low power.

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[13] Spread Spectrum Order, 5 FCC Rcd at para. 2.

Accordingly, Flash Comm respectfully requests that the Commission expeditiously issue a notice of proposed rulemaking to adopt the attached rules as a new Subpart E to Part 15 of the Commission's Rules and Regulations.

Respectfully submitted,

FLASH COMM, INC.

By:_____

Gregg P. Skall
Counsel for Flash Comm, Inc.

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September 29, 1995

Part 15
Subpart E

Messaging and Location Tracking Service Devices

APPENDIX A