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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

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

In the matter of	)	
	)	
Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them	)	PR Docket No. 92-235

To: The Commission

COMMENTS OF Senses International, Inc.

I. Introduction

Senses International in San Jose, California manufactures and sells the Safecom alarm radio system for central station alarm services worldwide. The Safecom system has received full UL Listings for burglar and fire systems, and is UL Listed as fully compatible with some 56 alarm control panels built by a wide range of manufacturers for use around the world. Senses is a small business enterprise based in and operating in the United States. Exports to other countries comprise a significant percentage of our sales; we thus contribute to reducing the foreign-trade imbalance.

II. Background on alarm systems

Electrical monitoring and protection of remotely-located premises with reporting of condition changes to a centrally located office began in the late 1800's using telephone and telegraph wires. These early systems relied on a simple closed loop circuit from the premises through the telephone/telegraph office to the central monitoring office; if the loop was opened or broken, an alarm was sounded. These loops required a dedicated wire line or circuit, capable of carrying DC battery current, from the customer to the monitoring office. A later modification to this design used a DC current reversal to identify a valid alarm; these circuits reported a broken loop as a trouble condition rather than as an alarm. This basic DC loop design continued to be used for simple systems into the 1980's with little change.

Over the years, several changes took place:

- Alarm systems expanded in capability, as customers demanded the ability to report more and more different types of conditions at the remote premises.

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II. Background on alarm systems (cont.)

- Population growth and demand for phone services, coupled with limited facilities, led the telephone companies to develop ways to put many users on one circuit simultaneously.
- Simple DC wire loops were not able to handle these new systems' numerous reporting codes, and in some areas were becoming difficult to obtain.
- Dedicated wire circuit costs went up, reflecting their value if the circuit were to be used for multiple telephone circuits.

These factors led to the development of the digital alarm dialer/ communicator in the 1960's, enabling alarm systems to encode and send alarm information as tone pulses on a standard telephone line. This system continues in use today, using a variety of signalling formats.

Another development was the polling multiplex loop circuit, where the central monitoring station is connected to a leased telephone line that hooks up to several remote stations in a manner similar to the old fashioned party line. The Master station at the central station sequentially polls, or calls, each of the remote units continuously. The remote station will respond to its poll address with a data message containing both routine and alarm information. These systems have several distinguishing characteristics:

- the system requires the use of a relatively expensive, multipoint dedicated leased line.
- the circuit is in use continuously, without pause.
- an alarm message cannot be sent from the remote to the central monitoring station unless and until the Master unit polls that remote.
- a line break is reported when the remote fails to respond to a poll.

This system also continues in use today, using a variety of signalling and data formats.

All alarm systems using wire and telephone lines share the same common drawback: a failure of the wire line, whether natural or manmade, accidental or intentional, will prevent the alarm system reports from getting to the central monitoring office. Accidential failures include auto accidents that knock down a utility pole, a telephone office fire or a severed underground phone cable at a construction site. In recent years the criminal element has used the intentional to their advantage, sometimes with spectacular results, simply by cutting the telephone lines to the house or business prior to entry. The only way around this problem is to use radio reporting of alarm signals, which will include the detection and reporting of loss of the phone lines at the alarm unit.

III. Radio alarm systems in general

Several radio systems have been produced and marketed over the years, with varying success. The majority of these systems are configured as one-way radio, where the alarm signal was transmitted from the protected premises to the monitoring station. Several tone signaling formats were used by different manufacturers; the systems were usually available in a variety of configurations and frequencies.

One-way systems have several distinct drawbacks. Being only one-way, there is no positive way to verify that the radio path is available and functioning in these systems. An attempt is made to overcome this deficiency by automatically transmitting a routine status signal at short intervals; the assumption is made that failure to receive one or more status signals is a trouble condition. This constant retransmission is spectrally inefficient, and unnecessarily occupies an otherwise reusable channel.

One-way radio systems are usually configured for transmit-only at the remote premises site and receive-only at the central monitoring station. Without a receiver at the remote premises, several remotes can and often do transmit simultaneously, jamming the channel. This problem is surmounted by having each signal transmitted multiple times, in the hope that at least one will get through. Again, this is spectrally inefficient at best; at worst, it could lead to missing, or not receiving, valid alarm signals at the monitoring office.

The two-way alarm radio systems are, for the most part, a radio adaption of the polling multiplex described earlier. These systems use continuous polling and a continuous transmit carrier from the Master station, which precludes any sharing of the radio channel. Many of these systems use the 900 MHz MAS channels, not directly subject to this Proceeding, and are referenced here for comparison.

IV. The Safecom alarm radio system

The Safecom alarm radio system provides fast, reliable reporting of Life-Safety alarm system signals by radio, using modern design techniques to fit in with today's congested radio spectrum.

The Safecom system was designed around and uses 12.5 kHz radios, for use on the UHF offset frequencies. Careful, detailed systems engineering results in the ability to install and successfully operate these secondary, offset radio systems in high RF-intensive environments such as Sandia Crest, Mt. Wilson and others.

The system uses full two-way radio at each end of the circuit, with effective monitor-before-transmit to eliminate units jamming each other or other users. The system can share the channel with other radio users so long as there are no continuous carrier systems.

The system does not require continuous polling to carry alarm messages, which are "volunteered" to the Master unit in real time as they occur. The system does not use any store-and-forward of data, so there is no possibility of lost signals due to the failure of some component at an inopportune time.

The Safecom radio system is designed to interface with existing alarm systems; we do not build the alarm system itself. The system has full UL Listing for all grades of alarm system protection levels, including UL Listing as fully compatible with some 56 different makes and models of alarm systems. The Safecom system can accommodate all coded signals transmitted from the standard alarm system digital dialer/ transmitter. The radio system converts the alarm signals to a proprietary radio data format with variable encryption, which cannot be "spoofed" into ignoring a valid alarm or sending in a false alarm, and reports them to the central monitoring station. Other new and different alarm system signaling formats have been, and are being, added to meet customer demand.

As the attached documentation shows, the Safecom system is in use around the United States. The success of the system has been proven by its acceptance and implementation around the world as well, in such places as Poland, Chile, Venezula, Australia, China, Papua New Guinea, Mexico and Canada to name a few.

VI. Specific comments on 92-235 proposals

A. Increased spectrum efficiency by narrower channels

Senses International is primarily concerned with the Docket's impact on existing and future users of the 12.5 KHz offset frequencies in the UHF band, specifically those channels set aside for Central Station operations. The Docket does not specifically address exactly what is to be done with the existing 12.5 kHz offset channel users; it appears that the existing 12.5 kHz offset systems will migrate onto one of the new 12.5 kHz channels. This point MUST be clarified and clearly recognized. Senses recommends that current 12.5 KHz offset users become co-primary with existing full channel users, and that the 2 watt power limitation be eliminated.

For Safecom systems, the requirement for 25 kHz radio users to operate on 12.5 kHz channels in 1996 does not appear to be a great problem. The Safecom system is already a 12.5 KHz system with ±2.0 KHz deviation. In most cases a simple adjustment in carrier and local oscillator frequencies will suffice.

The channel splitting will result in 20 channels to be set aside for central station operations, from 460.890625 to 461.009375 MHz. However, there are no corresponding 465/466 frequencies in the FCC listing. This would eliminate all central station repeater operations, voice and data, both existing and future. Whether an accidental oversight or an intentional part of the proposal, the 465/466 frequencies MUST be restored in the final Rules adopted.

Subject to further engineering review and pending the outcome of this Proceeding, the proposed future requirement to adopt 6.25 KHz channels after 2000 will likely require the replacement of the RF package in every remote radio panel unit, control station and repeater. Cost estimates for this work in not available at this time.

B. Allow channel exclusivity above 150 MHz

It is expected that existing users will shift frequency up or down to the new channel frequency. Due to the spectral efficiency resulting from the loading of multiple hundreds of units on a channel, Senses recommends that a central station should be allowed to qualify for Exclusive Usage Overlay on its data channel(s).

In this Proceeding, the Commission proposes that the Exclusive Usage Overlay is to be accomplished through the concurrence of existing users. We submit that this is not realistic, especially in the case of dissimilar users in interservice sharing, and will lead to the 'deep pockets' buying their way onto an EUO channel. Senses recommends that EUO be handled only through the existing frequency coordinators.

C. Consolidate 19 radio services into 3 or 4 services

The following points must be addressed in any discussion of possibly consolidating radio services.

- There must be recognition and acceptance of the validity and necessity of Life-Safety grade radio, to afford it the protection that it requires.
- Primary voice and/or shared voice/data channels need to be set aside and reserved for alarm central station applications.
- Likewise, some primary or co-primary data-only channels need to be identified and set aside for the central station industry.
- The distinction should continue to be made for UL-Listed central station operations and their radio systems.
- Frequency coordination requirements must be retained. The coordinator must be an unbiased representative of the industry or appointed by, and responsive to, a recognized industry group.
- Private, 'for hire' carriers should be prohibited from providing "alarm radio" services.

The Commission is proposing that frequency coordinators make a radical change in operations, from recommending the technically best available frequency to preserving the largest reserve frequency pool. This is to be accomplished by `stacking' users vertically on a channel rather than using other available channels. This raises several concerns.

- The frequency coordinator's role historically has always been to maximize the efficiency and usage of the spectrum. Overall, they have done a good job in discharging this responsibility.
- Such an action will lead to a large pool of unused channels being held in reserve. This does not serve the public interest if and when the users encounter frequency congestion and interference.
- Establishing pools of unused frequencies will inevitably lead to more and more requests for interservice sharing, with their accompanying mounds of paperwork and licensing delays.

Senses recommends that the frequency coordinator's role continue to be to assign the technically best, available channels for use.

D. Implement new technical and operational standards

Properly engineered data systems are very spectrum efficient. The Safecom system, for example, can place up to 2,500 remote radio panels on a single channel. To encourage the use of spectrum-efficient systems, data channels should NOT be counted in the total number of channels assigned to a user if restrictions are enacted on the number of channels for which a single user may be licensed.

A central station alarm company, for a variety of reasons, may elect to pursue UL listing for its operation. It may also choose to not become UL listed. In order that both choices may be made available, we recommend that the 20 channels resulting from the channel splitting be organized into voice and data channels for UL and non-UL operations as follows:

a. 10 channels for UL operations:
   1. 5 voice channels
   2. 5 data-only channels
b. 10 channels for non-UL operations:
   1. 5 voice channels
   2. 5 data-only channels

It is recommended that UL operations be permitted to utilize the non-UL channels when all of the UL channels in an area are in use, for the following reasons:

- companies with larger, more complex communications needs tend to be UL-listed;
- to the extent that there are more UL than non-UL operations, particularly in the larger cities and metropolitan areas;
- a non-UL company that undertakes to obtain UL should not be forced to change all of its existing radios and channels as a result of its upgrade to a UL listed operation.

This frequency plan also recognizes the need to provide dedicated, shared data channels on an equal and co-primary basis with voice channels.

Spectum efficiency and channel loading will require that a large number of units share a single channel. This mandates the use of carrier detect/monitor-before-transmit to minimize and eliminate radio collisions, where two or more radio panels try to transmit at the same time. Only 2-way data radio systems with positive supervision and acknowledgement can meet this need; 1-way transmit-only radio systems with their repeated, inefficient, and unreliable signaling are being passed up by state of the art 2-way systems. Senses recommends that a schedule be developed and established to phase out the use of one-way radio systems on Life-Safety radio channels.

D. Implement new technical and operational standards (cont.)

The same efficiency and loading leading to a large number of units on a channel will require some type of high-speed advanced data modulation, in the form of packet data or its equivalent; simple tone encoding will not be sufficient. Encryption of the data must be expressly authorized, due to the nature of potential attacks on security systems.

Channel occupancy time restrictions on non-Exclusive Use Overlay (i.e., shared) data channels should be modified as follows.
- maximum continuous channel occupancy time: 5.0 seconds
- minimum break between transmissions: 250 mS
- no continuous transmit carrier from master or remotes

With these parameters on a data channel, there is no need for the outmoded "10 in 60 seconds" rule.

Proper system design and effective frequency coordination procedures have resulted in efficient and effective communications systems on the existing 12.5 KHz offset channels, even within the existing power, bandwith and secondary-only limitations. This has in large part been made possible by the central station exemption of the 20' antenna rule. Senses recommends that central station radio systems continue to be exempt from the 20' antenna height rules.

The Height Above Average Terrain (HAAT)/power limitations need to be carefully examined, so as not to unduly burden users with limited-range systems. Building additional radio communications sites is not always a feasible, viable option, due to:
- Economic considerations of added system costs.
- Difficulty in acquiring suitably located sites.
- Local zoning prohibitions on antennas and structures.
- Power limitations must consider the necessity to provide for adequate RF penetration of buildings to interior radios.

VII. Summary and conclusion

The central station alarm industry is unique in the communications field. It is the only one where intentional sabotage and attack by the criminal element is routine and can be expected to occur, and against which defenses must be planned.

It is imperative that the FCC recognize the validity and necessity of Life-Safety grade radio alarm systems. When other means of communication are disabled due to natural or other causes, critical messages directly relating to the safety of life and protection of property MUST get through via radio. At this time, Underwriters Laboratories (UL) is the primary testing organization generally recognized by the alarm industry as a whole.

Senses shares the concerns of the alarm industry with regard to the changes proposed in 92-235. To the extent that they do not conflict with our positions, Senses also supports the efforts of the Central Station Alarm Association (CSAA) to ensure that the alarm industry is not adversly affected by the proposed Rules changes. Indeed, we trust that useful, beneficial and constructive changes may be made as a result of the Docket, and thank the Commission for this opportunity to provide written comments in this Proceeding.

Respectfully submitted,

Larry E. Sheridan

Larry E. Sheridan
Senses International
2363 Bering Drive
San Jose, CA 95131-1125
(408) 433-9700

May 27, 1993

COPY

CENTRAL STATION SECURITY SYSTEMS INC.

50 S. ANAHEIM BLVD., SUITE 250 • ANAHEIM, CA 92805 • STATE LICENSE NO. ACO 001654 (800) 843-8526 • FAX (714) 956-6264

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington D.C. 20554

In the matter of	)	
Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them	)	PR Docket No. 92-235

To: The Commission

COMMENTS OF CSSS, Inc.

CSSS, Inc. holds FCC radio licenses governed by Part 90 and is therefore an interested party to and files the following comments in, PR Docket No. 92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

This company owns and operates a Safecom radio system manufactured and sold by Sensus International of San Jose, California. Our Safecom system is fully UL-Listed for Life-Safety applications and uses advanced technology to put up to 2,500 radio units on a single simplex or duplex 12.5 KHz narrowband channel. As a fully supervised two-way system, it need not transmit a message more than once in most cases.

We believe that the Safecom system meets or greatly exceeds the intent of this proceeding with respect to spectrum efficiency and channel loading, and should become the standard by which other alarm radio systems are measured. This company wishes to go on record as supporting the comments filed by Sensus International in this proceeding.

Respectfully Submitted,

Robert M. Johnson

Robert M. Johnson, President
CSSS, Inc.
50 So. Anaheim Blvd. Suite 250
Anaheim, CA 92805
(800) 843-8526

MEMBERS OF: SECURITY SERVICES ASSOCIATION • CALIFORNIA ALARM ASSOCIATION • NATIONAL FIRE & BURGLAR ALARM ASSOCIATION • AMERICAN SOCIETY OF INDUSTRIAL SECURITY • CALIFORNIA CRIME PREVENTION OFFICERS ASSOCIATION • INTERNATIONAL SOCIETY OF CRIME PREVENTION PRACTITIONERS • CALIFORNIA STATE SHERIFFS ASSOCIATION • NATIONAL SHERIFFS ASSOCIATION • CALIFORNIA PROBATION, PAROLE, & CORRECTIONAL ASSOCIATION • AMERICAN CORRECTIONS ASSOCIATION

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To: The Commission

COMMENTS OF RFI SECURITY, INC.

Security holds FCC radio licenses governed by Part 90 and is therefore an interested party to and files the following comments in, PR Docket No. 92-235. The comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

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We believe that the Safecom system meets or greatly exceeds the intent of this proceeding with respect to spectrum efficiency and channel loading, and should become the standard by which other alarm radio systems are measured. This company wishes to go on record as supporting the comments filed by Senses International in this proceeding.

Respectfully submitted,

RFI Security, Inc.
360 Turtle Creek Court
San Jose, CA 95125
(408)-298-5400
February 19, 1993

SONITROL®

Sonitrol of Dayton

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

In the matter of	)	
Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them	)))	PR Docket No. 92-235

To: The Commission

COMMENTS OF Shiver Security Systems Unlimited

Shiver Security holds FCC radio licenses governed by Part 90 and is therefore an interested party to and files the following comments in, PR Docket No. 92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

This company owns and operates a Safecom radio system manufactured and sold by Senses International of San Jose, California. Our Safecom system is fully UL-Listed for Life-Safety applications and uses advanced technology to put up to 2,500 radio units on a single simplex or duplex 12.5 KHz narrowband channel. As a fully supervised two-way system, it need not transmit more than once in most cases.

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To: The Commission

COMMENTS OF A-Sonic Guard, Incorporated

Security holds FCC radio licenses governed by Part 90 and is therefore an interested party to and files the following comments in, PR Docket No. 92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

This company owns and operates a Safecom radio system manufactured and sold by Senses International of San Jose, California. Our Safecom system is fully UL-Listed for Life-Safety applications and uses advanced technology to put up to 2,500 radio units on a single simplex or duplex 12.5 KHz narrowband channel. As a fully supervised two-way system, it need not transmit a message more than once in most cases.

We believe that the Safecom system meets or greatly exceeds the intent of this proceeding with respect to spectrum efficiency and channel loading, and should become the standard by which other alarm radio systems are measured. This company wishes to go on record as supporting the comments filed by Senses International in this proceeding.

Respectfully submitted,

Janet L. O'Connor

A-Sonic Guard, Incorporated
745 S. 6th Street
Louisville, KY 40203
(502) 584-3117
March 11, 1993

cc: FCC 1-original & 9-copies
Senses International 1-copy

VALLEY

NSS
NATIONAL SECURITY SERVICE

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

In the matter of	)	
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Replacement of Part 90 by Part 88 to	)	PR Docket No. 92-235
Revise the Private Land Mobile Radio	)	
Services and Modify the Policies	)	
Governing Them	)	

To the Commission:

Comments of National Security Service, Inc.

National Security Service, Inc. holds various FCC radio licenses governed by Part 90, is therefore an interested party to and files the following comments in, PR Docket No. 92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

This company owns and operates a Safecom radio system manufactured and sold by Senses International of San Jose, California. Our Safecom system is fully U.L. Listed for Life Safety applications and uses advanced technology to put up to 2,500 radio units on a single simplex or duplex 12.5 KHz narrowband channel. A fully supervised two-way system, it need not transmit a message more than once in most cases.

We believe that the Safecom system meets or greatly exceeds the intent of this proceeding with respect to spectrum efficiency and channel loading, and should become the standard by which other alarm radio systems are measured. This company wishes to go on record as supporting the comments filed by Senses International in this proceeding.

Respectfully submitted,

John E. Tierney
Vice President/General Manager
National Security Service, Inc.

May 27, 1993

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RALEIGH, NORTH CAROLINA 27607
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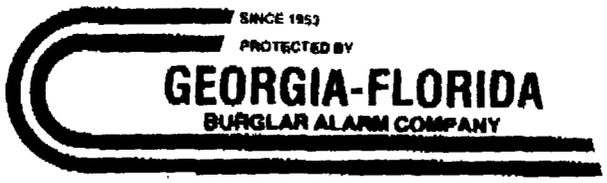

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To: The Commission

Comments of Georgia Florida Burglar Alarm Co.

Georgia Florida Burglar Alarm Co. holds various FCC Radio Licenses

GUARDIAN SECURITY SYSTEMS
INCORPORATED
6945 EAST 11th STREET — SUITE 1-A
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(918) 836-3336
FAX (918) 663-3635

Before the
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To: The Commission

Comments of Guardian Security Systems

Guardian Security Systems holds various FCC radio licenses governed by Part 90, is therefore an interested party to and files the following comments in, PR Docket No. 92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

This company owns and operates a Safecom radio system manufactured and sold by Senses International of San Jose, California. Our Safecom system is fully UL-Listed for Life-Safety applications and uses advanced technology to put up to 2,500 radio units on a single simplex or duplex 12.5 KHz narrowband channel. A fully supervised two-way system, it need not transmit a message more than once in most cases.

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Respectfully submitted,

R. C. Cocolas

Guardian Security Systems
6945 East 11 Street, P.O. Box

581690

Tulsa, OK 74158

WatchGuard
TOTAL SECURITY

May 27, 1993

Before the
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To: The Commission

Comments of WatchGuard

WatchGuard holds various FCC Radio licenses governed by Part 90, is therefore an interested party to and files the following comments in, PR Docket No. 92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

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Respectfully submitted,

Tim Andreas
WatchGuard Total Security
3112 Enterprise Blvd.
Lake Charles, LA 70601

3112 Enterprise Blvd.
Lake Charles, LA 70601
318-478-3112

Security Systems, Inc.

Where Quality Counts

May 26, 1993

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

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To: The Commission

Comments of Security Systems, Inc.

Security Systems, Inc. holds various FCC radio licenses governed by Part 90, is therefore an interested party to and files the following comments in, PR Docket No.92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

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ECURITY ALARM C

CERTIFIED ALARM CO. OF ALABAMA INC.
2904 JACKSON HWY., P.O. BOX 237 · SHEFFIELD, ALABAMA 35660 · (205) 383-1225
24 HOUR U.L. LISTED CENTRAL STATION

SINCE 1960

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FEDERAL COMMUNICATION COMMISSION
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In the matter of

Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them — PR Docket No. 92-235

To: The Commission

Comments of Certified Alarm

Certified Alarm hold various FCC radio licenses governed by Part 90, is therefore an interested party to the files the following comments in PR Docket No. 92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

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Respectfully submitted,

Certified Alarm
P.O. Box 237
Sheffield, AL 35660

May 26, 1993

SECURITY GENERAL CORPORATION

Before the
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Washington, D.C. 20554

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To: The Commission

Comments of Security General Corporation

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Respectfully submitted,

SECURITY GENERAL CORPORATION

James W Pattison

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TO: The Commission

Comments of Washington Alarm, Inc.

Washington Alarm, Inc. holds various FCC radio licenses governed by Part 90, is therefore an interested party to and files the following comments in, PF Docket No 92-235. These comments will be directed primarily at the Central Station operations currently authorized under Part 90.75.

This company owns and operates a Safecom radio system manufactured and sold by Senses International of San Jose, California. Our Safecom system is fully UL Listed for Life-Safety applications and uses advanced technology to put up to 2500 radio units on a single simplex or duplex 12.5 KHz narrowband channel. A fully supervised two-way system, it need not transmit a message more than once in most cases.

We believe that the Safecom system meets or greatly exceeds the intent of this proceeding with respect to spectrum efficiency and channel loading, and should become the standard by which other alarm radio systems are measured. This company wishes to go on record as supporting the comments filed by Senses International in this proceeding.

Very Truly,

John Woodman

UL LISTED AND FM APPROVED CENTRAL STATION LICENSED AND BONDED ELECTRICAL CONTRACTOR

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