

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Review of the Commission's Part 95 Personal Radio Services Rules)	WT Docket No. 10-119A
)	
1998 Biennial Regulatory Review – 47 C.F.R. Part 90 – Private Land Mobile Radio Services)	WT Docket No. 98-182 RM-9222
)	
Petition for Rulemaking of Garmin International, Inc.)	RM-10762
)	
Petition for Rulemaking of Omnitronics, L.L.C.)	RM-10844

COMMENTS ON NOTICE OF PROPOSED RULEMAKING

Comment Date: September 2, 2010

To: The Commission

COMMENTS OF

Northern California GMRS Users Group (NCGUG)
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INTRODUCTION

I represent a group of GMRS licensees who cooperatively own and operate several suburban GMRS repeater systems in the San Francisco, California bay area. This "ad-hoc" group forms the Northern California GMRS Users Group (NCGUG).

The NCGUG is comprised of over 49 licensed individuals and families. Core NCGUG members provide repeaters, support their maintenance, and arrange for access to repeater site facilities. Costs are either absorbed by the core members or spread among the various users on a volunteer basis. NCGUG has been in existence since the late 1990's.

The majority of our licensees utilize commercial or public-safety grade portable or vehicular radios which operate from five to fifty watts of power. All users have access to various NCGUG repeaters and also operate in direct mode. Regular users are assigned their own system access codes (CTCSS, Continuous Tone Coded Squelch System) for private use, identical to "community repeater operation" which is well known in the Part 90 services.

Various Community Emergency Response Teams (CERT) also use our repeater systems for emergency and event communications, and regular emergency communications drills.

Membership in the NCGUG has grown approximately 40% in the last two years; we believe this is due to improved GMRS websites which connect licensees to repeater owners in their own area,¹ and the substantial rise in CERT activities and volunteerism, promoted by the Obama Administration.

I am a Registered Professional Engineer (Electrical) in the State of California and Arizona, and a Principal in a firm involved in the planning, design and implementation of utility and public safety communications systems on a full-time basis. I have been licensed in the GMRS since the mid 1990s.

Our comments are organized using the Section headings in the NPRM.

COMMENTS

A. General Reorganization/Streamlining of the Personal Radio Services

Section 3: Power Limits

We urge the Commission not to reduce permissible transmit power levels for licensed GMRS use for the sake of streamlining rules or increased channel reuse.

The Commission notes that 50 watts output power is relatively high power, and asks whether a reduction is warranted to increase frequency re-use, and reduce interference, to GMRS communications. While frequency re-use is a laudable goal, the NCGUG sees no significant

¹ www.mygmrs.com is an excellent example of this.

GMRS congestion problems, at least in the San Francisco Bay area. Cooperation and communication among repeater owners and operators in the San Francisco bay area has been effective at limiting interference among repeaters. The cost of high-powered GMRS equipment is in fact self-regulating, limiting the amount of such equipment on the market. We have not heard users experiencing congestion problems on repeater systems or when operating in direct or talkaround modes.

To the contrary, we note that the most common complaint both GMRS and FRS radio users is “poor range”, not congestion. The vast majority of our members joined the NCGUG to use our repeaters to improve range. Adequate coverage is critical to making a wireless service useful. Reducing transmit power would reduce the public benefit and value of the GMRS.

We also note that 50-watt stations, whether base, vehicular are repeater stations rarely cause significant interference to GMRS or FRS users operating in direct or talk-around modes. Users communicating in these modes are usually close to one another (due to range limitations), and thus have signals that can easily communicate over most high-power stations. While it is believed that high-elevation repeaters and home base stations likely contribute the strongest signals, they are often many miles away from users and are much weaker than a nearby radio in direct or talk-around mode and are not likely to have a significant effect.

NCGUG also suggests that harmonization of power limits with Part 90, to the extent practical, would further streamline rules of the various services. We see little potential for abuse of the transmit power rules for the reasons stated above.

For these reasons, the NCGUG does not support any reduction in transmitter power, but would support alignment with Part 90 rules governing transmit power levels for streamlining purposes.

We agree that that the personal communications environment has evolved substantially. However, we strongly disagree with the Commission’s assertion that repeaters may not be needed since “...most wide-area personal communication needs are now met by commercial communication providers...”.

The majority of communications with other family members in our household is best conducted in short bursts, particularly while operating a motor vehicle. While several carriers have implemented push-to-talk services, they have yet to meet our needs. For example, the carrier with the best-performing push-to-talk (PTT) service provides poor and spotty coverage, particularly indoors; the other carrier can provide coverage, but the call setup is slow and dangerous while driving, and handset models have been marginal.

Additionally, the PTT services among the carriers are not interoperable. Thus, we are unable to communicate on a PTT basis with family or friends on different networks. Also, the costs of a one-to-many PTT call is multiplied by the number of users in the call, and can become prohibitively expensive. While we have chosen to equip some of our local repeater with backup power, many of the carrier systems do not have long-term backup power, and their systems will become overloaded during emergency conditions.

In contrast, our GMRS repeaters can provide targeted coverage, one-to-many or one-to-one communications, with a total cost of ownership that is an order of magnitude lower than that of a leased service, with potentially higher reliability.

The NCGUG has been contacted recently by leaders of several Community Emergency Response Teams (CERT) who are seeking an affordable, one-to-many communications medium that has reasonable service range. The GMRS is the perfect fit for these organizations. Unlike leased carrier services, even if our repeater systems are inoperable following an emergency or disaster, CERT vehicular and handheld equipment still operates in direct or talk-around mode. None of the carriers can provide such flexibility and essential communications capability. Why would the Commission want to limit consumer choice and further force reliance on large national carriers for conformity of the various FCC rules and spectrum-efficiency?

Section 5: Voice Scrambling

The Commission indicates that it prohibited scrambling to allow users of these services to readily hear, understand, and communicate with each other, and facilitates sharing and enables emergency communications. However, we note that tone-coded squelch, which is common to most all consumer GMRS/FRS bubble-pack radios sold over the last ten years, effectively eliminates the ability to hear others anyway, for these purposes. If this was one of the Commission's goals then it should have prohibited CTCSS capability.²

Scrambling of messages can be beneficial in the GMRS, but also raises several concerns. Improved message security can significantly enhance the GMRS. Message security is one reason many push-to-talk and land mobile customers have switched to leased mobile phone services. In the public safety service, mobile phones are the most common way to partially-secure communications when encrypted radios are not available.

Communications security is no different for family communications, and in some ways is very important. Permitting voice security will improve safety of family members, which often must announce their location over unsecure radio channels. It will also allow financial or personal messages to be conveyed in a more secure manner and make GMRS even more useful than it is today.

Our concern is related to the scrambling of illegal or business communications, specifically to avoid detection. However, the benefits of improved message security should not be restricted for the possibility that a few individuals may wish to use it improperly. NCGUG suggests that voice security techniques be permitted for all station classes and power levels, but specifically require (and reiterate) that signals be identified in plain voice or traditional Morse code techniques.

Additionally, the Commission could also require that encrypted radios be capable of automatically decoding (without operator intervention) analog FM signals when in the scrambled

² Often bubble-pack radio users do not know how to disable CTCSS, or don't understand the purpose and function of it.

mode. We understand that this is a standard feature offered by several manufacturers who offer voice security products. This would facilitate communications among users to better facilitate channel usage while preserving security.

B. General Mobile Radio Service

Section 1: Station Licensing

NCGUG disagrees with the Commission's proposal to license the GMRS service by rule. While this may have been appropriate for the FRS, the formal GMRS is very different from what the Commission describes in its Notice and should not be considered a similar service.

First, we are compelled to address the Commission's belief that "... current GMRS operations more closely resemble other Part 95 Personal Radio Services that are licensed by rule rather than Part 90 private land mobile systems that require an individual station license." We believe the Commission's approach is much too broad. It is improperly grouping the many unlicensed purchasers of FRS bubble-pack radios with the more professional licensed GMRS operators.

Bubble-pack radios are often first purchased to use at a particular event (camping, shopping, car caravans, etc.), particularly when a family has small children. The investment can be less than \$100 for two radios, and the user at least expects the radios to survive the current event, and maybe a year or two after. Often, these radios end up being used as toys by children, until the batteries expire, they break, or are lost. Small retail businesses also purchase bubble-pack radios, at least initially, but more often abandon these for more reliable commercial business radios. Finally, staffing organizations for large-scale events often purchase slightly larger quantities of bubble-pack radios for field staff use, for a single specific event. Again, these are often abandoned after the first event due to limited range, poor communications quality and interference susceptibility.

In contrast, the licensed GMRS user often purchases portable or vehicular equipment costing \$200-\$1,000 (each), and is associated with one or more local groups operating repeaters. Repeater equipment runs into the thousands of dollars, and operators often pay recurring site lease costs. My wife and I (as well as many NCGUG members) have commercial grade radio equipment in each of our vehicles, several commercial portable radios, and I operate a commercial-grade repeater in our City that other families also use. Our group operates three other repeaters as well. Many families have been assigned their own CTCSS code on each repeater, and we have a common "group" code for different family members to communicate when needed. The multi-code capability is provided by a commercial "Community Repeater Tone Panel" installed in each repeater, the same which is in broad use in the conventional commercial radio services. This is exactly how Part 90 business operations are conducted on Part 90 spectrum on conventional radio systems. We see no substantial differences, other than the content of the messages being conveyed.

The Commission also attempts to equate FRS/bubble-pack users with formal GMRS users by claiming there is no frequency coordination, and that both have access to any channel, unlike

Part 90 business radio services. While there is no single organization that coordinates repeaters here, most of the repeater owners here coordinate selection of frequencies and CTCSS codes, several times each year. We note that the GMRS population is quite active, and ongoing web discussions have seemingly kept the service quite professional, unlike the days of CB in the 70's or the influx of bubble-pack radios. Thus, coordination is being performed, just not by a separate entity.

While GMRS and FRS users have access to multiple channels, most GMRS users generally remain on the specific channel that supports their local repeater. Having authorization to use different channels primarily provides flexibility when initially selecting frequencies to avoid conflicts. Once a channel is selected, formal GMRS users rarely move, so they essentially use channels on a semi-exclusive basis. We pre-program our radios in advance, with specific family codes and frequencies; this ensures we can reach each other without having to setup the channels each time (also because changing channels on repeaters takes significant effort). Thus, it is highly impractical to use different channels on a regular basis.

In contrast, FRS users change code and frequencies often, either to avoid others, or because children have changed the settings, or their batteries have failed and the radio has reset.³ Unlike commercial radios, bubble-packs can be configured from the front panel.

For these reasons, we see licensed GMRS operated more in line with Part 90 services, or independent of typical bubble-pack GMRS/FRS users.

The NCGUG believes that individual licensing serves an important function for both GMRS users and the Commission.

We find no support for license by rule from our user base. Each has made a significant investment in their equipment and has a reasonable expectation that the service will remain protected from less responsible users, and in particular, encroachment by business users.

We believe that licensing promotes openness and transparency among individuals. Having something to lose, such as a license authorization, promotes and encourages cooperation among GMRS operators, particularly repeater operators whose systems have a significant impact on many other users.

Thus, licensing is important in a shared service where cooperation is critical.

In contrast, license-by-rule promotes anonymity and less overall responsibility. This in turn diminishes the real and perceived value of the service, and will likely result in a more chaotic service serving no one.

³ This suggests a basic incompatibility between bubble-pack (or low-power) GMRS and FRS and formal GMRS users; formal GMRS users are unable to avoid real or nuisance interference from the dynamic bubble-pack users because our networks and equipment are fundamentally different. We continue to believe that mixing fundamentally different services is not in the best interest of either service.

We also believe that this proposal will further diminish field enforcement priority, which has been particularly important to combat encroachment by local government and businesses entities. As an example, we note that Commission's enforcement actions in the CB service have diminished significantly since the service was licensed-by-rule. It is not that license-by-rule reduced rule violations or malicious interference; we believe that lower enforcement priority initially resulted in greater problems, which in turn drove many legitimate users away from the service; fewer enforcement requests were submitted by these legitimate users as a result.

We believe that licensing potentially reduces the Commission's enforcement burden, as it acts as the "invisible hand" to encourage joint resolution of problems on such shared channels.

Further, removing the licensing requirement does not significantly reduce the licensees' or the Commission's burden; a GMRS applicant can now apply on-line in under ten minutes, and pay electronically via credit card. We suspect there is little human intervention into the licensing or renewal process at the Commission. A ten-year license term, (which NCGUG supports) will further reduce this impact.

Finally, we believe license-by-rule weakens representation (at the Commission) of the very users the service is meant to protect. No metrics will be available to the Commission to gauge whether the service is actually providing a valuable service to citizens (through increasing or decreasing applications, renewals, etc.).

Given the fundamental differences in operation, equipment and licensee commitment between bubble-pack GMRS/FRS and formal GMRS users, we believe that the current high-power GMRS service is significantly different from all other Personal Radios Services.

For this reason, GMRS must remain an individually-licensed service.

NCGUG would support elimination of the license requirement for low-power (2watts or less TPO) portable radio users. However, use of high-elevation and more powerful repeater stations by low-power unlicensed users would become problematic.

However, we believe that higher-power users, and particularly those individuals who operate repeaters should be required to obtain a Commission authorization as they necessarily should assume much more responsibility for their stations.

We also support retention of the identification requirements for licensed individuals. The level of cooperation that the current \$85 (\$17/year for five years) buys among licensed GMRS users is priceless.

NCGUG fully supports a ten-year license term. This would make the GMRS consistent with other services, such as Part 90.

Section 2: Eligibility

The existing individual eligibility requirement has been extremely successful in maintaining a viable personal radio service. We have seen a significant reduction in unlicensed, high-power business operations since the 1990's.

However, business and local government encroachment still accounts for the majority of our interference problems.

We have found that many of these offenders are now lower-powered users (under five watt portables). As an example, there have been two specific cases here where this created significant interference.

In the first case, NCGUG field users had been experiencing interference at random locations for approximately five years, from what appeared to be crane operators. The crane crew's messages were extremely long duration and repetitive, and were transmitted from cranes high above the ground, covering an extremely large area. We tried on five or six different occasions to have these users change channels, but they refused to cooperate. We have even contacted the Vice President of the corporation who refuses to return our messages. This problem persists today.

The other recent case involved local law-enforcement agency conducting driver-training exercises for several consecutive weeks at time, from a training facility on a hill. This problem persisted for over two years. These users refused to cooperate when we asked them to change channels (we could change since our repeater is fixed there). The Commission's field enforcement staff was then contacted and finally resolved the problem.

We have found that government and business users are often the most uncooperative when we attempt to resolve a channel-sharing or interference issue (further showing that having nothing to lose [a license] leaves nothing to gain from cooperation). Business use is wholly incompatible with personal radio users due to the frequency and duration of business transmissions, which can easily dominate the limited number of channels.

Business has been allocated hundreds of channels across various radio bands, can use FRS, and the Commission's 2013 spectrum-efficiency and narrowbanding initiative will further create more business channels as the transition date approaches.

Allowing business on the limited number of GMRS channels would not reduce congestion in the business service in any significant way, but could irreparably damage GMRS.

If the service is licensed-by-rule, restricting business use by only permitting individuals to operate will be unenforceable and impractical. How would a small family run business, which can operate in GMRS today (and co-exist successfully), be differentiated from a non-family business operation? NCGUG suggests that under a license-by-rule scenario, restricting use to individuals may be the only course of action.

Section 4: Narrowbanding GMRS Channels

NCGUG supports a transition to more spectrum-efficient operation. This could reduce adjacent-channel interference now experienced on repeater inputs from FRS use, and allow for greater use of the seven 462 MHz interstitial channels.

However, we note that conversion to narrowband analog has a significant negative impact on both effective range (coverage), and on the ability of a receiver to reject co-channel interference.

Range degradation in narrowband analog has been well documented in TSB-88⁴ and by industry; with all else being equal, coverage is reduced by over 3 dB. Unlike commercial and public-safety services, where high-density repeater systems are common, GMRS repeaters are sparse and operate more distant from their user base. Thus, GMRS users currently operate with weaker signals in many cases. A 3 dB or more reduction will have a significant impact on coverage and service.

TSB-88 also shows that requisite carrier-to-interference (C/I) ratios required for a given audio quality are 6 dB higher for narrowband than for wideband analog FM. Thus, narrowband radios are much more affected by co-channel interference than wideband radios. This results in a further range reduction, particularly on shared channel where co-channel use in the same area is common.

In contrast, the most common narrowband digital modulation schemes have equivalent range to wideband analog, and have a lower C/I requirement as well (can better reject co-channel interference). Digital also provides more consistent voice quality, and can provide enhanced signaling features, such as those cited by Garmin.

Current digital technologies can also exceed the Commission's 2011/2013 Part 90 spectrum efficiency goals. Where narrowband analog provides a maximum of one voice channel per 12.5 kHz of spectrum, two digital technologies currently exist that can provide one voice channel in 6.25 kHz (or equivalent) efficiency, with no significant impact on coverage or interference susceptibility.

For these reasons, NCGUG suggests that the Commission permit digital voice and data emissions on GMRS, for all station classes. This would include F1E, FXE, FXD and F7W types. The Commission should consider a similar approach to that of Part 90, where both analog and digital technologies are permitted, as long as they meet certain spectrum efficiency requirements. Licensees should not be required to use digital equipment.

Contrary to what manufacturers may admit under competitive conditions, analog and digital signals can co-exist on the same channels, and allow for pre-transmission monitoring as required in a shared channel service. Most all radios are equipped with a "busy lamp" which indicates when a channel is in use (in addition to a monitor switch that can disable coded squelch). To the

⁴ TIA Telecommunications Systems Bulletin, Wireless Communications Systems, Performance in Noise-Limited Situations, Part1: Recommended Methods for Technology Independent Performance Modeling, Table A-1.

extent that users actually monitor before transmitting today, analog or digital radio busy lamps will indicate the presence of a co-channel signal, regardless of the nature of the signal. It is not necessary to actually listen for a voice to know if the channel is in use.⁵ It is inevitable that most all communications will be digital in the foreseeable future; there is no better time to begin this transition.

With regard to a narrowband transition period, it is noted that the Commission gave Part 90 commercial and public safety licenses many years to complete the transition to narrowband (from approximately 1997 to 2013).

The manufacturers of GMRS equipment are the same as that for commercial and public safety equipment. Due to the limited GMRS market, it is unlikely that manufacturers will continue to make wideband equipment only for GMRS operation. Thus, we believe that only new narrowband analog and digital equipment will be available over the next few years for GMRS. While spectrum-efficient equipment is immediately available and affordable (various commercial digital technologies are available at or near analog equipment costs), requiring immediate replacement of user and repeater equipment remains cost prohibitive for most GMRS users and groups.

As the Commission now realizes, the imposition of greater spectrum efficiency requirements on commercial and public safety licensees in Part 90 failed to produce results as quickly or as affective as the Commission intended. The primary reason was that the Commission required new narrowband applicants to fully protect legacy wideband licensees throughout the entire narrowband transition period. Thus, neither legacy wideband licensees, nor new narrowband applicants had much motivation to take action.

The NCGUG suggests that a ten-year transition to more spectrum-efficient technologies be required on all GMRS frequencies. Further, to encourage stations to transition, we suggest that high-power operation be permitted for licensed GMRS mobile and repeater stations on the seven 462 MHz interstitial GMRS channels, which are now limited to low-power operation, but only for stations operating spectrum-efficient narrowband technologies. This would also require that high-power mobile and control station operation be permitted on the 467 MHz interstitial channel now limited to FRS use. Interstitial narrowband stations could be required to protect incumbent wideband GMRS stations for approximately five years; wideband stations could be required to accept interference from narrowband interstitial stations in subsequent years.

Section 6: Garmin International, Inc. Petition for Rulemaking

Since Garmin was permitted to market data-capable equipment, NCGUG users have experienced some nuisance interference from time to time 462 MHz GMRS frequencies. However, this was localized, and did not occur often enough to be a major concern, in our opinion. This is because

⁵ It is unlikely that all users will be able to know the difference between a digital signal and noise as they sound similar on an FM receiver.

Garmin units were at low-elevation, and the affected receivers were also primarily mobile, and low-elevation a well.

However, the Commission's proposed rules would appear to expand Garmin's original request and permit operation on the 467 GMRS repeater input channels.⁶ Garmin has not requested this.

Repeater receivers are usually located at high-elevations, and will receive such data transmissions from tens of miles away. This will cause destructive interference to desired signals, such as from portable radios legitimately trying to access repeaters.

We recommend that the Commission clarify this by making the following changes:

“ 95.105 Permissible communications.

(d) GMRS units may transmit digital data containing location information, or requesting location information from one or more other units within that service, or containing a brief text message to another specific unit, **on channels specified for Base or Small Base (Channels 1-15) in §95.103(a).**”

Our concern remains to be abuse by commercial or local government entities who may wish to use the GMRS F2D emission for telemetry purposes, for large fleets, or in fixed operations. Therefore, we would support Garmin's proposal, but only if the GMRS remains an individually-licensed service.

C. Family Radio Service

Section 1: Combination Radios

While Section C of this NPRM is titled Family Radio Service, its scope appears to include certification of Personal Radio Service equipment generally, including GMRS. Our comments are related to the GMRS.

First, we believe that most of the non-bubble-pack equipment used in GMRS today, i.e. five-watt portable radios and vehicular radios, are type-certified for Part 90 (not Part 95). We are aware of only a handful (less than three) vehicular and portable radio models, and possibly a couple repeater models, that are type-certified for Part 95 exclusively, or for both Part 90 and 95.

The NCGUG noted earlier that the vast majority of our user's equipment is commercial or public-safety grade, with much of it likely being certified in Part 90 as well. All of our repeaters are commercial or public-safety grade.

If the Commission places further restrictions on equipment certified under Part 95, we are concerned that manufacturers will no longer produce equipment certified for both services, or worse, completely eliminate GMRS frequency capability in Part 90 commercial or public safety

⁶ Garmin originally proposed to operate on the 462 GMRS frequencies specified under §95.29(a) and (f); these are the 462 MHz primary and interstitial frequencies, and not the 467 MHz GMRS repeater input frequencies.

grade equipment. Since we believe the vast majority of equipment in GMRS is only certified in Part 90, this will significantly impact the availability of equipment choices, with no significant benefit.

For this reason, we urge the Commission to explicitly allow Part 90 certificated equipment in the GMRS, without requiring Part 95 certification (or, harmonization of Part 90 and 95 equipment certification requirements). Part 90 equipment is not front-panel programmable, and meets or exceeds the emission mask and frequency tolerance of Part 95 certification requirements. Further, we believe such models have not significantly contributed to intentional or unintentional interference to other critical radio services.⁷

Respectfully Submitted,

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⁷ Since Part 90 equipment often requires special software and hardware to program and configure, we believe that this will remain a significant barrier to most individuals which might consider disrupting other services.