

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

In the Matter of )  
)  
GARMIN INTERNATIONAL INC. ) RM-10762  
)  
Amendment of Section 95.29(f)(1), and )  
95.119(a)(1)(d), 95.183 (a)(4), 95.631(a), (e) & (f) )  
95.633(a) and 95.181 To Authorize Manufacturer, )  
Sale and Use of GPS Transmission Enhanced )  
General Mobile Radio Service Units )

COMMENTS ON PETITION FOR RULEMAKING

Comment Date: September 4, 2003

To: The Commission

COMMENTS OF

Northern California GMRS Users Group (NCGUG)

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## INTRODUCTION

1. The Northern California GMRS Users Group (NCGUG) represents a group of GMRS licensees who cooperatively own and operate several suburban repeater systems thirty miles east of San Francisco, California.

2. The NCGUG promotes the legal and cooperative use of GMRS for personal communications. The group continues to expend considerable effort in identifying and resolving sources of GMRS interference, including the ongoing interference from FRS users to GMRS repeater systems. The NCGUG contributes regularly to various on-line magazines and GMRS forums, with a particular focus on interference identification and awareness programs.

3. The Author is a Registered Professional Engineer (Electrical) in the State of California and Arizona, and is involved in the planning, design and implementation of public safety communications systems on a full-time basis for a national communications engineering firm.

## COMMENTS

4. First, we believe that location information transmission over GMRS channels would be a benefit to the public, and we generally support the concept suggested by Garmin.

5. Specifically, we support Garmin' suggested requirement for integrated (non-detachable) antennas, limiting data transmission to mobile use (not base or repeaters), and limiting data transmissions (GPS and text messaging)<sup>1</sup> to 30-seconds intervals.

6. However, Garmin's approach could open many potential loopholes, and result in significant abuse by individuals and manufacturers who wish market and sell digital "telemetry" systems using such technology.

7. We note that on Page 4, bullets 4 and 5, Garmin does not explicitly require that EVERY data transmission be manually initiated, only that "...data transmissions must be initiated by a manual action or command of a user.." So we expect Garmin to allow a user to enable a automatic *polling* feature only once, and the radio itself would then automatically poll every 30 seconds. Thus, under the proposed rules, continuous, and even unattended polling will result.

8. This ambiguity could result in FRS units being used on large transit fleets or other industries requiring location determination capability (i.e., shipping containers, inventory systems, etc. that could be considered *mobile*) where the installer could activate the GMRS unit ONCE and configure it to transmit one-second bursts continually. This will result in hundreds of transmissions per hour. Thus, what prevents a manufacturer from selling equipment that after a single, *one-time* manual activation could continuously transmit data bursts, similar to a typical telemetry system? While Garmin might believe that the "individual" licensing requirement of the GMRS would reduce this problem, widespread distribution of the proposed GPS/GMRS product would in fact result in significant abuse. It would then be contingent upon the affected

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<sup>1</sup> We note that the bulleted items on Page 4 sometimes refer to "GPS data, and other times to "text messaging". It is important that both of these be considered "data transmissions". We believe that the Commission's rules should not be specific to message content.

GMRS license to expend their efforts to locate the violator, validate the potential rule violation, and then inform the Commission's enforcement bureau.<sup>2</sup>

9. In the FRS rules, the Commission limited the ability of users to attach external devices or apparatuses that were not FCC certified as part of the unit.<sup>3</sup> This reduced the chance that an external signaling device could be attached to a radio, such as a data modem, Terminal Node Controller (TNC), or other device that would permit large-scale telemetry or fleet polling operations. Garmin proposed no such restriction for GMRS products.

10. While the NCGUG does not wish to restrict individually-licensed GMRS users from deploying external devices, such as GPS or messaging hardware, we need to ensure that the limited number GMRS channels are not abused by unlicensed individuals, or large organizations, commercial or otherwise.

11. For these reasons, we suggest the Commission (a) restrict automatic data transmissions to a period not exceeding four hours (requiring the user to manually re-enable automatic polling if another four-hour session is needed), and (b) *explicitly forbid* GPS and simple messaging to be deployed in a large scale by organizations, commercial or otherwise, for fleet or object location and identification, or for other telemetry purposes.

12. What would also lessen the chances of unauthorized operation is to specifically hold manufacturers and/or suppliers (retailers) of GMRS equipment responsible for informing purchasers of licensing requirements and restricted uses of the product, through distinctive product labeling, retailer education programs, etc. The Commission may not be aware that today, only the end-users can be cited for improper use of GMRS equipment; no rules exist today to enable its own enforcement bureau to prosecute the suppliers, although this would be the most effective use of limited resources. It is so much more difficult to identify an errant end user than it is to preempt the problem earlier in the supply chain. Thus, we urge the Commission to take this opportunity to correct this long-standing problem.

13. Garmin's particular approach proposes to waive many of the most basic GMRS rule requirements, namely pre-transmission monitoring and callsign identification (95.119). This could result in significant interference to licensed GMRS users on the proposed regular and offset 462 MHz channels, and make it literally impossible to contact an interfering station.

14. Garmin has requested that GPS and messaging be permitted for mobile use. However, mobile operations are permitted to transmit with significant power (up to 50 watts is permitted under 95.135 [a]).<sup>4</sup> Even at a 10-watt level, a set of three or four GPS/messaging units, if used on vehicles, sailing vessels, etc. could significantly increase the level of interference.

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<sup>2</sup> NCGUG members have logged several hundred hours tracking down and identifying interfering stations over the past two years alone. We estimate that it requires 30 man-hours, on average, to successfully identify each source of interference and detail our findings to the Commission.

<sup>3</sup> Sec. 95.194, FRS Rule 4..."(c) You may not attach any antenna, power amplifier, or other apparatus to an FRS unit that has not been FCC certified as part of that FRS unit. There are no exceptions to this rule and attaching any such apparatus to a FRS unit cancels the FCC certification and voids everyone's authority to operate the unit in the FRS."

<sup>4</sup> Garmin has requested that antennas must be integral to the GMRS unit, which would likely preclude safe operation at 50 watts. However, it is not unlikely that a vehicular rooftop antenna could be designed with a mounting base

15. We contend that interference would in fact result because Garmin's equipment is not required to detect the presence of other co-channel signals before transmitting data. As we noted above, manufacturers could design equipment to automatically transmit a poll (or a response to one) after initial manual activation. Thus, such equipment could transmit data over ongoing communications.

16. It would appear that Garmin's proposed use would also frustrate §95.143 (Managing a GMRS System in an Emergency), which specifies, "The stations in a GMRS system must cease transmitting when the station operator of any station on the same channel is communicating an emergency message..."

17. Potential customers of GPS/messaging products will have a limited understanding of pre-transmission monitoring, so such protection should be automatic and designed into equipment that can transmit in an automatic or unattended fashion. The single and most cost-effective way to accomplish this would be to restrict data communications based on simple channel activity, using the squelch circuit that is already present in every GMRS radio. If the GMRS unit detects channel activity, whether voice or data, it would refrain from data transmission. Furthermore, once the channel becomes clear, it has been industry practice to have the queued data transmission delayed for a random time period before transmitting. This avoids numerous data units from transmitting at the same time and covering each other immediately following a co-channel signal.

18. We suggest that the Commission append the following to the proposed wording of 95.193(a):

**"...Digital data communications are secondary to voice communications, and must protect voice communications through automatic methods. Data-capable transmitters must incorporate a transmitter lockout system to prevent data transmission when other co-channel signals are present. Timing of a data transmission following a lockout shall occur at a random time period after the channel is clear consistent with good engineering practice."**

19. Callsign identification is critical to identifying sources of interference (95.119). We believe that this is first time in the history of the GMRS that a manufacturer has requested to waive this requirement. All other similar services are required to identify their transmissions; we see no need make a special allowance for data communications, especially when GMRS users are permitted to operate at higher power levels than other unlicensed services.

20. We suggest that the Commission simply require the typical Morse code identification, specifically for products capable of automatic or unattended data transmissions. Users could simply enter their GMRS callsign into the radio's memory when configuring it.

21. Our GMRS users, as well as many others throughout the United States have been receiving significant destructive interference from adjacent channel FRS transmissions for

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consisting of a 10-watt GMRS transceiver – and be compliant with the proposed rules. At this power level, significant interference could result to other licensed GMRS licensees.

several years now. Interference directly from FRS transmitters (on FRS channels 1-7) is unusually severe for mobile and base stations in metropolitan areas and near city parks in the outlying suburbs. It is most severe during the spring and summer when FRS activity is the greatest. This interference is frequently strong enough to completely cover weaker "direct" GMRS transmissions on the primary GMRS channels,<sup>5</sup> and even signals from our repeater systems when operating in reduced signal areas. I live near three city parks, and this interference has made my GMRS base station/control station unusable during these months.

22. Interference measurements made on our GMRS control station and base station receivers<sup>6</sup> indicate an average of a 4-7 dB degradation to the 12 dB SINAD receiver sensitivity from *narrowband*, *1/2 watt* adjacent-channel FRS activity (FRS channels 1-7). However, Garmin wishes to operate at higher power levels, so we expect a greater level of interference than we experience today from FRS sources.

23. To achieve the 10 dB (minimum) goal for base, mobile and control station receiver protection, we suggest that the following be appended to §95.633 (Emission Bandwidth):

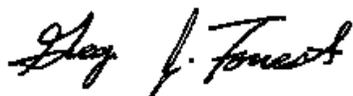
**...(x) The authorized bandwidth for emission type F2D transmitted by a GMRS unit is 8 kHz.**

24. Please note that 8 kHz is an estimate. Our goal is a minimum of 10-dB additional isolation. This is adequate bandwidth to transmit the intended data.<sup>7</sup>

25. We note that even if the Commission permits and F2D emission as requested by Garmin, Garmin's proposed amendment of 95.633 incorrectly requests an authorized bandwidth of 12.5 kHz. We believe that they have confused channel "steps" with channel "bandwidth". It is likely Garmin intended to mean 11.25 kHz, which is standard for current narrowband emissions.

Respectfully Submitted,

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<sup>5</sup> Primary GMRS channels are 462/467.550, 462/467.575, 462/467.600, 462/467.625, 462/467.650, 462/467.675, 462/467.700 and 462/467.700 MHz.

<sup>6</sup> We use professional commercial and public safety grade receivers.

<sup>7</sup> This bandwidth consistent with APCO Project 25 narrowband transmitters that are capable of transmitting 9,600 bps in an 8 kHz occupied bandwidth.