Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
GARMIN INTERNATIONAL, INC.	)	WT Docket No. 01-339
	)	
Amendment of Sections 95.193(a) and 95.631(d) to Authorize Manufacture, Sale and Use of GPS Transmission Enhanced Family Radio Service Units	)	RM – 10070
	)	
Amendment of Sections 95.193(a), 95.193(b), and 95.631(d) of the Commission's Rules Governing Permissible Communications in the Family Radio Service	)	

REPORT AND ORDER

Adopted: February 3, 2003 **Released: February 10, 2003**

By the Commission: Commissioner Abernathy issuing a statement.

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Heading Paragraph

I. INTRODUCTION

1. On December 20, 2001, we proposed to amend Sections 95.193(a), 95.193(b), and 95.631(d) of our Rules[1] to revise the scope of permissible communications and emission types for Family Radio Service (FRS) units.[2] We initiated this proceeding in response to a petition filed by Garmin International, Inc. (Garmin), requesting that FRS units be allowed to transmit Global Positioning System (GPS) location information using emission type F2D[3] in a digital data burst of not more than one second.[4] For the reasons explained below, we are revising our FRS rules to modify the authorized emission types and permissible communications to allow a new and incidental use of the FRS. We believe that permitting the transmission of location information and text messages over FRS channels will benefit the public.

II. BACKGROUND

2. In 1996, the Commission established the FRS as a very short range, two-way voice personal radio service.[5] The *FRS Report and Order* established the FRS primarily on the basis that it would fill a market niche in short distance, personal communications needs.[6] The FRS shares two small frequency bands in the 462 and 467 MHz range with the General Mobile Radio Service (GMRS).[7]

3. The Commission established FRS as a two-way, voice personal radio service to provide an affordable and convenient means of direct, short-range two-way voice communications among small groups of persons, including families, with minimal regulation.[8] Accordingly, our current rules authorize persons to use FRS units to conduct two-way voice communications.[9] One-way transmissions are permitted only for

[1] *See* 47 C.F.R. §§ 95.193(a), 95.193(b), 95.631(d).

[2] *See* Garmin International, Inc., Amendment of Sections 95.193(a) and 95.631(d) to Authorize Manufacture, Sale and Use of GPS Transmission Enhanced Family Radio Service Units, and Amendment of Sections 95.193(a), 95.193(b), and 95.631(d) of the Commission's Rules in the Family Radio Service, *Notice of Proposed Rulemaking*, WT Docket No. 01-339, 16 FCC Rcd 22876 (2001) (*Notice)*.

[3] Emissions are designated according to their classification and their necessary bandwidth. F2D is an emission in which the main carrier is frequency modulated, the signal modulating the main carrier is a single channel containing quantized or digital information with the use of a modulating subcarrier, and the type of information to be transmitted is data, telemetry, or telecommand. *See* 47 C.F.R. § 2.201 for a description of emission types.

[4] *See* Garmin International, Inc., Petition for Rulemaking, RM-10070 (filed Dec. 26, 2000) (Petition).

[5] *See* Amendment of Part 95 of the Commission's Rules to Establish a Very Short Distance Two-way Radio Service, *Report and Order*, WT Docket No. 95-102, 11 FCC Rcd 12977, 12983 ¶ 17 (1996) (*FRS Report and Order*).

[6] *Id*. at 12977 ¶ 2, 12979 ¶ 5.

[7] Specifically, FRS channels 1-7 are also GMRS frequencies and FRS channels 8-14 are offset from GMRS frequencies. *Compare* 47 C.F.R. § 95.621 (GMRS frequencies) *with* 47 C.F.R. § 95.627 (FRS frequencies).

[8] *FRS Report and Order* at 12977 ¶ 2, 12983 ¶ 17.

[9] 47 C.F.R. §§ 95.191(a), 95.193(a).

emergency messages or to establish two-way communications.[10] In this connection, the Commission noted that FRS would enhance public and personal safety and service to individuals, including individuals with disabilities and parents wanting to keep in touch with, *e.g.,* locate, their children.[11] Because FRS is a voice radio service, nonvoice type emissions generally are not permitted under the current rules, except when used to make contact or continue voice communications with a particular FRS unit.[12]

4. On June 22, 2000, Garmin, a designer and manufacturer of consumer electronic devices for the marine, aviation, automotive, and recreational markets, sought a waiver of Sections 95.193(a), 95.193(b), and 95.631(d) of the Commission's Rules to allow it to manufacture and market inexpensive FRS transceivers capable of transmitting GPS location information on FRS channels.[13] The Public Safety and Private Wireless Division (Division) of the Wireless Telecommunications Bureau granted the request on September 29, 2000.[14] Under its waiver grant, the Division permitted Garmin -- contingent on the outcome of this rulemaking proceeding -- to receive FCC certification of a FRS unit that would also permit users to transmit GPS location information using emission type F2D in a digital data burst of not more than one second.[15] Additionally, Garmin states that the unit was designed to limit transmission of GPS information to only one second out of every ten-second period in the event that a user were to repeatedly press the button.[16] On December 20, 2000, Garmin filed its Petition.[17]

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[10] An FRS unit may be used to transmit one-way communications only to establish communications with another person, send an emergency message, provide traveler assistance, make a voice page, or to conduct a brief test. *See* 47 C.F.R. § 95.193(a).

[11] *See FRS Report and Order,* 11 FCC Rcd at 12979 ¶ 5.

[12] "An FRS unit may transit only emission type F3E [which is a type of voice emission]. A non-voice emission is limited to selective calling or tone-operated squelch tones to establish or continue voice communications." 47 C.F.R. § 95.631(d). The FRS unit may transmit tones to make contact or to contiue communicatinos with a particular FRS unit. If the tones are audible (more than 300 Hertz), it must last no longer than 10 seconds at one time. If the tone is subaudible (300 Hertz or less), it may be transmitted continuously only while you are talking." 47 C.F.R. § 95.193(b).

[13] Letter from Garmin International, Inc. to Federal Communications Commission (dated June 22, 2000). *See also* Letter, dated August 28, 2000, from Garmin International, Inc. to D'wana Terry, Chief, Public Safety and Private Wireless Division, Wireless Telecommunications Bureau, Federal Communications Commission.

[14] *See* Garmin International, Inc., *Order*, 15 FCC Rcd 19143 (WTB PSPWD 2000). The initial waiver grant was for one year. On reconsideration, the Division extended the term of the waiver grant to two years, subject to the resolution of the Petition. *See* Garmin International, Inc., *Order on Reconsideration*, 16 FCC Rcd 7753, 7756 ¶ 8 (WTB PSPWD 2001) (*Garmin Reconsideration Order*). The Division further extended the waiver until completion of this rulemaking proceeding. Garmin International Inc., *Order*, 17 FCC Rcd 16108 (WTB PSPWD 2002).

[15] Garmin Reconsideration Order, 16 FCC Rcd at 7753 ¶ 3.

[16] Id.

[17] The Commission sought comment on the Petition on December 20, 2001. Comments were due February 13, 2002 and Reply Comments were due February 28, 2002. Comments were filed by Garmin International, Inc., (Garmin); Northern California GMRS Users Group (NCGUG); Personal Radio Steering Group, Inc., (PRSG), Stewart Teaze (Teaze) and XM Radio, Inc. (XM). Reply comments were filed by Garmin, William C. Houlne (Houlne), NCGUG and PRSG. On our own motion we accept the late filed comment of Mr. Teaze filed on June 26, 2002.

III. DISCUSSION

A. Transmission of Non-Voice Communications on FRS Channels

5. *Background.* Garmin seeks to manufacture and market inexpensive, handheld FRS transceivers capable of both transmitting GPS location information on FRS frequencies and graphically displaying the GPS location information on a radio receiving the GPS location information.[18] In its Petition, Garmin indicated that the current FRS rules do not allow the transmission of location information using a data emission on FRS channels.[19] In support of the proposed amendments, Garmin noted it is now possible to provide a low cost handheld device capable of transmitting and graphically displaying critical location information to the public with an accuracy of ten meters.[20] These enhancements are directly the result of technological developments in equipment and service, the availability of equipment at reasonable prices, and the removal of Selective Availability[21] from the GPS signal. Adding GPS capability to FRS units would provide a significant enhancement to a service that users could use to locate lost family members or members of groups.[22]

6. In the *Notice*, we agreed with Garmin that allowing FRS units to transmit location information could provide a significant enhancement to locating a lost or injured family or group member.[23] We noted that while voice emissions may have been sufficient to meet the needs of FRS users at the time the service was authorized, specifying only one emission type in the Rules may have unintentionally limited some manufacturers' capability to develop FRS units that could be even more useful to the public.[24] We tentatively concluded that the FRS rules should not prohibit FRS units from transmitting information, and invited comment on the merits of Garmin's proposal, specifically the public

[18] Petition at 3. Garmin presently markets handheld Marine Radio Service transceivers and receivers that graphically display GPS location information on the radio receiving the GPS location information. *See, e.g.,* West Marine catalog.

[19] *Id.* at 7. The public was invited to comment on the Petition. *See Public Notice*, Report No. 2467 (Feb. 20, 2001). Houlne opposed the petition on the basis that Garmin's proposal fails to provide any meaningful enhancement to FRS. Houlne Comments at 1. Mr. Houlne's filing was originally submitted as an informal request to rescind Garmin's waiver. The Wireless Telecommunications Bureau determined that Houlne's Petition should be treated as a comment in response to Garmin's Petition for Rulemaking. *See* Letter from John J. Schauble, Chief, Policy and Rules Branch, Public Safety and Private Wireless Division, Wireless Telecommunications Bureau, to William C. Houlne (dated July 25, 2001).

[20] Petition at 6.

[21] Petition at 2 n.2. Selective Availability (SA) was the intentional degradation of the GPS signal. SA variability degraded GPS position accuracy to a radius of 100 meters. SA was turned off May 2, 2000. *See* Office of Science and Technology Policy, Executive Office of the President, Statement by the President Regarding the United States' Decision to Stop Degrading Global Positioning System Accuracy, May 1, 2000, *available at* http://www.ostp.gov/html/0053_2.html

[22] *Id.* at 5.

[23] *Notice*, 16 FCC Rcd at 22880 ¶ 8.

[24] *Id.* at 22879 ¶ 7.

interest and personal safety benefits associated with allowing FRS units to transmit location information.[25]

7. *Discussion.* Generally, commenters support permitting limited non-voice communications in FRS.[26] We agree with these commenters that amending our Rules to permit transmission of location information over FRS channels would be a benefit to the public. We believe that by incorporating GPS, an enhanced FRS unit creates a viable tool that can be used to locate lost family members or group members.

8. In addition to permitting GPS location information, some commenters proposed additional modifications to the FRS rules. Specifically, commenters suggest that we examine permitting other short data communications applications in FRS, revising our FRS definition, restricting store-and forward packet operations and requiring FRS units to have pre-set unique identification codes. First, Teaze contends that we should permit other short data communications applications in addition to allowing transmission of GPS data packets. In support of this proposition, Teaze argues that limiting data communications to GPS location information would unnecessarily limit the flexibility of the data communications applications.[27] We note that since the FRS was initially authorized, text-messaging has become an increasingly common consumer activity, by way of internet instant messaging and text-enabled wireless telephones.[28] We believe that allowing incorporation of this function into FRS units will enhance their usefulness to consumers.[29]

9. Also, Teaze suggests that we amend the FRS rules to define the service as "a two-way, very short-distance, voice and data communication service intended for transmission that do not typically require long duty cycles."[30] Teaze asserts that this modification would provide FRS units with the same flexibility as units operating in the Multi-Use Radio Service (MURS).[31] He states that such an amendment would allow both the transmission of GPS data packets as well as other short data communications applications. We decline to modify our FRS definition in the manner proposed by Teaze, but we are modifying it to reflect the changes we are adopting in this *Report and Order*. We believe that revising Section 95.401(b) to reflect that we will now permit both voice and data communications provides sufficient flexibility. We further believe that no other change is necessary because the basic purpose of the FRS has not changed.

10. Commenters have also proposed that we consider restricting the type of data transmission operations for FRS units, require that all data affecting circuitry be internal to the FRS unit, and prohibit the coupling of external devices to FRS units. Specifically, Teaze suggests that we apply the MURS

[25] *Id.* at 22879-80 ¶¶7-8.

[26] *See e.g.* NCGUG Comments at 1; PRSG Comments at 5; XM Comments at 1, 4 (transmission of GPS location information will be useful to the public); Teaze Comments at 1 (supports allowing data communications).

[27] *Id*.

[28] Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, *Seventh Report*, 17 FCC Rcd 12985, 13051-53 (2002).

[29] Teaze Comments at 1.

[30] *Id.*

[31] *See* 47 C.F.R. § 95.401(f). MURS is a private, two-way short-distance voice, data or image communications service for personal or business activities of the general public.

restriction on store-and-forward packet operations[32] to the FRS.[33] We concur that such a restriction should also apply here because a store-and-forward capability could extend the operating range of the FRS-enhanced unit to distances beyond the immediate group of users.[34] In addition, PRSG and NCGUG assert that data generating components must be internal to the FRS unit.[35] Specifically, PRSG suggests that we restrict the collection and the generation of the data permissible to be transmitted in FRS. Moreover, PRSG seeks a requirement that all data-affecting circuitry must be solely internal to the FRS unit and must not be addressable by any external device or through any external connection or inductive coupling. PRSG argues that without this restriction, data-enabled FRS units will be open to misuse through the attachment or coupling of external devices for the creation of data packets (in a store-and-forwarding operating mode).[36] We agree that we should continue to prohibit attachment of external devices, so that users cannot extend their operating range (and thus defeat the intent of the Rules that FRS be a short-distance service with efficient and intensive reuse of spectrum) by attaching power amplifiers or external antennas after the equipment receives Commission approval.[37] We note that attachment of external devices is already prohibited under current FRS rules.[38] In addition, we believe that this limitation also addresses PRSG's concern that permitting transmission of user-generated text messaging or signaling on FRS channels would convert FRS into a short messaging service (SMS).[39]

11. We also conclude that, unlike alphanumeric paging (text messaging) or other SMS, we should retain the prohibition against interconnecting FRS units to the public switched telephone network (PSN).[40] In this regard, we note that the FRS was intended to fill a niche market for mobile-to-mobile communications capability over a very short range. We are concerned that allowing interconnection would change the basic nature of the service.[41] Moreover, allowing interconnection would reduce the number of usable channels by half because interconnected operation (cordless telephone) is typically duplex. Private radio communications that are interconnected to the PSN tend to be of longer duration

[32] *See* 47 C.F.R. § 95.1311. In the MURS, store-and-forward packet generated operations are prohibited because such usage could aggravate frequency congestion. *See* 1998 Biennial Regulatory Review – 47 C.F.R. Part 90, Private Land Mobile Radio Services, *Memorandum Opinion and Order and Second Report and Order*, WT Docket No. 98-182, 17 FCC Rcd 9830, 9843 ¶ 26 (2002) (*MURS Memorandum Opinion and Second Report and Order*).

[33] *See* Teaze Comments at 1.

[34] In a store-and-forward communications system, messages are received at intermediate routing points and recorded, *i.e.,* stored, and then transmitted, *i.e.,* forwarded, to the next routing point or to the ultimate recipient.

[35] PRSG Comments at 6.

[36] *See* PRSG Comments at 6-7.

[37] *See FRS Report and Order*, 11 FCC Rcd at 12979-80 ¶¶ 5, 8.

[38] *See* 47 C.F.R. § 95.194(c).

[39] Id.

[40] *See* 47 C.F.R. § 95.193(e). Such a limitation also applies to MURS units. *See* 47 C.F.R. § 95.1313.

[41] *FRS Report and Order,* 11 FCC Rcd at 12984 ¶18.

than other types of communications, allowing interconnection would reduce the usefulness of FRS by significantly increasing congestion.[42]

12. Finally, some commenters believe we should require FRS units to have a pre-set unique identification code. PRSG argues that such an identifier would assist the recipient of a GPS-based location signal to determine if that signal originated from one of his/her associated units, or from some other non-affiliated unit.[43] Houlne further argues that for safety reasons, a preassigned, unmodifiable identifier would be unique and preferable to a user defined identifier.[44] We agree with Garmin, however, that such a requirement is unnecessary, and a more practical approach would be for the user to assign a unit name at will to the FRS enhanced radio which would permit the user to determine who is in the calling group's party and from which radio a location signal is generated.[45] Accordingly, we decline to require FRS units to have a pre-set unique identification code.

13. We believe the record in this proceeding warrants amendment of Sections 95.193(a), 95.193(b), and 95.631(d) of our Rules because we believe that these amendments will benefit FRS users.[46] Additionally, the current limitation on the emission type that an FRS unit may transmit appears to be incompatible with technological developments in equipment and service that have occurred since FRS was authorized. Accordingly, the amendments to Sections 95.193(a), 95.193(b), and 95.631(d) that we adopt today will give manufactures the ability to integrate different communications service and capabilities into FRS equipment[47] thereby enhancing FRS' usefulness to the public.

B. Avoiding Congestion on FRS Channels

14. *Background.* In the *Notice,* we indicated that voice communications would remain the primary use of FRS.[48] In order to maintain the availability of FRS channels for voice transmission, we tentatively agreed with Garmin's proposal to limit digital data emissions to no more than one second out

[42] See MURS Memorandum Opinion and Order and Second Report and Order, 17 FCC Rcd at 9844 ¶ 29.

[43] PRSG Comments at 6.

[44] Houlne Comments 7.

[45] Garmin Reply Comments at 9.

[46] Section 95.193(a)-(b) lists the types of communications permitted in the Family Radio Service, and Section 95.631(d) sets forth the emission types a FRS unit is permitted to transmit.

[47] Petition at 6.

[48] *Notice,* 16 FCC Rcd at 22880 ¶ 9. As an initial matter, we note that FRS is a shared service, and no user is entitled to protection from other users. *See* 47 C.F.R. § 95.191(b). Thus, we disagree with NCGUG's characterization of co-channel traffic as interference. *See* NCGUG Comments at 3. As stated in the *FRS Report and Order*, FRS units use only a small fraction of transmitter power that GMRS stations are authorized to use and FRS units utilize a small and relatively inefficient antenna while GMRS stations may use a large gain antenna located on a tower or building. These differences combined with the capture effect of frequency modulation emission types should preclude any disruption of GMRS communications. *See FRS Report and Order*, 11 FCC Rcd at 12980 ¶ 9, n.28.

of a ten-second period.[49] We sought comment on whether the proposal was sufficient to protect FRS voice communications.[50]

15. In addition, we sought comment on whether we should modify any other FRS rules in light of changed events since the establishment of FRS. Commenters suggested revisions concerning requiring a channel lockout system, limiting FRS data transmissions to certain channels and reducing the bandwidth for digital transmissions. For the reasons indicated below, we decline to adopt these suggestions.

16. *Duty Cycle.* In its petition, Garmin proposed that the digital data emission not exceed one second of every ten-second period. PRSG recommends increasing the minimum off-time from ten seconds to a one-minute interval to protect channel capacity for co-channel voice communications.[51] With regard to the use of FRS channels for digital data transmissions and voice transmissions, Garmin stated that the enhancements to FRS units it requests are not likely to cause interference to any other FRS unit transmitting in the FRS band.[52] Moreover, Garmin notes that PRSG's concerns relate to alleged interference from existing FRS operations. Garmin further asserts that there is no difference between analog voice emissions and the proposed digital modulations in terms of potential interference.[53] While we believe that a sixty-second duty cycle is excessive, we are sympathetic to PRSG's concern that at ten percent the cumulative effect of data transmission by several FRS units could completely command any signal channel.[54] If a signal was sent out and everyone in a particular area automatically transmits back, then significant congestion is likely to occur. As a result, we will adopt a thirty-second duty cycle which is a reasonable compromise between the two proposals. A thirty-second interval for any data transmissions will allow for protection of FRS voice communications and preserve the usefulness of location information.

17. *Channel Lockout.* PRSG and NCGUG both recommend requiring a transmitter lockout system to ensure non-voice communications are secondary to voice communications.[55] Consequently, the presence of other transmissions would "lockout" data communications resulting in the transmission of data communications at random intervals.[56] We agree with Houlne that instituting such a requirement could reduce the usefulness of the safety aspect of the digital data burst function (the delivery of a data transmission to a FRS enhanced unit).[57] We also agree with Garmin that such protection from data communications is unnecessary, particularly since data transmissions would create less potential for interference because the signal will be less than one second long and cannot be repeated in any thirty-

[49] *Id.* at 22880 ¶¶ 8-9.

[50] *Id.* at 22881 ¶ 11.

[51] PRSG Comments at 4 (the cumulative effect of data transmissions by dozens or even hundreds of FRS units could completely command any single channel in crowded environments such as amusement parks).

[52] *Id.* at 6.

[53] Garmin Reply Comments at 2-3.

[54] PRSG Comments at 4.

[55] NCGUG Comments at 6; PRSG Comments at 3.

[56] NCGUG Comments at 5-6.

[57] Houlne's Reply Comments at 6.

second period.[58] It also is worth further noting that no such limitation applies to the current non-voice emissions permitted on FRS channels,[59] with no apparent negative impact on voice communications.

18. *Channel Restrictions.* NCGUG suggests that we limit FRS data transmission to FRS channels 1 through 7 only in order to mitigate interference to GMRS repeater receivers.[60] Garmin states that this proposal would only serve to force data communications onto one-half of the available FRS channels, while the sounder practice would be to spread the data communications over as many channels as possible.[61] We agree and decline to limit data transmissions to channels 1 through 7. We note that NCGUG has not provided any evidence that FRS data transmissions would cause harmful interference to GMRS repeater receivers. For these reasons, and because voice communications should remain the primary use of FRS, we reject Houlne's suggestion to set aside one FRS channel exclusively for data transmission.[62]

19. *Bandwidth Reduction.* The authorized bandwidth for FRS voice emissions is 12.5 kHz.[63] NCGUG proposes to limit the bandwidth for data transmissions to 8 kHz.[64] It asserts that the only effective way to mitigate interference is to reduce the amount of energy present on adjacent primary GMRS channels and claims that at least 10 dB of additional isolation is necessary, which can be realized by reducing the bandwidth for data emission to 8 kHz.[65] Garmin rejects this proposal and asserts that if GMRS repeaters are suffering from adjacent channel interference, then the real solution is to improve GMRS repeater adjacent channel selectivity – not to impose strict occupied bandwidth limitations on FRS radios.[66] Similarly, Houlne rejects NCGUG's proposal for bandwidth reduction for data transmissions as a means to mitigate interference to GMRS users as mere supposition based on an improperly referenced and unsubstantiated model that lacks real world testing.[67] We note that even though FRS channels have 25 kHz spacing,[68] current rules require FRS radios be designed as if channel spacing were 12.5 kHz specifically to minimize interference with interstitial GMRS channels.[69] We have found that the current

[58] Garmin Reply Comments at 5.

[59] *See* 47 C.F.R. § 95.193(b) (permitting transmission of tones to make contact or continue communications).

[60] NCGUG Comments at 4.

[61] Garmin Reply Comments at 4-5.

[62] Houlne Comments at 7; Houlne Reply Comments at 6.

[63] 47 C.F.R. § 95.633(c).

[64] NCGUG Comments at 4-5.

[65] Id.

[66] Garmin Reply Comments at 4.

[67] Houlne Reply Comments at 6.

[68] *See* 47 C.F.R. § 95.627(a).

[69] In the *FRS Report and Order*, the Commission established technical standards to ensure FRS units do not cause interference to other services and that large numbers of users could share the channels in the same or adjoining neighborhoods or areas. It adopted a maximum power of 0.500 watt, that an antenna be an integral part of the FRS unit, and the maximum allowable frequency deviation of 2.5 kHz and an audio frequency response of 3.125 kHz. *FRS Report and Order*, 11 FCC Rcd at 12982 ¶ 13.

technical requirements adequately avoid interference, even during the transmission of non-voice communications tones. Therefore, we disagree with NCGUG. Further, NCGUG has not provided any technical data to support its allegations or proposal. Thus, we are not persuaded that the requested bandwidth for FRS data transmissions is warranted.

C. Initiation of Transmission of Location Information

20. Initially, Garmin proposed to require initiation of data transmissions by "a manual key press" only.[70] We sought comment on this proposal. In its comments to the *Notice,* however, Garmin revised its proposal to permit the initiation of digital data transmissions "by a manual action or command of a user," rather than limited to initiation by a manual key press.[71] PRSG agrees that solely permitting manual activation by pressing a key is unnecessarily restrictive, but cautions that whatever method is employed should avoid inadvertent activation.[72] We agree with the commenters that users should have flexibility to initiate a location transmission in various ways.[73]

21. In its comments, Garmin also proposes to allow FRS units to poll other specific location enhanced FRS units.[74] Garmin states that this operation would allow a person utilizing a location enhanced unit to determine the location of a member of his or her calling group.[75] By allowing one unit to manually interrogate another, location enhanced FRS units become even more practical safety devices for emergency situations. Houlne agrees that polling would be an important safety feature, given that an incapacitated operator may be unable to push a button.[76] Both NCGUG and PRSG oppose making the remote polling feature available.[77] NCGUG argues that it would increase the frequency of message collisions and interference with voice and other data transmissions.[78] PRSG opposes remote polling and asserts that there is a need for security of these communications and that such a remote polling capability could be abused by wrongdoers to locate children or other vulnerable users.[79]

22. It is our recognition that FRS has been used by families and other small groups for, among other things, communicating location and safety- or emergency-type messages, especially when members of the group find themselves lost or injured, that causes us to conclude that allowing FRS units to transmit location information may be of use to the public.[80] We expect that FRS will continue to be used by

[70] *Notice*, 16 FCC Rcd at 22878 ¶ 9.

[71] Garmin Comments at 3.

[72] PRSG Reply Comments at 3-4.

[73] NCGUG Reply Comments at 3.

[74] Garmin Comments at 4.

[75] *Id.* at 2.

[76] Houlne Reply Comments at 3.

[77] NCGUG Comments at 6-7.

[78] *Id.*

[79] PRSG Comments at 5.

[80] *See Notice*, 16 FCC Rcd at 22880 ¶ 8.

families and other small groups for these types of messages. In light of the Commission's prior recognition of the public interest benefits of automatically locating individuals in distress, especially when they are injured or in an unfamiliar environment,[81] we believe that the benefits of allowing polling outweigh the concerns raised by NCGUG and PRSG. Polling will allow a FRS unit to determine the location of other FRS units within a given operating area, which will facilitate rescue and aid in situations where an individual has become lost, confused or has otherwise lost contact with his or her group. Polling will be optional, so manufacturers will be able to provide units without that feature to users who do not want it, or units on which the user can enable or disable the feature at will. Furthermore, we do not believe that allowing polling will increase congestion, because, pursuant to the duty cycle adopted herein, no user will be able to interrogate other units more than once every thirty seconds.

D. Display of Location Information

23. Garmin proposed to graphically display the GPS location information transmitted by another FRS unit.[82] In the *Notice*, we noted that the FRS rules do not specify or limit how the information signal received by an FRS unit is made available to a FRS user. Thus, we tentatively concluded that it was unnecessary to specify methods and standards such as the AX.25 standard and the Automatic Position Reporting system used by amateur radio operators[83] because specifying exact methods and standards would limit the flexibility of manufacturers to incorporate newly developed technologies.[84]

24. We are not persuaded that prescribing a standard for display of location information is necessary or desirable. Houlne urges the adoption of the AX.25 standard on the premise that having no standard would be chaotic. Houlne asserts that requiring methods and standards will provide the bases for sound engineering practices, uniformity among manufacturers and quality for the consumer.[85] We are concerned that mandating a standard for display of location information would restrict manufacturers and consumers to current technology, precluding the use of improved or less expensive means.[86] Accordingly, we decline to impose a GPS data transmission standard because we believe manufacturers

[81] *See* Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Report and Order and Further Notice of Proposed* Rulemaking, CC Docket No. 94-102, 11 FCC Rcd 18676, 18679 (1996). *See also* Houlne Comment at 2.

[82] Petition at 5-6.

[83] *Notice,* 16 FCC Rcd at 22881 ¶ 10. AX.25 refers to a specific packet protocol firmware used for accepting data from a computer and assembling the data into data packets that are then fed into a transmitter. The Automatic Position Reporting System (APRS) is a real time positioning system that displays on maps the location of other APRS-equipped transmitters. *See The ARRL Handbook for Radio Amateurs* 12.22-12.26 (2002).

[84] *Notice,* 16 FCC Rcd at 22881 ¶ 10.

[85] Houlne Comments at 6.

[86] *Cf.* Amendment of the Commission's Rules to Establish New Narrowband Personal Communications Services, *First Report and Order*, Gen. Docket No. 90-314, ET Docket No. 92-100, 8 FCC Rcd 7162, 7171 ¶¶ 50-51 (1993); Amendment of the Commission's Rules to Establish New Personal Communications Services, Gen. Docket No. 90-314, ET Docket No. 92-100, *Notice of Proposed Rulemaking and Tentative Decision*, 7 FCC Rcd 5676, 5728 ¶ 130 (1992) (declining to require interoperability or inter-system capability among personal communications service licensees because doing so would restrict licensees' flexibility to determine which services were needed and to provide those services by the most advantageous technology).

should have the ability to provide new technologies and services to the public efficiently without requiring a rule making proceeding.

E. Interference to SDARS

25. Finally, XM urges the Commission to limit the out-of-band emissions from FRS units. XM is concerned that the fifth harmonic emissions of FRS radios operating on channels 8 through 14 at 467 MHz may interfere with XM's Digital Audio Radio Service (SDARS) operations at 2332.3-2345 MHz. XM asserts that future proliferation of family radios at their present out-of-band emissions limits will adversely affect the high-quality service SDARS consumers expect.[87] Accordingly, XM seeks to limit the out-of-band emissions of FRS radios to a field strength of no more than 8.6μ V/m at 3 meters measured in a 1 MHz interval.[88] We agree with Houlne that XM has provided no substantive evidence that FRS radios are in fact causing interference or present a significant interference potential. Thus, we decline to impose the out-of-band emissions suggested by XM in this proceeding.

IV. CONCLUSION

26. In summary, we believe that the public interest will be served by permitting FRS units to transmit location information and FRS user generated text messages. Therefore, in this *Report and Order*, we amend our Rules to allow a FRS unit to transmit a digital data emission and communications containing FRS user generated text and location information. These rule changes will enhance the usefulness of the FRS as a service that provides an affordable and convenient means of direct, short-range two-way voice communications among small groups of persons, with minimal regulation.

V. PROCEDURAL MATTERS

27. *Final Regulatory Flexibility Certification*. The Regulatory Flexibility Act of 1980, as amended (RFA),[89] requires that an initial regulatory flexibility analysis be prepared for notice and comment rule making proceedings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[90] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization,"

[87] XM Comments at 4. Specifically, XM states the Commission should promptly update the out-of-band emission limits for FRS to protect XM's SDARS operations, because it believes the current emissions limits are not adequate to protect SDARS receivers. In addition, XM believes the Commission should also update its rules to limit out-of-band emissions from other unlicensed devices (such as laptop computers, cellular phones, PalmPilots and wireless headphones, etc). XM further notes that the Commission's Rules regarding the FRS provide FRS operators and manufacturers with notice that the Commission may require technical changes to equipment to solve interference problems caused by harmonic emissions. *Id*. (citing 47 C.F.R. § 95.635 Note 4, which states that, if spurious or harmonic emissions result in harmful interference (any transmission, radiation or induction that endangers the functioning of a radionavigation or other safety service or seriously degrades, obstructs or repeatedly interrupts a radio-communication service operating in accordance with applicable laws, treaties and regulations), the FCC may, at its discretion, require appropriate technical changes in the station equipment to alleviate the interference, including the use of a low pass filter between the transmitter antenna terminals and the antenna feed line).

[88] XM Comments at 1.

[89] The RFA, *see* 5 U.S.C. § 601– 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[90] *See* 5 U.S.C. § 605(b).

and "small governmental jurisdiction."[91] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[92] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[93]

28. In this *Report and Order*, we authorize an individual to use a FRS unit to satisfy his or her need for non-voice communications for the purpose of providing information about the location of the FRS unit to other FRS units or transmitting text messages. The revised rules apply exclusively to individuals who use FRS units. The modifications are in the public interest because they would allow the public to take advantage of technological developments in equipment and service that have occurred since the authorization of the FRS, availability of equipment at reasonable prices, and the removal of Selective Availability from the GPS signal.

29. In addition, the rules modified in this *Report and Order* affect manufacturers of FRS units. Based on requests from manufacturers for certification of FRS units, we believe that there are between five and ten manufacturers of FRS units, and that none of these manufacturers are small entities. The rule change applies to individuals who use FRS units and does not result in a mandatory change in manufactured FRS units. Rather, the rule changes are permissive and would allow a manufacturer, if it so chooses, to include additional features in the FRS units it manufactures. Therefore, we certify that the modification in this *Report and Order* will not have a significant economic impact on a substantial number of small entities. The Commission will send a copy of the *Report and Order*, including a copy of this Final Regulatory Flexibility Certification, in a report to Congress pursuant to the Congressional Review Act. [94] In addition, the *Report and Order* and this final certification will be sent to the Chief Counsel for Advocacy of the SBA, and will be published in the *Federal Register*.[95]

30. *Paperwork Reduction Analysis*. This *Report and Order* does not contain any new or modified information collection. Therefore it is not subject to the requirements for a paperwork reduction analysis, and the Commission has not performed one.

31. *Contact for Information.* For further information contact Ms. Jeannie Benfaida, Public Safety and Private Wireless Division, Wireless Telecommunications Bureau, (202) 418-0680, TTY (202) 418-7233, or via E-mail at jbenfaid@fcc.gov.

32. *Alternative Formats.* Alternative formats (computer diskette, large print, audiocassette, and Braille) are available from Brian Millin at (202) 418-7426, TTY (202) 418-7365, or at bmillin@fcc.gov. This *Report and Order* can also be downloaded at http://www.fcc.gov/dtf.

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[91] *See* 5 U.S.C. § 601(6).

[92] *See* 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[93] *See* 15 U.S.C. § 632.

[94] *See* 5 U.S.C. § 801(a)(1)(A).

[95] *See* 5 U.S.C. § 605(b).

VI. ORDERING CLAUSES

33. IT IS ORDERED that, pursuant to Sections 4(i), 4(j), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), and 303(r), that Sections 95.193(a), 95.193(b), and 95.631(d) of the Commission's Rules, 47 C.F.R. §§ 95.193(a), 95.193(b), and 95.631(d), ARE AMENDED as set forth in the Appendix, effective thirty days after publication of the *Report and Order* in the Federal Register.

34. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Report and Order*, including the Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

35. IT IS FURTHER ORDERED that this proceeding IS TERMINATED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX

FINAL RULES

Part 95 of Chapter 1 of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation for Part 95 continues to read as follows:

Authority: Sections 4, 303, 48 Stat. 1066, 1082 as amended; 47 U.S.C. 154, 303.

2. Section 95.193 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 95.193 (FRS Rule 3) Types of communications.

(a) You may use an FRS unit to conduct two-way voice communications with another person. You may use an FRS unit to transmit one-way voice or non-voice communications only to establish communications with another person, send an emergency message, provide traveler assistance, provide location information, transmit a brief text message, make a voice page, or to conduct a brief test.

(b) *Non-voice communications.* (1) The FRS unit may transmit tones to make contact or to continue communications with a particular FRS unit. If the tone is audible (more than 300 Hertz), it must be transmitted continuously no longer than 15 seconds at one time. If the tone is subaudible (300 Hertz or less), it may be transmitted continuously only while you are talking.

(2) The FRS unit may transmit digital data containing location information, or requesting location information from one or more other FRS units, or containing a brief text message to another specific FRS unit. Digital data transmissions must be initiated by a manual action or command of a user, except that an FRS unit receiving an interrogation request may automatically respond with its location. Digital data transmissions shall not exceed one second, and shall be limited to no more than one digital transmission within a thirty-second period, except that an FRS unit may automatically respond to more than one interrogation request received within a thirty-second period.

* * * * *

3. Section 95.194 is amended by adding paragraph (d) to read as follows:

§ 95.194 (FRS Rule 4) FRS Units.

* * * * *

(d) FRS units are prohibited from transmitting data in store-and-forward packet operation mode.

4. Section 95.401is amended by revising the paragraph (b) as follows:

§ 95.401 (CB Rule 1) What are the Citizen Band Radio Services?

* * * * *

(b) The Family Radio Service (FRS) - a private, two-way, very short-distance voice and data communications service for facilitating family and group activities. The rules for this service are contained in subpart B of this part.

* * * * *

5. Section 95.631 is amended by revising paragraph (d) to read as follows:

§ 95.631 Emission types.

* * * * *

(d) An FRS unit may transmit only emission type F3E or F2D. A non-voice emission is limited to selective calling or tone-operated squelch tones to establish or continue voice communications, digital data transmission of location information or text messaging.

* * * * *

4. Section 95.633 is amended by revising paragraph (c) to read as follows:

§ 95.633 Emission bandwidth.

* * * * *

(c) The authorized bandwidth for emission type F3E or F2D transmitted by a FRS unit is 12.5 kHz.

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SEPARATE STATEMENT OF COMMISSIONER KATHLEEN Q. ABERNATHY

Re: In the Matter of Garmin International, Inc., Amendment of Sections 95.193(a) and 95.631(d) to Authorize, Manufacture, Sale and Use of GPS Transmission Enhanced Family Radio Service Units, Amendment of Sections 95.193(a), 95.193(b), and 95.631(d) of the Commission's Rules Governing Permissible Communications in the Family Radio Service, WT Docket No. 01-339, RM-10070, Report and Order (adopted February 3, 2003)

Today's Order amends our rules to give manufacturers the flexibility to integrate innovative communications services and capabilities into equipment used in the Family Radio Service. I believe that by removing prohibitions on FRS units' ability to transmit location information, their usefulness will increase to consumers. Users will now be able to locate family members or members of groups, which is invaluable if someone is lost or injured. By allowing our rules to accommodate such new technological advancements and by encouraging innovation by manufacturers, consumers benefit from the latest technological advancements.