

FCC MAIL SECTION

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

DISPATCHED BY

WT Docket No. 95-102

In the Matter of

Amendment of Part 95 of the  
Commission's Rules to  
Establish a very short distance  
two-way voice radio service

RM-8499

## NOTICE OF PROPOSED RULE MAKING

Adopted: June 22, 1995;

Released: August 2, 1995

Comment Date: October 2, 1995

Reply Comment Date: October 16, 1995

By the Commission:

## I. INTRODUCTION

1. In this *Notice of Proposed Rule Making (Notice)*, we propose to establish a very short distance, unlicensed, two-way voice radio service in the Ultra High Frequency (UHF) portion of the radio spectrum by amending the rules for the Personal Radio Services (47 C.F.R. Part 95). This proceeding was initiated by a petition for rule making (petition), RM-8499, filed by the Radio Shack Division of Tandy Corporation (Tandy), on July 20, 1994.<sup>1</sup>

2. Tandy states that there is a burgeoning public demand for an affordable and convenient means of direct, short-range, two-way voice communication among small groups of persons.<sup>2</sup> It requests that we authorize fourteen UHF channels for a new service which it calls the Family Radio Service (FRS). It would share seven General Mobile Radio Service (GMRS) channels that are not used for repeater operation as well as utilize seven channels that are located between certain GMRS channels.<sup>3</sup> Motorola and the Telecommunications Industry Association (TIA) filed comments supporting the petition, while the Personal Radio

Steering Group (PRSG), representing users of the GMRS, and a number of GMRS licensees filed comments in opposition.

## II. DISCUSSION

3. In its petition, Tandy identifies a need by small groups of persons such as families for a good quality voice radio communication service having a very short range. The group members would use palm size radio units to communicate while on outings, such as visiting shopping malls and amusement parks, attending sporting events, camping, and taking part in other recreational activities.<sup>4</sup> Tandy states that many persons could benefit from such a service, particularly for personal security, due to the low cost of the units and their communication capability.<sup>5</sup> Other commenters agree there is an unmet need for a low cost, flexible, consumer grade radio communication alternative.<sup>6</sup>

4. Tandy envisions that such a Family Radio Service would use hand-held units transmitting a frequency modulation emission type. It says a service structured this way can meet the communications needs of small groups of individuals in a myriad of situations.<sup>7</sup> Tandy requests<sup>8</sup> that the units be authorized to transmit, on a secondary shared basis, on the seven GMRS lowpower non-repeater channels.<sup>9</sup> It also requests that FRS units be authorized to transmit on seven other channels, each located midway between the eight GMRS repeater transmitting channels.<sup>10</sup> Based on tests it has done, Tandy has determined that a maximum power of only one-half watt is adequate to provide good communications quality over a very short range, and that transmissions made at this very low power level will preclude interference potential to other stations.<sup>11</sup>

5. The Personal Radio Steering Group (PRSG), representing users of the GMRS, and REACT International, Inc., request that FRS be authorized on channels other than GMRS channels.<sup>12</sup> The PRSG states that mixing licensed and unlicensed users on the same channels is unworkable, and requests that the Commission continue to reserve the unused interstitial channels for future GMRS use.<sup>13</sup> Michael C. Trahos, a GMRS licensee, contends that use of the proposed channels will risk interference to GMRS systems.<sup>14</sup> Tandy filed reply comments reiterating the benefits of its proposed service and noting support from TIA and Motorola.

6. Motorola and the TIA agree there is a need for a low cost unlicensed very short distance two-way voice radio service,<sup>15</sup> and that technical standards can be crafted to adequately protect GMRS systems.<sup>16</sup> Motorola argues that Tandy's proposal is the proper compromise between a low

<sup>1</sup> See Public Notice, July 26, 1994, Report No. 2023.

<sup>2</sup> Petition at 4.

<sup>3</sup> The General Mobile Radio Service is a personal radio service administered under Part 95 of the Commission's Rules. Its purpose is to facilitate the activities of licensees and their immediate family members. There are fifteen Ultra-High Frequency (UHF) channels consisting of eight channel pairs for repeater operation and seven interstitial non-repeater channels. See Sections 95.1-95.181 of the Commission's Rules, 47 C.F.R. §§ 95.1-95.181. As of July 31, 1994, the Commission had licensed 11,981 GMRS systems.

<sup>4</sup> Petition at 3-4.

<sup>5</sup> *Id.* at 7-8.

<sup>6</sup> Comment of REACT International, Inc. at 1.

<sup>7</sup> Petition at 2.

<sup>8</sup> Petition at 7.

<sup>9</sup> Section 95.29(f) of the Commission's Rules, 47 C.F.R. § 95.29(f) authorizes family members using GMRS mobile and small base stations to transmit in the simplex mode with no more than 5 watts ERP on the channels at 462.5625, 462.5875, 462.6125, 462.6375, 462.6625, 462.6875, and 462.7125 MHz.

<sup>10</sup> These channels would be at 467.5625, 467.5875, 467.6125, 467.6375, 467.6625, 467.6875, and 467.7125 MHz.

<sup>11</sup> Petition at 6-7.

<sup>12</sup> Comments of PRSG at 17, REACT International at 5-10.

<sup>13</sup> Comments of PRSG at 3-4.

<sup>14</sup> Comments of Michael C. Trahos at 5-6.

<sup>15</sup> Comments of TIA at 1, Motorola at 3.

<sup>16</sup> Comments of TIA at 2, Motorola at 6.

cost sophisticated two-way radio service that provides greater service reliability than the Citizens Band (CB) Radio Service<sup>17</sup> and a complex service that would require more regulatory oversight.<sup>18</sup> TIA says that consumer acceptable radios will have to provide selective calling.<sup>19</sup> Motorola states that the bandwidth of the transmissions should be limited to 12.5 kHz.<sup>20</sup>

7. The petition and the comments make a convincing argument as to the need for a good quality very short range unlicensed voice radio communications service for use by small groups.<sup>21</sup> We believe that this service would provide most small groups, such as families, friends, and associates, with good quality voice communications over a range of a few city blocks. It would facilitate activities around the home, at group outings, and at group activities where members become separated, either planned or inadvertently. It would also be useful to hunters, campers, hikers, bicyclists, and other outdoor activity enthusiasts. It appears that technology can make such a service very convenient to use and widely affordable.<sup>22</sup> Further, it would create new jobs as well as provide more choices for consumers. We propose, therefore, to amend the rules to establish a Family Radio Service.

8. Each channel would be usable simultaneously by many millions of small groups throughout the country. The technical standards proposed by Tandy should provide good quality communications over a range of approximately one kilometer. A number of factors, however, limit the interference potential of these units. First, there is the line-of-sight propagation characteristic of frequencies in the UHF domain. Next, simple antennas that are an integral part of the unit together with its very low transmitter power will further restrict its range. Another feature is the capture effect provided by FM emission types.<sup>23</sup> We agree that selective calling<sup>24</sup> would help enable this service to co-exist with the GMRS as well as make it possible for user groups to enjoy a modicum of privacy.

9. Tandy, Motorola, and TIA state that for FRS to be attractive to users, there should be no requirements for operator or station licenses. We agree. We can not foresee any regulatory purpose that would be served by requiring operator or station licenses in such a radio service. We propose, therefore, to establish the Family Radio Service within the Citizens Band (CB) Radio Service and authorize operation by rule under Section 307(e) of the Communications Act.<sup>25</sup> We propose to regulate the usage of the FRS units through technical standards and type certification.<sup>26</sup> We propose to rely upon only four simple operating rules,<sup>27</sup> and to amend the rules necessary to authorize FRS as one of the personal radio services. We solicit comment on these proposals.

10. We are not persuaded by the claim that unlicensed FRS units are incompatible with the GMRS. We believe that these two services can share certain channels successfully. The technical standards for the FRS units should preclude any serious disruption to GMRS systems. None of the channels proposed for the FRS is authorized for the wide area repeater stations in GMRS systems, where interference is most likely to occur.<sup>28</sup> Moreover, the seven shared channels we propose for FRS are currently available to GMRS systems for communications similar to that proposed for the FRS.<sup>29</sup> We solicit comment on our conclusion with regard to interference.

11. We also propose technical standards similar to those requested in the petition and the comments. The units would transmit frequency modulated voice emission type F3E only. The authorized bandwidth would be 12.5 kHz. The maximum power of the transmitter would be one-half watt. The antenna must be an integral part of the transmitter, have no gain, and be vertically polarized. We specifically request comments regarding the sufficiency of the proposed technical standards to support this new radio service. Comments should indicate whether any of the

<sup>17</sup> The CB Radio Service is a personal radio service authorized in the High Frequency portion of the radio spectrum. The propagation characteristics of these frequencies often result in severe interference between stations, and communications over distances that are much greater than the users desire.

<sup>18</sup> Comments of Motorola at 3. The CB service is an unlicensed, High Frequency (HF), short-distance voice communications service for personal or business activities. Although channel reusability is often limited by HF propagation characteristics and over-powered stations, it continues to have great acceptance by the public. CB has introduced millions of people to the benefits of two-way radio.

<sup>19</sup> Comments of TIA at 1-2.

<sup>20</sup> Comments of Motorola at 6.

<sup>21</sup> In 1983, we proposed to create a new private radio communications service (PRCS) that would have served many of the same needs as FRS. We did not allocate the proposed 8 MHz of spectrum for PRCS at that time, concluding that the spectrum was reserved for future growth of land mobile and cellular radio systems. See *Report and Order*, Gen Docket No. 83-26, para. 21, 50 Fed. Reg. 865 (1985). We also did not adopt our proposal to create the Consumer Radio Service because the comments in that proceeding did not show there was a need for the service, and no manufacturers came forward that were willing to produce equipment. See *Report and Order*, PR Docket No. 86-38, para. 11, 2 FCC Rcd 2383, (1987).

<sup>22</sup> The only costs to the user would be the cost of the FRS units is estimated to be \$100-\$150 each and the cost of replacement batteries.

<sup>23</sup> Capture effect is the phenomenon whereby the strongest signal received on a frequency is the only signal that is demodulated by a FM receiver tuned to that frequency.

<sup>24</sup> Selective calling is a feature that permits the user of a unit to program it so that only a unique sequence of tones will activate the receiver. Transmissions of other units on the same channel would not activate the programmed receiver.

<sup>25</sup> Section 307(e) of the Communications Act of 1934, as amended, 47 U.S.C. 307(e), provides that, the term "citizens band radio service" shall have the meaning given it by the Commission by rule, and that the Commission may by rule authorize the operation of such radio stations without an individual license.

<sup>26</sup> The requirements for type certification can be found in Sections 2.1031-2.1045 of the Commission's Rules, 47 C.F.R. §§ 2.1031-2.1045.

<sup>27</sup> The proposed rules cover eligibility and responsibility, authorized locations, types of communications, and equipment requirements.

<sup>28</sup> A repeater is a station that receives the signal of another station on one frequency and retransmits that signal on a different frequency. One of the primary uses of a repeater is to increase the area over which a low power hand held station can communicate. This use is inconsistent with the type of communications FRS is designed to satisfy.

<sup>29</sup> 47 C.F.R. § 95.29(f). A licensee does not require any permission from the FCC to use these channels after a GMRS system license has been granted.

proposed technical standards need to be relaxed or tightened, and whether other standards should be included in the rules.

12. A related issue is interconnection with the public switched network (PSN).<sup>30</sup> We propose not to allow interconnection between FRS stations and the PSN. We want to ensure that the unique niche envisioned for this proposed low power Family Radio Service not be compromised. However, we request comments regarding whether interconnection with the PSN should be permitted and if so, any restrictions or conditions that should be imposed.

13. With respect to the comment of TIA regarding the need for selective calling, we are not proposing rules that would require suppliers to incorporate such a capability in their units. We agree, however, that selective calling would enhance the appeal of the FRS by allowing users to answer calls addressed to them without having to also monitor all other communications on the channel. The proposed rules, therefore, would allow a supplier the option to provide such a capability if it desires. Commenters advocating rules mandating a Commission-specified interoperable selective calling standard should provide proposed technical standards suitable for inclusion in the rules.

### III. PROCEDURAL MATTERS

#### Ex Parte Rules - Non-Restricted Proceeding

14. This is a non-restricted notice and comment rule making proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in the Commission's Rules. See generally 47 C.F.R. §§ 1.1202, 1.1203, and 1.1206(a).

#### Regulatory Flexibility Act

15. An initial Regulatory Flexibility Analysis is contained in Appendix A.

16. The Secretary shall send a copy of this *Notice of Proposed Rule Making*, including the Analysis in Appendix A, to the Chief Counsel for Advocacy of the Small Business Administration in accordance with Section 603(a) of the Regulatory Flexibility Act, Pub. L. No. 96-354, 94 Stat. 1164, 5 U.S.C. 601-612 (1981).

#### Comment Dates

17. Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. §§ 1.415 and 1.419, interested parties may file comments on or before **October 2, 1995**, and reply comments on or before **October 16, 1995**. To file formally in this proceeding, you must file an original and five copies of all comments and reply comments. To file informally, you must file an original and one copy of your comments, provided only that the Docket Number is specified in the heading. You should send comments and reply comments to: Office of the Secretary, Federal Communications Commission, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center (Room 239) of the Federal Communications Commission, 1919 M Street N.W., Washington, D.C. 20554.

#### Ordering Clause

18. Authority for issuance of this *Notice* is contained in Sections 4(i), 303(b), 303(r), and 307(e) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(b), 303(r), and 307(e).

19. For further information, contact William T. Cross, Private Wireless Division, Wireless Telecommunications Bureau, (202) 418-0680.

FEDERAL COMMUNICATIONS COMMISSION

*William F. Caton*

William F. Caton  
Acting Secretary

### APPENDIX A

#### Initial Regulatory Flexibility Analysis

##### Reason for Action

The Commission is proposing to amend Part 95 of its rules to establish a new Family Radio Service within the CB Radio Service. This change will provide a new and innovative communication service and promote more efficient use of the radio spectrum.

##### Objectives

The proposed rules will encourage rapid deployment and growth of inexpensive low power communications equipment for use by groups in which members need to communicate over short distances.

##### Legal Basis

The proposed action is authorized under Sections 4(i), 303(b), 303(r), and 307(e) of the Communications Act, 47 U.S.C. §§ 154(i), 303(b), 303(r), and 307(e).

##### Report, Recordkeeping and Other Compliance Requirements

None.

##### Federal Rules Which Overlap, Duplicate or Conflict With These Rules

None.

##### Description, Potential Impact, and Small Entities Involved

The proposed rule change would benefit individuals by allowing them to make use of new services, and producers of personal communications equipment. Most users are expected to be members of groups such as families that desire to communicate by radio over very short distances.

##### Any Significant Alternatives Minimizing the Impact on Small Entities Consistent with the Stated Objectives

None.

FRS stations to be connected to the public switched network.

<sup>30</sup> For purposes of this proceeding, we consider interconnection to be any arrangement that allows messages transmitted by

## APPENDIX B

Part 95 of Chapter I of Title 47 of the Code of Federal Regulations is proposed to be amended as follows:

## Part 95-Personal Radio Services

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

**AUTHORITY:** Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. §§ 154, 303.

2. Subpart B, Sections 95.191 through 95.194, is added to Part 95 to read as follows:

## Subpart B - Family Radio Service (FRS)

## GENERAL PROVISIONS

Sec.

**95.191 (FRS Rule 1) Eligibility and responsibility.**

**95.192 (FRS Rule 2) Authorized locations.**

**95.193 (FRS Rule 3) Types of communications.**

**95.194 (FRS Rule 4) FRS units.**

## Subpart B-Family Radio Service (FRS)

## GENERAL PROVISIONS

**§ 95.191 (FRS Rule 1) Eligibility and responsibility.**

(a) Unless you are a representative of a foreign government, you are authorized by this rule to operate an FCC certified FRS unit in accordance with the rules in this subpart. No license will be issued.

(b) You are responsible for all communications that you make with the FRS unit. You must share each channel with other users. No channel is available for the private or exclusive use of any entity.

**§ 95.192 (FRS Rule 2) Authorized locations.**

(a) Provided that you comply with these rules, you are authorized to operate an FRS unit:

(1) Within or over any area of the world where radio services are regulated by the FCC; (this area includes the fifty United States and the District of Columbia, the Commonwealth of Puerto Rico, the United States Virgin Islands (50 islets and cays), American Samoa (seven islands), the Commonwealth of Northern Mariana Islands, and Guam Island) or

(2) Within or over any other area of the world, except within or over the territorial limits of areas where radio services are regulated by an agency of the United States other than the FCC or any foreign government (you are subject to its rules); or

(3) Aboard any vessel or aircraft registered in the United States, with the permission of the captain, that is within or over any area of the world where radio services are regulated by the FCC or upon or over international waters; or

(4) Aboard any unregistered vessel or aircraft owned or operated by a United States citizen or company that is within or over any area of the world where radio services are regulated by the FCC or upon or over international waters.

(5) You must operate the FRS unit only according to any applicable treaty to which the United States is a party. The FCC will make public notice of any such conditions.

(b) Your use of an FRS unit must not cause harmful interference to a FCC monitoring facility. Doing so could result in imposition of restrictions upon the operation of the FRS unit within 0.8 km (0.5 mile) of the facility by its Engineer-in-Charge. (Geographical coordinates of the facilities that require protection are listed in § 0.121(c) of this chapter.)

(c) The FCC may impose additional restrictions on a FRS station if the station is located at a point within the *National Radio Quiet Zone* (an area within the States of Maryland, Virginia and West Virginia). The Zone is the area bounded by:

- (1) 39°15'N. on the North;
- (2) 78°30'W. on the East;
- (3) 37°30'N. on the South; and
- (4) 80°30'W. on the West.

**§ 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 the FRS unit 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.

(b) 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 last 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.

(c) You must not use an FRS unit in connection with any activity which is against federal, state or local law.

(d) You must, at all times and on all channels, give priority to emergency communication messages concerning the immediate safety of life or the immediate protection of property.

(e) No FRS unit may be interconnected to the public switched telephone network.

**§ 95.194 (FRS Rule 4) FRS units.**

(a) You may only use an FCC certified FRS unit. (You can identify an FCC certified FRS unit by the label placed on it by the manufacturer.)

(b) You must not make, or have made, any internal modification to an FRS unit. Any internal modification cancels the FCC certification and voids your authority to operate the unit in the FRS.

(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.

3. Section 95.401 is revised to read as follows:

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

The Citizens Band Radio Services are:

- (a) The Citizens Band (CB) Radio Service—a private, two-way, short-distance voice communications service for personal or business activities of the general public. The CB Radio Service may also be used for voice paging.
- (b) The Family Radio Service (FRS)—a private, two-way, very short-distance voice communications service for facilitating family and group activities. The rules for this service are contained in Subpart B of this part.

4. Section 95.601 is revised to read as follows:

**§ 95.601 Basis and purpose.**

These rules provide the technical standards to which each *transmitter* (apparatus that converts electrical energy received from a source into RF (radio frequency) energy capable of being radiated) used or intended to be used in a station authorized in any of the Personal Radio Services must comply. They also provide requirements for obtaining type acceptance of such transmitters. The Personal Radio Services are the GMRS (General Mobile Radio Service), the Family Radio Service (FRS), the R/C (Radio Control Radio Service), and the CB (Citizens Band Radio Service). For operating rules, see Part 95, subpart A-GMRS; subpart B-FRS; subpart C-R/C; and subpart D-CB.

5. Section 95.603 is amended by revising the heading and adding paragraph (d) to read as follows:

**§ 95.603 Type acceptance or certification required.**

\* \* \* \* \*

(d) Each *FRS unit* (a transmitter that operates or is intended to operate in the FRS) must be certified for use in the FRS in accordance with Subpart J of Part 2 of this chapter.

6. Section 95.605 is revised to read as follows:

**§ 95.605 Type acceptance and certification procedures.**

Any entity may request type acceptance or certification for its transmitter in one of the Personal Radio Services, following the procedures in Part 2 of this chapter.

7. Sections 95.627 through 95.669 are redesignated as 95.629 through 95.671 and a new Section 95.627 is added to read as follows:

**§ 95.627 FRS unit channel frequencies.**

(a) The FRS unit channel frequencies are:

Channel No.	(MHz)
1.....	462.5625
2.....	462.5875
3.....	462.6125
4.....	462.6375
5.....	462.6625
6.....	462.6875
7.....	462.7125
8.....	467.5625
9.....	467.5875
10.....	467.6125
11.....	467.6375
12.....	467.6625
13.....	467.6875
14.....	467.7125

(b) Each FRS unit must be maintained within a frequency tolerance of 0.0005%.

8. Section 95.629 is amended by revising paragraph (b), redesignating paragraphs (d) and (e) as paragraphs (e) and (f) respectively, and adding a new paragraph (d) to read as follows:

**§ 95.629 Emission types.**

\*\*\*\*\*

(b) An R/C transmitter may transmit any appropriate non-voice emission which meets the emission limitations of § 95.633.

\*\*\*\*\*

(d) An FRS unit may transmit only emission type F3E. A non-voice emission is limited to selective calling or tone-operated squelch tones to establish or continue voice communications.

\*\*\*\*\*

9. Section 95.631 is amended by adding a new paragraph (c) to read as follows:

**§ 95.631 Emission bandwidth.**

\*\*\*\*\*

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

10. Section 95.633 is amended by revising paragraph (b) to read as follows:

**§ 95.633 Unwanted radiation.**

\*\*\*\*\*

(b) The power of each unwanted emission shall be less than TP as specified in the applicable paragraph:

Transmitter	Emission type	Applicable paragraphs
GMRS .....	A1D, A3E, F1D, G1D, F3E, G3E with filtering.....	(1), (3), (7)
	A1D, A3E, F1D, G1D, F3E, G3E without filtering....	(5), (6), (7)
	H1D, J1D, R1D, H3E, J3E, R3E.....	(2), (4), (7)
	F3E with filtering.....	(1), (3), (7)
FRS.....		

NOTE: Filtering refers to the requirement in § 95.635(b)

R/C:

27 MHz band As specified in § 95.629(b).....(1), (3), (7)

72-76 MHz band As specified in § 95.629(b)..... (1), (3), (7), (10), (11), (12)

CB..... A1D, A3E..... (1), (3), (8), (9)  
 H1D, J1D, R1D, H3E, J3E, R3E..... (2), (4), (8), (9)  
 A1D, A3E type accepted ..... (1), (3), (7) before September 10, 1976  
 H1D, J1D, R1D, H3E, J3E, R3E type ..... (2), (4), (7) accepted before September 10, 1986

\*\*\*\*\*

11. Section 95.635 is amended by revising paragraph (a) to read as follows:

**§ 95.635 Modulation standards.**

(a) A GMRS transmitter that transmits emission types F1D, G1D, or G3E must not exceed a peak frequency deviation of plus or minus 5 kHz. An FRS unit or a GMRS transmitter that transmits emission type F3E must not exceed a peak frequency deviation of plus or minus 5 kHz.

\*\*\*\*\*

12. Section 95.637 is amended by adding a new paragraph (d) to read as follows:

**§ 95.637 Maximum transmitter power.**

\*\*\*\*\*

(d) No FRS unit, under any condition of modulation, shall exceed 0.500 W Carrier power (average TP during one unmodulated RF cycle) when transmitting emission type F3E.

13. Section 95.645 is revised to read as follows:

**§ 95.645 FRS unit and R/C transmitter antennas.**

The antenna of each FRS unit, and the antenna of each R/C station transmitting in the 72-76 MHz band, must be an integral part of the transmitter. The antenna must have no gain (as compared to a half-wave dipole) and must be vertically polarized.

14. Section 95.647 is revised to read as follows:

**§ 95.647 Power capability.**

No CB or R/C station transmitter or FRS unit shall incorporate provisions for increasing its transmitter power to any level in excess of the limit specified in § 95.637.

15. Section 95.649 is revised to read as follows:

**§ 95.649 Crystal control required.**

All transmitters used in the Personal Radio Services must be crystal controlled, except an R/C station that transmits in the 26-27 MHz frequency band, and a FRS unit.

16. Appendix 1 to Subpart E is amended by adding the definition for "FRS", in alphabetical order, to read as follows:

APPENDIX 1 TO SUBPART E-GLOSSARY OF TERMS

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FRS. Family Radio Service.

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