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 Federal Communications Commission  
 Washington, D.C. 20554

DISPATCHED BY

PR Docket No. 94-59

In the Matter of

Amendment of Part 97 of the  
 Commission's Rules Concerning  
 HF Digital Communications in the  
 Amateur Service. RM-8218  
 RM-8280

### REPORT AND ORDER

Adopted: April 17, 1995;

Released: April 27, 1995

By the Commission:

### I. INTRODUCTION

1. On June 13, 1994, we adopted a *Notice of Proposed Rule Making (Notice)*<sup>1</sup> in the above-captioned proceeding. In the *Notice*, we proposed to authorize automatic control<sup>2</sup> of stations transmitting digital emission types on the High Frequency (HF) amateur service bands,<sup>3</sup> subject to two conditions for such operation. The automatically controlled station must either be connected to another station that is under manual control, or the automatically controlled station must transmit within a subband designated for this purpose.<sup>4</sup> In this *Report and Order*, we adopt the proposed rules.

<sup>1</sup> 9 FCC Rcd 2850 (1994).

<sup>2</sup> Section 97.3(a) of the Commission's Rules, 47 C.F.R. § 97.3(a), defines automatic control as the use of devices and procedures for control of a station when it is transmitting so that compliance with the Commission's Rules is achieved without the control operator being present at a control point. Only stations specifically designated in the rules may be automatically controlled.

<sup>3</sup> In the HF range (3-30 MHz), the amateur service is allocated 3.55 MHz of spectrum in nine bands between 3.5-29.7 MHz. Digital emission types may be transmitted on 1.182 MHz of this spectrum and analog voice and image emission types on the remainder. There are nine digital data emission types for telemetry, telecommand, and computer communications and nine digital RTTY emission types for narrow-band direct-printing telegraphy communications. See Sections 97.3(c), 97.301(b), and 97.305(c) of the Commission's Rules, 47 C.F.R. §§ 97.3(c), 97.301(b), and 97.305(c).

<sup>4</sup> The subbands would total 135 kHz of spectrum. Each subband would be located within that part of the HF band where only Morse telegraphy, RTTY, and data emission types are authorized currently.

### II. DISCUSSION

2. In response to the *Notice*, we received nineteen comments and one reply comment. The comments ranged from recommending that automatic control not be authorized under any condition to recommending that automatic control be authorized unconditionally. They confirmed generally that the amateur service has a need for stations to transmit digital emission types on the HF bands while under automatic control. The comments also established that there is concern that such transmissions could cause interference to other communications.<sup>5</sup> The comments, however, generally agree that the conditions proposed will provide the necessary degree of protection against such interference. They indicated, moreover, that the desired communications can be carried out under the conditions proposed.

3. Except for temporary authority we issued to permit a feasibility study directed by The American Radio Relay League, Inc. (ARRL),<sup>6</sup> automatic control has not been authorized on the HF bands. Heretofore we have considered immediate action by the station control operator as necessary to avoid causing interference to the communications of other amateur stations transmitting on an HF band.<sup>7</sup> A station transmitting on an HF band usually demands greater attention by its control operator than does a station transmitting on Very-High Frequency (VHF) and higher frequency bands because HF radio wave propagation is long range and changes often.<sup>8</sup> The comments, however, indicated that such operation is practical on the HF bands when the automatically controlled station is simply responding to interrogation by a station having the control operator at its control point or when the station is transmitting on a channel located within a small subband designated for that purpose.

4. The ARRL supports the proposal.<sup>9</sup> It states that absent consensus in the comments, we should take the compromise approach reflected in the rules as proposed.<sup>10</sup> It contends that authorization of automatic control will result in greater flexibility in experimentation and development of digital communications as well as facilitate adaption of existing digital technologies to practical use.<sup>11</sup> In another comment that strongly supported automatic control, however, Colby states that establishing and maintaining communications on a shared HF channel is no different than it

<sup>5</sup> The control operator of the automatically controlled station would not be at the control point as is the case with a locally or remotely controlled station. The control operator of the automatically controlled station, therefore, could not monitor its communications and take immediate corrective action as necessary to prevent interference.

<sup>6</sup> See *Memorandum Opinion and Order*, PR Docket No. 85-105, 1 FCC Rcd 166 (1986).

<sup>7</sup> See *Report and Order*, PR Docket No. 85-105, 51 Fed. Reg. 3069 (1986). An amateur station that is transmitting on an HF band may be locally or remotely controlled. In either type of control, the control operator is at the control point. See Section 97.109 of the Commission's Rules, 47 C.F.R. § 97.109.

<sup>8</sup> Automatic control on VHF and higher frequency bands (above 30 MHz) is authorized currently. See Section 97.109(d) of the Commission's Rules, 47 C.F.R. § 97.109(d).

<sup>9</sup> The American Digital Radio Society, Inc., which filed RM-8280, did not file comments. Its views, however, were reflected in the rules proposed in the *Notice*.

<sup>10</sup> Reply Comments of the ARRL at 5.

<sup>11</sup> Comments of the ARRL at 2.

is on a shared VHF channel, and opposes any conditions on automatically controlled amateur stations beyond those now required in the VHF bands.<sup>12</sup> The ARRL argues that additional conditions proposed are necessary because any automatically controlled station transmitting in a crowded shared HF band involves a substantially increased risk of interference.<sup>13</sup> Other comments also express concern with an increased risk of interference.<sup>14</sup> Further, they oppose the establishment of subbands as a solution to the interference concern because subbands would significantly reduce the available spectrum for stations transmitting other emission types.

5. Automatic control of stations transmitting digital emission types enables amateur operators to utilize high-speed computer-based message technology for the rapid and accurate relaying of messages and data. For this reason, we conclude that there has been demonstrated a need for stations in the amateur service to transmit on the HF bands under automatic control. Such operation will result in greater flexibility in experimentation and development of digital communications.

6. We do recognize the concerns of those who oppose the proposal on the basis of potential interference, and in response to these concerns we are limiting when automatic control can be employed. First, the control operator of the station that is connected to the automatically controlled station must prevent the automatically controlled station from causing interference. Second, we are designating subbands to which transmissions between two automatically controlled stations are confined. These subbands are a small portion of the spectrum otherwise available for digital emission types. We also are confident in the ability of the amateur service community to respond, as it has in the past, to the challenge of minimizing interference with novel technical and operational approaches to the use of shared frequency bands.

7. Requiring automatically controlled stations to transmit only in the designated subbands when communicating with another automatically controlled station, furthermore, will not reduce the HF spectrum available for other emission types. The bandwidth of the transmissions of an automatically controlled station will occupy no more than 500 Hz, and the subbands represent only 3.8 percent of the HF spectrum authorized to the amateur service. Other than Morse telegraphy,<sup>15</sup> only digital emission types are currently authorized for the specified subbands. Nothing in the rules that we are adopting prohibits other stations from continuing to share these subbands.<sup>16</sup>

### III. CONCLUSION

8. In summary, we are amending the amateur service rules to authorize automatic control of amateur stations. To lessen the possibility of inadvertent interference, the automatically controlled station either must be connected to another station that is under manual control, or the automatically controlled station must transmit only within a subband designated for communications between automati-

cally controlled stations. We believe these rule changes will allow the amateur service community to contribute to communication technology and to advance its communication and technical skills consistent with Section 97.1 of the Commission's Rules, 47 C.F.R. § 97.1. We see this action as fundamental to our commitment to provide maximum flexibility to the amateur service community. Therefore, we will amend the amateur service rules as set forth in the attached Appendix.

### IV. ORDERING CLAUSES

9. Accordingly, IT IS ORDERED that effective **July 1, 1995**, Part 97 of the Commission's Rules, 47 C.F.R. Part 97, IS AMENDED as set forth in the Appendix hereto. Authority for this action is found in Section 4(i) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i) and 303(r).

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

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

### FEDERAL COMMUNICATIONS COMMISSION

William F. Caton  
Acting Secretary

### APPENDIX

Part 97 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

Part 97 - Amateur Radio Service

1. The authority citation for Part 97 continues to read as follows:

**Authority citation: 48 Stat. 1066, 1082, as amended; 47 U.S.C. §§ 154, 303. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. §§ 151-155, 301-609, unless otherwise noted.**

2. Section 97.109 is amended by revising paragraphs (d) and (e) to read as follows:

**§ 97.109 Station control.**

\* \* \* \* \*

(d) When a station is being automatically controlled, the control operator need not be at the control point. Only stations specifically designated elsewhere in this Part may

<sup>12</sup> Comment of Ted Colby at 1-2.

<sup>13</sup> Comments of the ARRL at 2-3, Reply Comments of the ARRL at 3-4.

<sup>14</sup> Comments of Harvey M. Foster at 1, Larry L. Burrs at 1, Lawrence L. Rhodes at 1, Beverly A. Carlson and Gunnar C. Carlson at 1-2.

<sup>15</sup> Morse telegraphy is authorized on all amateur service frequencies. See Section 97.305(a) of the Commission's Rules, 47 C.F.R. § 97.305(a).

<sup>16</sup> See Section 97.305 of the Commission's Rules, 47 C.F.R. § 97.305.

be automatically controlled. Automatic control must cease upon notification by an EIC that the station is transmitting improperly or causing harmful interference to other stations. Automatic control must not be resumed without prior approval of the EIC.

(e) No station may be automatically controlled while transmitting third party communications, except a station transmitting a RTTY or data emission. All messages that are retransmitted must originate at a station that is being locally or remotely controlled.

3. A new Section 97.221 is added to Subpart C To read as follows:

**§ 97.221 Automatically controlled digital station.**

(a) This rule section does not apply to an auxiliary station, a beacon station, a repeater station, an earth station, a space station, or a space telecommand station.

(b) A station may be automatically controlled while transmitting a RTTY or data emission on the 6 m or shorter wavelength bands, and on the 28.120-28.189 MHz, 24.925-24.930 MHz, 21.090-21.100 MHz, 18.105-18.110 MHz, 14.0950-14.0995 MHz, 14.1005-14.112 MHz, 10.140-10.150 MHz, 7.100-7.105 MHz, or 3.620-3.635 MHz segments.

(c) A station may be automatically controlled while transmitting a RTTY or data emission on any other frequency authorized for such emission types provided that:

(1) The station is responding to interrogation by a station under local or remote control; and

(2) No transmission from the automatically controlled station occupies a bandwidth of more than 500 Hz.