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

2000 DEC 30 P 4: 19

In the Matter of	)	
	)	
Revision of the Commission's Rules	)	
To Ensure Compatibility with	)	CC Docket No. 94-102
Enhanced 911 Emergency Calling Systems	)	
	)	

FOURTH REPORT AND ORDER

Adopted: December 11, 2000 **Released:** December 14, 2000

By the Commission:

I. INTRODUCTION

1. In this Order, the Commission takes steps to ensure persons with hearing and speech disabilities using text telephone (TTY) devices will be able to make 911 emergency calls over digital wireless systems. In light of recent technological advances related to TTY/digital compatibility, the Commission establishes June 30, 2002, as the deadline by which digital wireless service providers must be capable of transmitting 911 calls made using TTY devices. In order to monitor the development and implementation of this capability within carrier networks, the Commission imposes a reporting requirement on carriers, which may be fulfilled by reporting through an industry forum that has been actively involved in resolving TTY/digital compatibility problems.

II. BACKGROUND

2. In the *E911 First Report and Order*,[1] the Commission required that all covered wireless carriers must be capable of transmitting 911 calls from individuals with speech or hearing disabilities through means other than mobile radio handsets, *e.g.*, through the use of TTY devices.[2] Although the requirement took effect October 1, 1997, carriers operating digital wireless systems have been unable to comply because they cannot pass the Baudot-encoded audio tones produced by TTY devices. Recognizing the technical difficulties associated with transmitting TTY calls on digital wireless systems, the Commission suspended enforcement of the TTY requirement for digital wireless systems until

[1] Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, *Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd 18676, 18701 (1996) (*E911 First Report and Order*), *recon.*, 12 FCC Rcd 22665 (1997) (*E911 Reconsideration Order*).

[2] 47 C.F.R. § 20.18(c).

December 31, 1998.[3] The Commission later granted over 100 temporary waivers of the rule, which remain pending, while the industry worked on a solution.[4]

3. Since September 1997, the Wireless TTY Forum (TTY Forum) — a group consisting of wireless carriers, wireless equipment manufacturers, manufacturers of TTY devices, public safety organizations, and consumer organizations representing individuals who are deaf or hard-of-hearing — has been meeting in an effort to develop solutions that will enable TTY users to make 911 calls on digital wireless networks. In early 1999, Lucent Technologies (Lucent) presented to the TTY Forum a potential solution to the TTY/digital problem. The Lucent solution has subsequently been approved by the Telecommunications Industry Association (TIA) Subcommittees TR45.5 (CDMA) and TR45.3 (TDMA) standards bodies. In addition, Ericsson has proposed a solution to the GSM standards body, which is awaiting final adoption. Motorola is currently working on a solution for its proprietary iDEN technology.

4. In light of the industry's progress, the Wireless Telecommunications Bureau (Bureau) released a Public Notice on May 17, 2000, seeking comment on a new implementation deadline for TTY access to digital wireless systems.[5] The Public Notice also requested comment on other issues, including methods by which the Commission could monitor the progress of digital wireless service providers toward the goal of making their systems compatible with TTY devices.[6]

III. DISCUSSION

A. Implementation Deadline

5. In the Public Notice, the Bureau proposed December 31, 2001, as the deadline for implementation of a digital wireless TTY solution and proposed that all digital wireless carriers begin complying with Section 20.18(c) on or before this date.[7] The Bureau stated that the approval of the Lucent solution by two standards bodies and the apparent acceptance of the Ericsson solution by a third standards body indicated that carriers operating digital wireless systems would soon be able to transmit signals from TTY devices.[8] The Bureau sought comment on the proposed deadline, particularly with respect to whether it would permit equipment manufacturers and carriers sufficient time to complete the tasks associated with implementing a system solution of this kind.[9]

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[3] *See E911 Reconsideration Order*, 12 FCC Rcd 22695 (para. 59) (suspending enforcement of TTY requirement until October 1, 1998); Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, 13 FCC Rcd 21746 (para. 8) (1998) (Wireless Telecommunications Bureau Order extending suspension through November 15, 1998); Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, 14 FCC Rcd 694 (para. 10) (1998) (Wireless Telecommunications Bureau Order extending suspension through December 31, 1998) (*November 1998 TTY Order*).

[4] Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, *Order*, 14 FCC Rcd 1700 (1998) (*TTY Waiver Order*); *Order*, 14 FCC Rcd 3304 (1999).

[5] Public Notice, 15 FCC Rcd 8860 (May 17, 2000) (*Public Notice*).

[6] *Id.*, 15 FCC Rcd at 8862.

[7] *Id.*, 15 FCC Rcd at 8861-62.

[8] *Id.*, 15 FCC Rcd at 8861.

[9] *Id.*, 15 FCC Rcd at 8862.

6. SBC, Ericsson, and Motorola agree with the proposed deadline, as long as the affected carriers are permitted an additional six months (until June 30, 2002) to deploy and test the solution in their systems.[10] Other carriers argue that the deadline proposed in the Public Notice is infeasible because of their dependence upon manufacturers, as well as the time needed for testing, problem solving, and deployment.[11] Some carriers urge the Commission not to set a deadline at this time, or to allow for waivers.[12] CTIA and some carrier commenters argue that the Commission is imposing on wireless carriers a number of other regulatory deadlines that will make meeting a December 31, 2001, deadline difficult.[13] Disabilities rights groups and public safety entities support June 30, 2002, as a firm deadline in order to permit adequate testing, but emphasize that it should not be subject to waiver or delays.[14]

7. We agree with the commenters advocating a firm deadline; this deadline is needed for the industry to maintain TTY access as a priority. Because the technology did not exist to enable TTY signals to be transmitted over digital wireless systems at the time the rule was originally implemented, the Commission has suspended and waived the compliance obligation for these systems for over three years. We commend the industry, representatives of the disability community, and other parties that have worked diligently during that time to develop technological solutions to the problem. Now that solutions for nearly all air interfaces have been developed, we believe it is appropriate to establish a date certain by which digital wireless service providers must begin complying with Section 20.18(c).

8. We establish December 31, 2001, as the deadline for carriers operating digital wireless systems to have obtained all software upgrades and equipment necessary to make their systems capable of transmitting 911 calls from TTY devices. However, we allow carriers an additional six-month period (until June 30, 2002) to integrate, test, and deploy the technology in their systems in conjunction with the public safety community. The record indicates that network infrastructure manufacturers should have software generally available[15] to all carriers by December 31, 2001.[16] We recognize the concerns of carriers that, once the technology and equipment are available, a number of things must be done to

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[10] *See* SBC Reply Comments at 2-3; Ericsson Reply Comments at 2-3; Motorola Comments at 2-3.

[11] *See* AT&T Wireless Reply Comments at 2-4; Conestoga Reply Comments at 2-3; Nextel Reply Comments at 1-2; PVT Networks Reply Comments at 2; Qwest Wireless Reply Comments at 2-5; Southern Reply Comments at 2-4; Voicestream Reply Comments at 2-3; BellSouth Comments at 3-8; RCA Comments at 2-3.

[12] *See* BellSouth Comments at 6-7; Conestoga Reply Comments at 2; CTIA Comments at 2-4; Nextel Reply Comments at 2; PVT Networks Reply Comments at 2; Qwest Wireless Reply Comments at 5; RCA Comments at 2-3; Southern Reply Comments at 2-4; Voicestream Reply Comments at 2-3; BellSouth Comments at 7-8.

[13] CTIA Comments at 4 (Commission's rules governing number portability, E911 Phase II location, and CALEA require wireless carriers to make significant system modifications within the same period of time). *See also* Southern Reply Comments at 4.

[14] Consumer Advocates Reply Comments at 6; Comments of NENA, APCO and NASNA at 1-3.

[15] We interpret the term "generally available" as the date that the manufacturer announces as the release date for the upgraded software to all carriers for deployment. *See* SBC Reply Comments at 2-3.

[16] Ericsson indicates that it expects to have TTY-compatible equipment available for CDMA, TDMA, and GSM available by December 31, 2001. Ericsson Comments at 4. Nokia expects to have test handsets for CDMA and TDMA available by June 2001, and it expects GSM equipment to be available sometime in 2001, depending on when the GSM standard is finalized. Nokia Comments at 2. *See* also SBC Comments at 4 (stating that its vendors can provide equipment in time to satisfy the December 31, 2001, deadline); Sprint Comments at 7-8 (indicating that two of its vendors could meet the deadline).

ensure the solution works properly within a digital wireless system.[17] However, based upon the record in this proceeding, we conclude that six months should be a sufficient amount of time for testing and deployment.[18] To the extent carriers are capable of implementing a solution before the deadline, we expect them to do so.

9. Some commenters assert that the December 31, 2001, deadline is too tight for full deployment of solutions for systems that use GSM and iDEN technologies.[19] Nortel and Nokia argue in favor of a more flexible deadline to account for necessary development and testing, and advocate later deadlines for certain solutions (*e.g.*, GSM and iDEN). Information from the GSM standards group and Motorola indicate that work on solutions for these technologies is progressing.[20] While there may be an issue as to whether solutions for GSM and iDEN systems will be available by December 31, 2001, we believe the June 30, 2002, final deadline provides ample time for completion of standards work, testing, and deployment of GSM and iDEN solutions.

10. For all air interfaces, we expect carriers to devote the resources necessary to meet their compliance obligations. As we have noted, the industry has had a great deal of time to develop solutions for digital/TTY compatibility, and we believe the schedule we have set is reasonable and will ensure that TTY users on digital wireless systems will finally receive the benefits of E911 at the earliest possible time.

11. In addition to amending our rules to reflect the modified implementation deadline for digital wireless systems to be capable of transmitting 911 calls using TTY devices, we also address the 104 pending petitions seeking waiver of Section 20.18(c).[21] These petitions, the majority of which were filed on or before December 4, 1998, contain detailed analyses of the problems then associated with achieving TTY compatibility on digital wireless systems. Because of the technological advances that have

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[17] *See* AT&T Wireless Reply Comments at 2-4; CTIA Comments at 3-4; Motorola Comments at 3; Nextel Reply Comments at 3; Nortel Reply Comments at 4; PVT Networks Reply Comments at 2; Qwest Wireless Reply Comments at 3-5; Sprint Comments at 5-7. RCA argues that allowing time for scheduling installation is particularly important for small, rural carriers because they do not have the market power to influence manufacturers' delivery timetables and they must allocate financial resources well in advance. RCA Comments at 3. We note that SBC expresses qualified support for the modified deadline. SBC Comments at 3 and Reply Comments at 3 (stating that the schedule will be tight and leaves no room for unexpected issues or problems).

[18] *See* Ericsson Reply Comments at 3; Nokia Comments at 2-3; SBC Comments at 2-4; Sprint Comments at 4, 7-8.

[19] *See* Nextel Comments at 4-5; Motorola Comments at 4-6; Southern Reply Comments at 3-4; Nokia Comments at 3-4; Voicestream Reply Comments at 2-3.

[20] *See* ATIS T1P1 Subcommittee's letter to Jim Murrell, Chair GSM North America, September 7, 2000, advising that the balloting for two GSM TTY standards, PCS 1900 - Cellular Text Telephone Modem (CTM) General Description, and PCS 1900 - Cellular Text Telephone Modem (CTM) Transmitter Bit Exact C-Code, has been completed. The American National Standards Institute is currently reviewing these standards. Work on a third standard, the minimum performance standard for CTM, which will specify the test procedures and test vectors to be used in testing the performance of the CTM receiver, is ongoing. This letter can be found on the ATIS web page at <www.atis.org>. Motorola is currently testing a voice-path solution that, as in the Lucent solution, detects TTY tones and converts them to data that is embedded in the voice packet and transmitted over the iDEN air interface. *See* Motorola Comments at 4-5.

[21] *See* Appendix C for a list of parties with waiver petitions pending before the Commission. *See also TTY Waiver Order*, 14 FCC Rcd 1700 at Appendix.

occurred since that time, and the revised implementation schedule we are adopting in this Order, we find that these waiver petitions are moot and we dismiss them.

B. Monitoring Progress

12. In the Public Notice, the Bureau sought comment concerning how the Commission could keep itself informed concerning carrier efforts toward attaining digital TTY accessibility, as well as the progress of technological developments and the adoption of standards.[22] The Bureau suggested requiring digital wireless service providers to submit an implementation plan or periodic reports as possible methods for monitoring carrier progress.[23]

13. Disabilities groups and public safety entities support the imposition of a reporting requirement to enable the Commission to monitor industry progress toward implementation of digital TTY solutions.[24] However, most carrier and equipment manufacturer commenters agree that reports by the TTY Forum should be required in lieu of individual reports by carriers.[25] Many commenters argued that requiring carriers to prepare and submit reports is burdensome and diverts attention and resources away from the objective of digital TTY deployment.[26] A few commenters pointed out that, since the solutions being developed are manufacturer-specific rather than carrier-specific, carrier reports would not be efficient.[27] Instead, they suggest that the Commission monitor development, testing, and deployment efforts through the TTY Forum.[28]

14. Wireless carriers formed the TTY Forum in September 1997 for the purpose of sharing information and developing solutions to the TTY/digital incompatibility problem. Chaired by the Cellular Telecommunications Industry Association and assisted by the Personal Communications Industry Association, the Forum came to include various stakeholders in the outcome of the TTY-wireless issue.[29] Over the past three years, participants of the Forum have included consumers, representatives from state and local government emergency centers, wireless product manufacturers and service providers, and TTY equipment manufacturers. Commission staff members have attended meetings of the TTY Forum and have benefited from the exchange of information. The TTY Forum has done an excellent job of helping carriers move toward the goal of making digital wireless systems widely

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[22] *Public Notice*, 15 FCC Rcd at 8862-63.

[23] *Id.*

[24] Consumer Advocates Comments at 6-7 and Reply Comments at 6-7; Comments at NENA, APCO and NASNA at 2.

[25] *See* CTIA Comments at 5-7; Conestoga Reply Comments at 3; Nextel Reply Comments at 4; PVT Networks Reply Comments at 3; Qwest Wireless Reply Comments at 6; Southern Reply Comments at 4-5; Voicestream Reply Comments at 4; BellSouth Comments at 8-9; RCA Comments at 4-5.

[26] CTIA Comments at 5-7; Conestoga Reply Comments at 3; Nextel Reply Comments at 4; PVT Networks Reply Comments at 3; Qwest Wireless Reply Comments at 6; Southern Reply Comments at 4-5; Sprint Comments at 10-11; Voicestream Reply Comments at 4; BellSouth Comments at 8-9; RCA Comments at 4-5.

[27] VoiceStream Wireless Reply Comments at 4; SBC Comments at 5.

[28] CTIA Comments at 5-7; Conestoga Reply Comments at 3; Nextel Reply Comments at 4; PVT Networks Reply Comments at 3; Qwest Wireless Reply Comments at 6; Southern Reply Comments at 4-5; Voicestream Reply Comments at 4; BellSouth Comments at 8-9.

[29] The Forum is now co-chaired by representatives of PCIA and ATIS.

accessible to TTY devices.

15. We believe the best way to monitor progress on TTY-digital deployment is to require carriers to submit quarterly reports, but to allow them to fulfill this requirement by reporting through the TTY Forum. As a result, we require that carriers submit either individual reports or an aggregate report through the TTY Forum to the Commission 15 days after the end of each quarter, beginning on April 15, 2001, with a report for the quarter ending March 31, 2001, and continuing through the implementation deadline of June 30, 2002.[30]

16. By allowing carriers to report in conjunction with the TTY Forum, we anticipate that the reports will contain useful information concerning equipment development and deployment, as well as actions taken by carriers. In addition, by allowing carriers and other entities to report in an aggregate fashion, the requirement should be less burdensome than it would be to impose individual reporting requirements. Carriers offering digital wireless service that do not wish to report through the TTY Forum may instead file quarterly reports individually.[31]

17. The quarterly reports should contain updates on the status of the various solutions and should distinguish between different air interfaces. The reports should provide information concerning the following deployment "milestones" and issues:

Development Activities

(1) network infrastructure software development;

(2) handset development and testing plans;

(3) beta testing and lab testing;

(4) release and general availability to carriers of network infrastructure software;

(5) availability to carriers of full acceptance test units;

(6) efforts toward achieving digital wireless solution compatibility with enhanced TTY devices.;[32]

Testing and Deployment Activities

(7) carrier coordination of testing with PSAP;

(8) carrier testing activities, including field testing, consumer end-to-end testing, and other necessary tests;[33]

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[30] This reporting requirement is similar to the one imposed by the Commission in the *E911 First Report and Order* in this proceeding, in which it required parties to the industry Consensus Agreement, PCIA, and the Ad Hoc Alliance for Public Access to 911 to furnish the Commission with annual reports detailing the status of the issues involving the interfaces and signaling systems to be deployed for E911 services. *See E911 First Report and Order*, 11 FCC Rcd at 18742.

[31] Of course, other interested parties may voluntarily provide any information they deem relevant through the submission of written *ex parte* materials to the Commission. Such materials should be filed in accordance with the Commission's rules governing *ex parte* submissions. *See* 47 C.F.R. §§ 1.1200-1.1216.

[32] *See* discussion of enhanced protocols, paragraphs 20-23, *infra*.

(9) retail availability of necessary consumer equipment; and

(10) geographic scope of network infrastructure deployment.[34]

18. The Forum should file an original and four copies of each report with the Commission's Secretary (Magalie Roman Salas, Office of the Secretary, Federal Communications Commission, 445 12th Street, SW, Washington, D.C. 20554) and a diskette copy to the Commission's copy contractor (International Transcription Service, Inc. (ITS), CY-B400, (202) 857-3800). In addition, a copy of each report should be sent to the Chief, Policy Division, Wireless Telecommunications Bureau, and the Chief, Disabilities Rights Office, Consumer Information Bureau. All reports shall reference the docket number of this proceeding. Also, the reports should be filed using the Commission's Electronic Comment Filing System (ECFS) by sending an electronic file via the Internet to http://www.fcc.gov/e-file/ecfs.html. The Forum should also e-mail a copy of each report to mlittell@fcc.gov.

C. Consumer Impacts

19. In the Public Notice, the Bureau sought comment on whether any of the TTY/digital wireless compatibility solutions could impose additional costs and/or inconveniences on consumers and if so, the extent and nature of these costs and/or inconveniences.[35] In response to our inquiry, disabilities groups raised several new issues concerning the solutions.

a. TTYs Using Enhanced Protocols

20. The first issue concerns the effect of wireless E911 solutions for those who use TTYs with proprietary enhanced communication protocols, such as Turbo Code (developed by Ultratec) and HiSpeed (developed by Ameriphone). These enhanced protocols, which were developed in the late 1980s before digital wireless services were prevalent, have become widely used because of their effectiveness in improving the speed of TTY transmissions and their ability to allow for conversation interruption. The enhanced protocols appear to work properly when used on analog wireline and wireless networks. However, when TTYs equipped with these enhanced protocols are used on digital networks, including digital wireless systems, they may result in the garbling or blocking of transmissions, sometimes causing the transmission to revert to Baudot and sometimes failing completely. This could be a serious problem in the context of emergency communications.[36]

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[33] SBC and the TTY Forum suggested certain of these criteria for the reports. *See* SBC Reply Comments at 4; Minutes of TTY Forum Meeting 16 (Nov. 9, 2000).

[34] Each quarterly report may not necessarily cover each of the listed milestones, as certain milestones may not yet have been reached as of the due date of a particular quarterly report.

[35] *Public Notice*, 15 FCC Rcd at 8863.

[36] In addition to digital wireless systems, this problem may occur on any system using low bit rate voice encoding, including Voice Over Internet Protocol (VoIP), Voice Over Asynchronous Transfer Mode (VoATM), Voice Over Frame Relay (VoFR), and Voice Over Internet Protocol Over Asynchronous Transfer Mode (VoIPoATM). *See generally* Implementation of Sections 255 and 251(a)(2) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996: Access to Telecommunications Service, Telecommunications Equipment and Customer Premises Equipment by Persons with Disabilities, WT Docket No. 96-198, FCC 99-181, *Report and Order and Further Notice of Inquiry*, paras. 177-182 (rel. Sept. 29, 1999) (seeking comment on impact of internet protocol telephony services on disability community).

21. We are troubled by the potentially serious issues raised by the disabilities groups about the potential disruption of emergency communications. However, we believe the record in this proceeding is insufficient to take action on this issue at this time. We direct the industry, through the TTY Forum, to investigate these issues and to work towards necessary solutions.[37] This will require a cooperative effort on the part of digital-TTY solution developers, developers of enhanced protocols, handset manufacturers, and TTY manufacturers. While we recognize that the enhanced protocols are proprietary in nature, we expect the patent holders to cooperate to the greatest extent possible so that network providers can develop a way to pass enhanced TTY tones over digital wireless networks. We ask the TTY Forum to keep us apprised of its work to address this issue in its quarterly reports. We believe enhanced protocols raise important and significant issues that warrant inquiry in the future, either in the E911 proceeding or in a separate proceeding addressing TTY harmonization and compatibility on a broader basis. While we do not establish a timeframe for carriers to transmit TTY calls using enhanced protocols at this time, we intend to monitor industry progress on this issue and we may take further action in the future, if necessary.

22. We note that when the Commission adopted its E911 TTY rule, it generally contemplated that the TTY devices would operate by transmitting Baudot tones. It appears that, although the industry has made great progress towards enabling the use of such Baudot TTYs with digital wireless phones, certain enhancements may interfere with the effective transmission of emergency calls. While we expect the industry to continue work on this problem, one possible interim solution might be to ensure that, if an enhanced protocol cannot be used on a particular digital wireless system, the devices should revert to Baudot in order for the emergency call to go through.

23. We recognize that advances in technology, including the development of enhanced protocols and assistive devices, are gradually improving the ability of individuals with speech or hearing disabilities to communicate. It is unclear what effects such developments will have in the context of implementing E911 capabilities in digital wireless communications systems. We intend to monitor the industry's progress as it implements the TTY-digital solutions and to examine further issues such as these, particularly insofar as they bear on the ability of persons with disabilities to communicate using digital wireless systems during an emergency.

b. Voice Carry Over and Audio Jack

24. Disabilities groups express concern about the availability of accessories to support voice carry over (VCO) in the wireless E911 solutions. Voice carry over is a form of telecommunications relay service (TRS) where the person with the hearing disability is able to speak directly to the other end user. The communications assistant (CA) types the response back to the person with the hearing disability, and the CA does not voice the conversation.[38] Consumer advocates assert that, in certain wireless handsets, direct connections through the audio jack (the access point on the handset into which the TTY device is plugged) cut off the microphone in the mouthpiece, preventing the user from moving between receiving TTY and speaking during a call. Without some means of switching modes, they state that a VCO user would have to disconnect the audio cable every time it is his or her turn to speak. A "push-to-talk" button on the connector is one possible solution that disabilities groups suggest.[39]

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[37] We note that the TTY Forum is already taking steps to form a working group to explore some aspects of the issue of enhanced protocols. TTY Forum Meeting 16 Report, Draft .01 (Nov. 28, 2000).

[38] 47 C.F.R. § 64.601(9) (defining voice carry over).

[39] Consumer Advocates Reply Comments at 9.

25. Earlier in this proceeding, the Commission adopted a set of criteria that any digital wireless solution must satisfy.[40] Among these was the requirement that VCO should be supported where possible.[41] To the extent that a particular handset prevents VCO when used with a digital wireless solution, we expect the handset manufacturer to take steps to rectify the problem. We encourage equipment manufacturers and carriers to work together to achieve solutions that resolve the incompatibility between TTY devices and digital wireless systems, so that persons with hearing disabilities will finally benefit from being able to dial 911 for emergency services.

26. Similarly, consumer advocates also express concern about difficulties associated with some wireless phones that do not permit simultaneous connection of the audio jack and the power adapter. Disabilities groups state that, on some handsets, the audio jack is located too close to the access point for the power cord, thus preventing the TTY user from making a call while the phone is plugged into a power outlet.[42] Because this issue was raised following the comment period in this proceeding, there is very little on the record as to the nature and extent of this problem. To the extent that such a problem exists, we direct the handset manufacturer to work with TTY manufacturers to resolve incompatibility problems of this type and to ensure that handsets are fully usable by consumers.

c. Analog Availability and Cost

27. In their reply comments, consumer advocates dispute the claims of some carriers that TTY owners are not currently denied access to cellular phone use because they can subscribe to an analog service.[43] They claim that consumers have had difficulty subscribing to analog service because it is being phased out and supplanted by digital service, and when they are able to obtain analog service, the cost is greater than that of digital service.[44] The consumer advocates ask the Commission to encourage wireless carriers to discount analog service pending the availability of digital TTY solutions.[45] No other parties commented on this issue.

28. While it is true that the number of digital wireless customers has been increasing in recent years while the number of analog customers has been decreasing,[46] generally the information provided in this proceeding regarding the lack of availability of analog services has been anecdotal.[47] Similarly, the

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[40] Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Order in CC Docket No. 94-102, 13 FCC Rcd 21746, 21749 and App. (1998).

[41] *Id.*, App. at 2.

[42] *Ex Parte* Presentation by David Baquis, Self-Help for Hard of Hearing People, Judy Harkins and Norman Williams, Gallaudet University, and Al Sonnenstrahl, Consumer Action Network, to Dale Hatfield, Elizabeth Lyle and other FCC staff members (Aug. 3, 2000).

[43] Consumer Advocates Reply Comments at 1-2.

[44] *Id.* at 2-3.

[45] *Id.* at 3.

[46] *See* Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993: Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, Fifth Report, FCC 00-289 at Section II.A.1.b (rel. Aug. 18, 2000) (*Competition Report*).

[47] The Commission's rules currently require cellular systems to provide analog service. *See* 47 CFR §§ 22.915, 22.933. A recently issued staff report recommends that the Commission review whether to eliminate or modify this rule. Federal Communications Commission Biennial Regulatory Review 2000 Staff Report at 50 (Sept. 18, 2000) <http://www.fcc.gov/Reports/biennial2000report.pdf>.

record in this proceeding is inconclusive with respect to the disparity that may exist between pricing for digital and analog wireless services.[48] Nonetheless, we are concerned that individuals using TTY devices are not only being forced to wait several years to obtain the benefits associated with being able to dial 911 using a digital wireless telephone, but they may also be in the position of having to pay higher service rates for the only type of service available to them in the meantime. Thus, in areas in which a carrier offers both analog and digital service plans, to the extent there are disparities in the pricing of these plans, we encourage the carrier to work with TTY users to provide an analog service plan for such users that is priced comparably to digital service, at least until the carrier implements a solution that achieves TTY-digital wireless compatibility.[49] In addition, to address consumer concerns regarding analog availability, we encourage carriers that currently provide analog service to continue to make this service available to TTY users until a TTY-digital solution has been implemented in their systems.[50]

29. Of course, by establishing a firm deadline for digital wireless service providers to comply with our TTY rule, we are attempting to resolve the disabilities groups' underlying concerns by requiring carriers to achieve TTY/digital compatibility at the earliest possible date. This will ultimately ensure that TTY users will be able to choose among service and pricing plans, just as other consumers are able to do presently.

d. Other Issues Raised in Public Notice

30. Finally, in the Public Notice, the Bureau requested comment on several other issues pertaining to digital TTY compatibility. One such issue concerned methods of enforcement of Section 20.18(c). Specifically, the Bureau asked how Sections 251(a)(2) and Section 255(b) of the Communications Act of 1934 relate to the implementation of Section 20.18(c), as well as whether the Commission might use its equipment authorization process to enforce Section 20.18(c).[51]

31. We expect carriers and manufacturers to work together to develop and implement solutions in an expeditious manner, particularly in light of the long period of time the industry has had to work on TTY-digital incompatibility. Specifically, we expect carriers to comply with the rule's requirements consistent with the schedule we prescribe in this order. We are prepared to utilize the panoply of enforcement mechanisms we have at our disposal to address noncompliance with the Communications Act and our rules to ensure that the purposes and goals of the Act, including sections 251(a)(2) and 255(b), as well as section 20.18(c) of our rules, are carried out.[52] In light of this broad range of

[48] We note that, in at least one pricing study, analysts have found that, in some cases, digital wireless services may be cheaper than analog services. *See* David A. Freeman, *Wireless Telephony: Untethered Stories & Stats, Medium Users Benefited Most in 1999*, Bear, Stearns & Co. Inc., June 2000, at 19.

[49] This type of accommodation is not without precedent. Because it can take up to three times longer to complete TTY calls than voice calls, the Commission encouraged wireline interexchange carriers to offer discounts on long distance calls to Telecommunications Relay Service (TRS) users several years ago. In the Matter of Telecommunications Services for Individuals with Hearing and Speech Disabilities, and the Americans With Disabilities Act of 1990, *Report and Order and Request for Comments*, CC Docket No. 90-571, 6 FCC Rcd 4657, 4663 (1991). Several long distance companies currently provide such discounts to TTY and relay users.

[50] We note that it may be a violation of Section 255 of the Act for carriers that provide analog service to fail to provide such service to TTY users in light of the fact that, at present, TTY users are only able to use analog wireless services. *See* 47 U.S.C. § 255(c).

[51] *Public Notice*, 15 FCC Rcd at 8863 (citing 47 U.S.C. §§ 251(a)(2) and 255(b), and 47 C.F.R. § 2.901).

[52] *See* 47 U.S.C. §§ 501-502.

enforcement options, we see no need to create any special enforcement procedures or mechanisms specifically for the TTY rule.

32. Other issues raised by the Public Notice included the suitability of certain interim solutions and the international implications associated with the development of standards for and deployment of a GSM solution.[53] Based on the limited record that was developed on these issues, we decline to take further action on these issues at this time. In addition, we believe the technical issues raised by Nortel concerning the CDMA standard are more appropriately resolved through the standards setting process or through the mutual efforts of participants in the TTY Forum rather than through regulatory intervention.[54] As a result, we decline to act on Nortel's request for clarification at this time.

IV. PROCEDURAL MATTERS

A. Regulatory Flexibility Act

33. The Regulatory Flexibility Act (RFA),[55] requires that a regulatory flexibility analysis be prepared for rulemaking proceedings, unless the agency certifies that "the rule will not have a significant economic impact on a substantial number of small entities."[56] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[57] In addition, the term "small business" has the same meaning as the term "small business concern" under Section 3 of the Small Business Act.[58] 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.[59]

34. This Fourth Report and Order accomplishes two things. One, it establishes June 30, 2002, as the final deadline by which digital wireless systems must be capable of transmitting 911 calls made using TTY devices. Although the Commission originally proposed December 31, 2001, as the compliance deadline, in response to comments the Commission permitted parties an additional six-month-period (until June 30, 2002) to integrate, test and deploy the technology in their systems. This deadline applies to all operators of digital wireless systems; however, this additional six months is a benefit to small entities and will not result in a significant economic impact. Two, it establishes a progress monitoring reporting requirement. This requirement directs parties to submit quarterly reports on carrier compliance

[53] *Public Notice*, 15 FCC Rcd at 8863-64.

[54] *See* Nortel Reply Comments at 6.

[55] *See* 5 U.S.C. § 601 *et. seq.*, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

[56] 5 U.S.C. § 605(b).

[57] 5 U.S.C. § 601(6).

[58] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 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."

[59] 15 U.S.C. § 632.

activities. These reports are used to inform the Commission of carrier progress toward meeting the goal of digital compatibility with TTY devices. This requirement applies to all operators of digital wireless systems. Although there are a significant number of these entities to whom the rules apply, the completion of these reports will require nominal time and no special professional skills. Therefore, any additional costs incurred as a result of this Fourth Report and Order are insignificant. As suggested by numerous commenters[60] the Commission has decided to allow the affected entities to fulfill this requirement by submitting their reports through the TTY Forum. Commenters strongly encouraged the Commission to allow such reporting, because, *inter alia*, it is an extremely simple and inexpensive method of reporting for all entities, including small operators.

35. Therefore, we certify that the requirements of this Fourth 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 Fourth Report and Order, including a copy of this final certification, in a report to Congress pursuant to the Congressional Review Act.[61] In addition, the Commission will send a copy of the Fourth Report and Order, including the final certification, to the Chief Counsel for Advocacy of the Small Business Administration. A copy of the Fourth Report and Order, including the final certification, will also be published in the Federal Register.[62]

B. Paperwork Reduction Analysis

36. This Fourth Report and Order contains a new information collection. As part of our continuing effort to reduce paperwork burdens, we invite the general public and the Office of Management and Budget ("OMB") to take this opportunity to comment on the information collection contained in this Fourth Report and Order, as required by the Paperwork Reduction Act of 1995.[63] Public and agency comments are due 60 days from the date of publication of this Fourth Report and Order in the Federal Register. Comments should address:

- Whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility.
- The accuracy of the Commission's burden estimates.
- Ways to enhance the quality, utility, and clarity of the information collected.
- Ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

37. Written comments by the public on the new information collection are due 60 days after the date of publication in the Federal Register. Written comments must be submitted by the OMB on the proposed and/or modified information collections on or before 60 days after the date of publication in the Federal Register. In addition to filing comments with the Secretary, a copy of any comments on the information collections contained herein should be submitted to Judy Boley, Federal Communications Commission, Room 1-C804, 445 Twelfth Street, S.W., Washington, D.C. 20554, or via the Internet to

[60] *See* para. 13, *supra*.

[61] *See* 5 U.S.C. § 801(a)(1)(A).

[62] *See* 5 U.S.C. § 605.

[63] *See* Pub. L. No. 104-13.

jboley@fcc.gov, and to Ed Springer, OMB Desk Officer, Room 10236 New Executive Office Building, 725 Seventeenth Street, N.W., Washington, D.C. 20503, or via the Internet to Edward.Springer@omb.eop.gov.

C. Authority

92. This action is taken pursuant to Sections 1, 4(i), 201, 303, 309, and 332 of the Communications Act of 1934, as amended by the Telecommunications Act of 1996, 47 U.S.C. §§ 151, 154(i), 201, 303, 309, 332.

D. Further Information

93. For further information, contact Mindy Littell of the Policy Division, Wireless Telecommunications Bureau, at 202-418-1310 (voice) or 202-418-1169 (TTY).

V. ORDERING CLAUSES

38. Accordingly, IT IS ORDERED that Part 20 of the Commission's Rules is amended as set forth in Appendix B.

39. IT IS FURTHER ORDERED that the rule amendments made by this Order and specified in Appendix B SHALL BECOME EFFECTIVE 60 days after the date of the publication of the rule amendments in the Federal Register.

40. IT IS FURTHER ORDERED that the information collections contained in this order WILL BECOME EFFECTIVE following approval by the Office of Management and Budget. The Commission will publish a document at a later date establishing the effective date.

41. IT IS FURTHER ORDERED that all petitions for waiver of Section 20.18(c) of the Commission's rules listed in Appendix C ARE DISMISSED AS MOOT in light of the rule changes adopted in this Fourth Report and Order.

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

FEDERAL COMMUNICATIONS COMMISSION

Magalie Roman Salas

Magalie Roman Salas
Secretary

APPENDIX A

LIST OF COMMENTERS AND ABBREVIATIONS

Parties Filing Comments on the Public Notice

1. Alliance for Telecommunications Industry Solutions [ATIS]
2. Association of Late-Deafened Adults, Consumer Action Network, Gallaudet University, National Association of the Deaf, Rehabilitation Engineering Research Center on Telecommunications Access, Self-Help for Hard of Hearing People, and Telecommunications for the Deaf, Inc. [Consumer Advocates]
3. AT&T Wireless Services, Inc. [AT&T Wireless]
4. BellSouth Corporation [BellSouth]
5. California Coalition of Agencies Serving the Deaf and Hard of Hearing, Inc. [CA Coalition]
6. Cellular Telecommunications Industry Assoc. [CTIA]
7. Ericsson Inc. [Ericsson]
8. Motorola, Inc. [Motorola]
9. National Emergency Number Association, the Association of Public-Safety Communications Officials-International, Inc., and the National Association of State Nine One One Agencies [NENA, APCO and NASNA]
10. Nextel Communications, Inc. [Nextel]
11. Nokia, Inc. [Nokia]
12. Rural Cellular Assoc. [RCA]
13. Andrea J. Saks
14. SBC Wireless, Inc. [SBC]
15. Sprint PCS [Sprint PCS]
16. Margaret A. Staton

Parties Filing Reply Comments on the Public Notice

1. Association of Late-Deafened Adults, Consumer Action Network, Gallaudet University, National Association of the Deaf, Rehabilitation Engineering Research Center on Telecommunications Access, Self-Help for Hard of Hearing People, and Telecommunications for the Deaf, Inc. [Consumer Advocates]
2. AT&T Wireless Services, Inc. [AT&T Wireless]
3. Conestoga Wireless Company [Conestoga]
4. Ericsson Inc. [Ericsson]
5. Industry TTY Forum
6. Barbara Loeding, Ph.D.
7. Sheila Conlon Mentkowski
8. Nextel Communications, Inc. [Nextel]
9. Nortel Networks Corporation [Nortel]
10. PVT Networks, Inc. and GW Wireless, Inc. [PVT Networks]
11. Qwest Wireless, LLC [Qwest Wireless]
12. SBC Wireless, Inc. [SBC]
13. Southern Communications Services, Inc. d/b/a/ Southern LINC [Southern]
14. VoiceStream Wireless Corporation [VoiceStream]

APPENDIX B

FINAL RULES

For the reasons discussed in the accompanying Fourth Report and Order, Part 20 of Title 47 of the Code of Federal Regulations is amended as follows:

PART 20—COMMERCIAL MOBILE RADIO SERVICES

1. The authority citation for Part 20 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 160, 251-254, 303, and 332 unless otherwise noted.

2. Section 20.18, 911 Service, is amended by deleting the note to paragraph (c) and by adding a new note to paragraph (c) as follows:

§ 20.18 911 Service.

* * * *

(c) * * * * *

NOTE TO PARAGRAPH (c): Operators of digital wireless systems must begin complying with the provisions of this paragraph on or before June 30, 2002.

APPENDIX C – LIST OF PARTIES WITH PENDING WAIVER PETITIONS

1. Advantage Cellular Systems, Inc.
2. Aerial Communications, Inc.
3. Airadigm Communications, Inc.
4. Airtouch Communications, Inc.
5. Alaska DigiTel, LLC and Anchorage PCS, LLC
6. Alaska-3 Cellular, LLC
7. Aliant Cellular Inc.
8. Aliant Communications Co.
9. ALLTEL Corporation
10. Alpine PCS, Inc.
11. American Cellular Corporation
12. American Rural Cellular, Inc.
13. AmeriCell PA-3 Limited Partnership
14. Ameritech Wireless Communications, Inc., Ameritech Mobile Communications, Inc., and Related Licensees
15. AT&T Wireless Services, Inc.
16. Bell Atlantic Mobile, Inc.
17. BellSouth Corporation
18. Brookings Municipal Utilities d/b/a Swiftel Communications
19. Cal-One Cellular L.P.
20. Caprock Cellular
21. Carolina PCS I Limited Partnership
22. Cellular Communications of Puerto Rico, Inc.
23. Cellular Mobile Systems of St. Cloud
24. Cellular Pacific
25. Cellular Phone of Kentucky, Inc. d/b/a Ramcell of Kentucky
26. Cellular XL Associates, L.P.
27. Celulares Telefonica
28. Centennial Cellular Corp.
29. Central Wireless Partnership
30. CenturyTel Wireless, Inc.
31. CGKC&H No. 2 Rural Cellular Limited Partnership
32. Chase Telecommunications, Inc.
33. Cincinnati Bell Wireless, LLC
34. Comcast Cellular Communications, Inc.
35. Commercial Mobile Radio Service Carriers (Appalachian Cellular LLC, et al.)
36. ComScape Telecommunications of Charleston License, Inc.
37. Conestoga Wireless Co.
38. CT Cube, Inc.
39. D&E Wireless, Inc.
40. DiGiPH PCS, Inc.
41. Dobson Cellular Systems, Inc.
42. Eastern Sub-RSA Limited Partnership
43. ENMR Telephone Cooperative, Inc., Texas RSA 3 Limited Partnership, New Mexico RSA 6-II Partnership, and New Mexico RSA 4 East Limited Partnership
44. Enterprise Communications Partnership
45. GTE Wireless Incorporated
46. Highland Cellular, Inc.
47. Horizon Personal Communications, Inc.

48. HLD Cellular Corporation
49. Hudson Valley Cellular Partnership
50. Illinois Valley Cellular RSA 2-I
51. Illinois Valley Cellular RSA 2-II
52. Illinois Valley Cellular RSA 2-III
53. Kokomo CellTelCo
54. Larsen Cellular Communications, Ltd.
55. Litchfield County Cellular, Inc. d/b/a Ramcell of Oregon
56. McElroy Electronics Corporation
57. Mid-Tex Cellular, LTD.
58. Minnesota Southern Cellular Telephone Company
59. Missouri RSA No. 7 Limited Partnership
60. MobileTel, Inc.
61. Montana Wireless, Inc.
62. New Mexico RSA 6-III Partnership
63. Nextel Communications, Inc. [FN6]
64. North Alabama Cellular, LLC
65. North American Cellular
66. North Carolina RSA 1 Partnership d/b/a Ramcell of North Carolina
67. North Dakota Network Company
68. North Dakota PCS Limited Partnership
69. Northcoast Communication, LLC
70. Northwest Missouri Cellular
71. Omaha Cellular Limited Partnership
72. Omnipoint Corporation
73. Panhandle Telecommunications Systems, Inc.
74. Poka Lambro PCS, Inc.
75. Powertel, Inc.
76. Price Communications Wireless, Inc.
77. PrimeCo Personal Communications, L.P.
78. Public Service Cellular, Inc.
79. RSA 1 Limited Partnership
80. RT Communications, Inc.
81. Sagir, Inc.
82. SBC Wireless Inc.
83. South Central Utah Telephone Association
84. Southern Company
85. Southern Illinois RSA Partnership
86. Sprint Spectrum, L.P., d/b/a Sprint PCS
87. TeleCorp PCS, Inc.
88. Texas RSA 1 Limited Partnership d/b/a XIT Cellular
89. Texas RSA 15B2 Limited Partnership
90. 3 Rivers PCS, Inc.
91. Tritel, Inc.
92. Triton Communications, L.L.C.
93. Triton PCS License Company L.L.C.
94. Union Telephone Company
95. United States Cellular Corporation
96. Upstate Cellular Network
97. US Unwired Inc., Louisiana Unwired, LLC and Meretel Communications Limited Partnership

98. U.S. West, Inc.
99. Valley Telecommunications Company
100. Vanguard Cellular Systems, Inc.
101. Washington RSA No. 8 Limited Partnership
102. Western Wireless Corporation
103. Wireless Communications Venture
104. Wireless One Network, L.P.