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FEDERAL COMMUNICATIONS COMMISSION
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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	CC Docket No. 94-102
Revision of the Commission's Rules to Ensure	)	
Compatibility with Enhanced 911 Emergency	)	DA 00-1091
Calling Systems	)	

COMMENTS OF AT&T WIRELESS SERVICES, INC.

AT&T Wireless Services, Inc. ("AT&T"), by its attorneys, hereby responds to the Commission's request for comment on a new implementation deadline for TTY access to digital wireless systems for 911 calls.[1/] AT&T has been actively involved with industry efforts to develop technological solutions that can overcome obstacles to TTY digital access, and is confident that it will have the capability to transmit TTY 911 calls over its digital wireless network in the near future. However, AT&T's ability to meet the Commission's proposed deadline for TTY digital access will depend in large part upon whether handset and switch manufacturers can provide the necessary software and hardware to AT&T at least twelve to fifteen months before the deadline. At this point, it appears that such software will not be available from all of AT&T's vendors in sufficient time to allow AT&T to comply with the Commission's proposed deadline, and AT&T expects that other wireless carriers will be in the same position. The Commission accordingly should ensure that any deadline it adopts provides an adequate period of time for handset and switch manufacturers to develop and distribute the necessary software and hardware and for wireless carriers to test and integrate such software into

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[1/] Wireless Telecommunications Bureau Seeks Comment on New Implementation Deadline for TTY Access to Digital Wireless Systems for 911 Calls, Public Notice, CC Docket 94-102, DA 00-1091 (rel. May 17, 2000).

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handsets and networks. The Commission also should excuse carrier non-compliance that results from the inability of manufacturers to provide such software on a timely basis.

DISCUSSION

I. The Implementation Deadline May Need to be Modified to Ensure that the Necessary Handset and Switch Software and/or Hardware is Available from Manufacturers and Properly Tested and Integrated into Digital Wireless Networks

AT&T has been actively involved with industry efforts to develop a solution that will permit the transmission of TTY 911 calls over digital wireless systems. AT&T has been a committed member of the Wireless TTY forum, has donated lab facilities to the Universal Wireless Communications Consortium for standardized tests of TTY performance over IS-136 TDMA wireless networks, and has been working vigorously with vendors to arrive at a solution.

The benefits of the wireless industry's efforts are beginning to materialize. In the one and a half years since the Commission granted temporary waivers of the rule requiring the transmission of 911 calls made from TTY devices over digital wireless systems,[2/] the wireless industry has made great strides in finding a solution for digital TTY access. Two potential solutions for TDMA systems now exist: Lucent's "No-Gain" solution and Ericsson's enhanced modem technology ("EMT") solution. The Lucent No-Gain solution has been codified into standards by the Telecommunications Industry Association's TR45.3 subcommittee on TDMA standards (standard IS-823) and TR 45.5 subcommittee on CDMA standards.[3/] The GSM

[2/] In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Order CC Docket 94-102, 14 FCC Rcd 1700 (rel. Dec 31, 1998).

[3/] See Declaration of Scott Prather at ¶ 2, attached hereto as Exhibit 1 ("Prather Declaration").

standards body, the Alliance for Telecommunications Industry Solutions (ATIS) Working Group T1P1.5, is moving towards adoption of Ericsson's EMT solution and is expected to vote on this standard soon. It is AT&T's understanding that Ericsson's EMT solution will work with TDMA systems as well as GSM systems.[4/]

AT&T will implement whichever solution offers the most benefit to its customers. Currently, AT&T plans to implement the Lucent No-Gain solution because this is the only solution AT&T has been able to evaluate thoroughly and the only solution that has been codified in standards. The Lucent No-Gain solution is a voice-based solution that uses the audio path of the digital mobile phone and passes the output of the TTY device through the mobile phone's vocoder, as opposed to a data solution that bypasses the vocoder.[5/] The No-Gain solution turns the gain in the adaptive filter in the vocoder down to zero when a TTY Baudot signal is detected, and allows for voice carry over ("VCO") and hearing carry over ("HCO"). Id. The Lucent solution requires software upgrades for both the handset and the network. Id. Once implemented, it would be available on certain new handsets and throughout the AT&T wireless network. Id.

AT&T expects to be able to transmit TTY 911 calls on its digital wireless systems in a trial market approximately six months after the necessary software is available from switch and handset manufacturers. AT&T will need these six months to test and integrate the software into

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[4/] Ericsson's EMT solution has not been approved by TIA/EIA. If the Ericsson solution requires any changes to existing TIA/EIA standards, deployment would be slowed considerably. Prather Declaration at ¶ 2.

[5/] Prather Declaration at ¶ 3.

its handsets and switches.[6] For at least two of AT&T's switch manufacturers, the TTY software update for the Lucent No-Gain solution may be part of a full software release and would require rigorous testing in the lab and in the field.[7] Following a successful market trial, AT&T will require another six to nine months to deploy TTY-compatible software across its network. Therefore, AT&T Wireless would need twelve to fifteen months to fully implement a TTY digital solution throughout its network once the necessary software and hardware are available from its switch and handset manufacturers.

Many of AT&T's switch and handset vendors apparently will have the software available for the Lucent No-Gain solution in time to deploy it in a test market by the Commission's proposed deadline. Based upon preliminary information, however, at least one of AT&T's vendors will not be able to provide the switch software upgrade necessary for the Lucent solution until approximately second quarter 2002, and certain handset manufacturers may not have the capability built into their new phones in time.[8] While AT&T can upgrade its switches on a switch-by-switch basis, AT&T would not be able to meet the Commission's proposed TTY access deadline of December 31, 2001 for those markets where the switches have not been upgraded. Id. Implementing a TTY digital solution on a switch-by-switch basis would require that customers be notified about the particular markets where TTY access to 911 is and is not

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[6] Id. at ¶ 4.

[7] Id. Problems not pertaining to TTY could be found during testing that could slow the release of the product if they are sufficiently severe. Correcting such problems would require further work on the part of the manufacturers.

available. Similar notification efforts would be necessary for new handsets that could not support the TTY digital solution. Id.

In view of the foregoing, the Commission should modify its proposed deadline to give all manufacturers adequate time to develop and distribute the necessary software and AT&T and other wireless carriers adequate time to test and integrate such software into handsets and networks. AT&T has no objection to the Commission reinstating a simple quarterly reporting requirement for carriers and manufacturers to ensure that all parties are working diligently to make their systems compatible with TTY devices. The Commission also should excuse carrier non-compliance with the TTY digital access requirement if non-compliance is the result of vendor's inability to deliver the necessary software in a timely fashion.

II. The Adoption of Incompatible TTY/Digital Wireless Solutions by Wireless Carriers Could Have an Adverse Impact on Roaming

The Commission also has asked whether any of the proposed TTY/digital wireless compatibility solutions would have a potential adverse impact on consumers. AT&T notes that two such effects are possible with regard to North American and international roaming.

North American roaming compatibility issues could arise if some TDMA carriers select the Lucent solution while others select the Ericsson solution.[9] If AT&T implements the No-Gain solution, the only currently available solution for TDMA, but other TDMA carriers select the

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[8] Id. at ¶ 5. Because the Ericsson solution has not yet been adopted by a standards committee, AT&T currently has no information about the time frame in which the necessary software and hardware would be available from manufacturers.

[9] Id. at ¶ 6. If all wireless carriers using TDMA technology select the Lucent solution, roaming for AT&T subscribers using TTY devices should emulate conventional voice coverage.

Ericsson solution, AT&T subscribers using TTY devices would be required to use adaptive hardware (external modems) in order to roam on these other carriers' systems, which could increase costs for customers that roam in other markets. Id. Eventually, the hardware necessary to support the Ericsson solution could be built into handsets, but a means for the network to communicate to the mobile which TTY access method is supported has not yet been developed for TDMA networks. Id. Customers therefore would need to know which access method is supported in a particular market and select the appropriate mode on the handset, which could be confusing. Id. Supporting two standards would also increase costs.

The effects of adopting inconsistent solutions on international roaming are also complicated. If the Ericsson solution is adopted by the GSM standards body, and all TDMA and CDMA handsets utilize the No-Gain solution, the handsets will have to be capable of operating in both the IS-823 and EMT modes in order to support international roaming.[10/] In the case of incompatible technologies between GSM and TDMA, the mobile could automatically select the correct access mode according to whether it is on a GSM or TDMA network, which could avoid some of the problems described above with regard to North American roaming, but only if all TDMA carriers adopt a consistent TTY access solution. Id. The failure of TDMA carriers in North American to implement one TTY solution therefore will become more significant as international roaming becomes more prevalent.

10/ Id. at ¶ 7.

CONCLUSION

For the reasons set forth above, the Commission should ensure that any implementation deadline it adopts provides an adequate period of time for handset and switch manufacturers to develop and distribute the necessary software and hardware and for wireless carriers to test and integrate such software into handsets and networks. The Commission also should excuse carrier non-compliance that results from the failure of manufacturers to provide such software on a timely basis.

Respectfully submitted,

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June 19, 2000

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* Admitted in Maryland only.

DECLARATION OF SCOTT PRATHER

1. My name is Scott Prather. I am employed as a Senior Member of the Technical Team with AT&T Wireless Services, Inc. ("AT&T"). In this position, I am the lead engineer responsible for the implementation of a TTY solution in AT&T Wireless Services' network.

2. Two potential solutions for TDMA systems now exist: Lucent's "No-Gain" solution and Ericsson's enhanced modem technology ("EMT") solution. Standards based on the Lucent No-Gain solution were adopted by the Telecommunications Industry Association's TR45.3 subcommittee on TDMA standards (standard IS-823) and TR 45.5 subcommittee on CDMA standards. The GSM standards body, the Alliance for Telecommunications Industry Solutions (ATIS) Working Group T1P1.5, is moving toward adoption of Ericsson's EMT solution and it is my understanding that they will soon be voting on this standard. It is my understanding that Ericsson's EMT solution will work with TDMA systems as well as GSM systems. If the Ericsson solution requires any changes to existing TIA/EIA standards prior to deployment on a TDMA system, deployment would be slowed considerably.

3. AT&T will implement whichever solution offers the most benefit to our customers. We will evaluate each solution to determine which is the most efficient and technologically superior solution. Currently, AT&T plans to implement the Lucent No-Gain solution, as this is the only solution AT&T has been able to thoroughly evaluate and the only solution that has been codified in standards. The Lucent No-Gain solution is a voice-based solution that uses the audio path of the digital mobile phone and passes the output of the TTY device through the mobile phone's vocoder, as opposed to a data solution that bypasses the vocoder. The No-Gain solution turns the gain in the adaptive filter in the vocoder down to zero when a TTY Baudot signal is detected, and allows for voice carry over ("VCO") and hearing

carry over ("HCO"). The Lucent solution requires software upgrades for both the handset and the network. If this solution is implemented, it is my understanding that it would be available on certain new handsets and throughout the AT&T wireless network.

4. AT&T expects to be able to transmit TTY 911 calls on its digital wireless systems in a trial market approximately six months after the necessary software and/or hardware is available from switch and handset manufacturers. AT&T will need these six months to test the software in its handsets and switches. For at least two of our switch manufacturers, the TTY software update for the Lucent No-Gain solution would be part of a full software release and would require rigorous testing in the lab and in the field. Problems not pertaining to TTY could be found during testing that could slow the release of the product if they are sufficiently severe. Correcting such problems would require further work on the part of the manufacturers. Full deployment of TTY-capable software throughout AT&T's wireless network will take place over a six to nine month period following successful testing in a trial market. Therefore, following delivery of the necessary software upgrades to support a TTY digital solution from its manufacturers, AT&T would need twelve to fifteen months to fully implement a TTY digital solution throughout its network.

5. Many of AT&T's switch and handset vendors apparently will have the software available for the Lucent No-Gain solution in time to meet the Commission's proposed deadline in a trial market. Based upon preliminary information, however, at least one of AT&T's vendors will not be able to provide the switch software upgrade necessary for the Lucent solution until approximately second quarter 2002, and certain handset manufacturers may not have the

capability built into new phones in time. While AT&T can upgrade its switches on a switch-by-switch basis, AT&T would not be able to meet the Commission's proposed TTY access deadline of December 31, 2001 for those markets where the switch manufacturer has not been able to provide the necessary upgrades. Implementing a TTY digital solution on a switch-by-switch basis would require that customers be notified about the particular markets where TTY access to 911 is and is not available. Because the Ericsson solution has not yet been adopted by a standards committee, AT&T currently has no information about the time frame in which the necessary software and hardware would be available from manufacturers to implement this solution.

6. If all wireless carriers using TDMA technology select the Lucent solution, roaming for AT&T subscribers using TTY devices should emulate that of conventional voice. However, North American roaming compatibility issues could arise if some TDMA carriers select the Lucent solution while others select the Ericsson solution. If AT&T implements the No-Gain solution, the only currently available solution for TDMA, but other TDMA carriers select the Ericsson solution, AT&T subscribers using TTY devices would be required to use adaptive hardware (external modems) in order to roam on these other carriers' systems, which could increase costs for customers that roam in other markets. Eventually, the hardware necessary for Ericsson solutions could be built into handsets supporting the No-Gain solution, but a means for the network to communicate to the mobile which TTY access method the

network supports has not yet been developed. Customers therefore would need to know which access method is supported in a particular market and select the appropriate mode on the handset, which could be confusing. Supporting two standards would also increase costs.

7. The effects of adopting inconsistent solutions on international roaming are also complicated. If the Ericsson solution is adopted by the GSM standards body and all TDMA and CDMA handsets implement the No-Gain solution, the handsets will have to be capable of operating in both the IS-823 and EMT modes in order to support international roaming, which will increase costs. In the case of incompatible technologies between GSM and TDMA, the mobile could automatically select the correct access mode according to whether it is on a GSM or TDMA network, which could avoid some of the problems described above with regard to North American roaming, but only if all TDMA carriers adopt a consistent TTY access solution. Therefore, the failure of TDMA carriers in North American to implement one TTY solution will become more significant as international roaming becomes more prevalent.

Scott Prather

Executed on 19 Jul, 2000

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CERTIFICATE OF SERVICE

I, Michelle Mundt, hereby certify that on this 19th day of June 2000, I caused copies of the foregoing "Comments of AT&T Wireless Services, Inc." to be sent to the following by hand delivery:

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