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JUL 16 2001

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY**Report to the Federal Communications Commission on Carrier Efforts Toward Attaining Digital TTY Accessibility, and the Status of the Various Technological Solutions, as Provided by CC Docket No. 94-102, In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems**

Northwest Missouri Cellular L.P. ("Northwest Missouri"), by its attorneys, pursuant to the Federal Communications Commission's ("Commission") *Fourth Report and Order* in CC Docket No. 94-102,¹ hereby files a Quarterly Report for the quarter ending June 30, 2001, detailing its efforts towards attaining digital TTY accessibility, and the status of the various technological solutions that will help it attain that goal.

In the *Fourth Report and Order* the Commission established December 31, 2001 as the new 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. It further established June 30, 2002 as the deadline for carriers to integrate, test and deploy the technology in their systems in conjunction with the public safety community. In order to be assured that the aforementioned deadlines will be met without complication, the Commission required digital wireless carriers to submit Quarterly Reports fifteen days after the end of each quarter.² Northwest Missouri now files this instant report with the Commission.

I. Carrier Background

Northwest Missouri provides analog and digital CMRS wireless service in the Missouri 1-Atchison RSA.³ Northwest Missouri intends to do everything within its power to comply with the requirements of 20.18(c) of the rules, to provide hearing-impaired persons with TTY access via the 911 dialing code over its digital wireless network. However, the ability for TTY devices to actually transmit calls over the TDMA digital portion of Northwest Missouri's network is wholly dependent upon the availability of the required infrastructure hardware and software and compatible handsets in sufficient time to meet the Commission's deadline. Northwest Missouri respectfully submits that these items are both beyond Northwest Missouri's control. Accordingly, Northwest Missouri has requested information and a status update from its network infrastructure and handset providers regarding their ability to meet the Commission's deadlines.

¹In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Fourth Report and Order*, CC Docket No. 94-102, 15 Fcc Rcd 25216, 65 Fed. Reg. 82293 (December 28, 2000), ("*Fourth Report and Order*").

²*Id.*

³Station KNKN816 (CMA5041).

II. Access to E911 Through TTY Devices

A. **Development Activities**

Northwest Missouri does not own its own switch. Rather, Northwest Missouri obtains switching services from Cingular Wireless' ("Cingular") switch in Kansas City, MO to switch Northwest Missouri's Lucent Technologies ("Lucent") TDMA infrastructure cell site equipment. Presently, Northwest Missouri understands that the requisite software which the Commission's rules require to be in place by December 31, 2001, will be hosted on the Cingular switch and not the network infrastructure owned and operated by Northwest Missouri. Northwest Missouri has made inquiries to both Cingular and Lucent regarding the status on their progress in achieving full compliance with the Commission's rules for the Northwest Missouri infrastructure. In response to Northwest Missouri's inquiry, Lucent has provided a status update on its progress in achieving full compliance with the Commission's rules. Lucent's response is appended hereto as **Exhibit A**. Northwest Missouri is not independently capable of verifying the information presented below, but has no reason to believe that it is not accurate. Northwest Missouri also respectfully refers the Commission to the *Fourth Report and Order*, wherein SWB (now Cingular) agreed with the Commission's proposed deadline of December 31, 2001, as long as the affected carriers were permitted an additional six months (until June 30, 2001) to deploy and test the solution in their systems.⁴

Even once the network infrastructure is in place, Northwest Missouri understands that the ability to actually allow 911 access to TTY devices will also be contingent upon the availability of compatible handsets. While Northwest Missouri provides service to a number of brands of certified handsets owned by its subscribers and roamers entering its market, Northwest Missouri's primary handset providers for subscriber equipment sold by Northwest Missouri are Nokia and Motorola. Northwest Missouri has requested that Nokia and Motorola provide information on their progress in achieving full compliance with the Commission's rules with its TDMA handsets. Motorola's response is appended hereto as **Exhibit B**. Northwest Missouri is not independently capable of verifying the information presented therein, but has no reason to believe it is not accurate. As of this date, the only response Northwest Missouri has received regarding Nokia is from its handset distributor advising that "Nokia handsets being sold to Northwest Missouri Cellular, as the FCC acknowledges, do not pass the TTY data with an acceptable error rate." Northwest Missouri has not yet received a detailed response directly from Nokia, and therefore cannot report on its development activities. Last quarter, however, Nokia provided this information directly to the Commission in its own quarterly report. Northwest Missouri presumes that Nokia will follow the same procedure for this quarter. The appended Motorola information is respectfully submitted in response to these issues, as required in the Commission's *Fourth Report and Order* (rel. Dec 14, 2000).

- (1) *Network Infrastructure Software Development*
- (2) *Handset Development and Testing Plans*

⁴*Fourth Report and Order*, ¶ 6.

- (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*

B. Testing and Deployment Activities

Once the Cingular system has been upgraded to provide the requisite functionality and compatible handsets become available, Northwest Missouri will perform the appropriate tests. The specific details of a time line to implement 911 access to TRS via TTY devices over the digital wireless network, and other issues related to such implementation, including handset development and testing, are beyond the scope of information which Northwest Missouri can provide. Such questions are more appropriately addressed by equipment vendors because the equipment vendors, and not the licensees, are directly involved in developing compliant equipment. The Lucent and Motorola responses address these issues, as set forth in the Commission's *Fourth Report and Order*.

Because of the lack of available infrastructure hardware and software and compatibly handsets, Northwest Missouri has yet to undertake any testing and development activities.

- (7) *Carrier Coordination of Testing With PSAP*
- (8) *Carrier Testing Activities, Including Field Testing, Consumer End-to-end Testing, and Other Necessary Tests*
- (9) *Retail Availability of Necessary Consumer Equipment*
- (10) *Geographic Scope of Network Infrastructure Deployment*

III. Conclusion

As soon as the issues surrounding TTY access over digital networks are resolved, and assuming they are completed in a timely manner, Northwest Missouri intends to promptly and fully comply with the requirements of the *Fourth Report and Order*, to test and deploy the technology in its system in conjunction with the public safety community by June 30, 2002. Because the December 31, 2001 deadline appears to apply only to software required on the network switch owned by Northwest Missouri's switching vendor, it does not appear as though this deadline for implementing this software is directly applicable to the Northwest Missouri network nor is it within Northwest Missouri's control. As required, Northwest Missouri will provide the Commission with quarterly updates on the status of development and deployment, as advised by Northwest Missouri's infrastructure, handset and switching service vendors and, if

necessary, will seek a waiver of the applicable deadlines if the requisite equipment and software does not actually become available in sufficient time to enable Northwest Missouri to meet the deadlines.

Respectfully Submitted,

Northwest Missouri Cellular L.P.



Michael K. Kurtis
Anna E. Ward

July 16, 2001

It's Attorneys

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EXHIBIT A

REPORT TO TTY/TDD FORUM 18
Lucent Technologies
12 June, 2001

Lucent Technologies
Bell Labs Innovations



Chris Fernandez - Product Management
Steve Benno - Algorithm Development
Jim Huntley - Lab Testing

TTY/TDD Standards

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TTY Standards updated with latest fixes.

TR45.5/3GPP2 CDMA Standards

- IS-127-3 EVRC TTY Extension Balloted
- IS-733-2 13K TTY Extension Balloted
- SMV Contains TTY/TDD Extension.

TR45.3 TDMA Standards

- IS-823-A TTY for TDMA Balloted
- IS-840-A TTY Min Perf Spec Balloted

LAB TESTING OF TTY/TDD - TDMA

Lucent Technologies
Bell Labs innovations



Test Categories:

- 1) **Baseline Testing** - unimpaired TTY transmission performance for live & streaming uplink, downlink & mobile-to-mobile calls with Power Control (DTX/DDPC) ON & OFF.
- 2) **HO Testing** - unimpaired TTY transmission performance for live & streaming, uplink & downlink calls with Power Control (DTX/DDPC) ON & OFF under hand-off.
- 3) **Impairments Testing** - TTY transmission performance for live & streaming, uplink & downlink calls with Power Control (DTX/DDPC) ON & OFF with Noise + Fading on RF link.
- 4) **Interoperability Testing** - unimpaired TTY transmission performance for live & streaming, uplink & downlink calls with Power Control (DTX/DDPC) ON & OFF with TTY OFF at mobile.
- 5) **False Alarm Testing** - unimpaired and impaired TTY transmission performance for streaming uplink & downlink calls with Power Control (DTX/DDPC) ON.

Test Results: (Ultratec Compact TTY - Ameriphone Q90)

- 1) Downlink CER ~ 0%; Uplink CER ~ 0-1+%; Streaming CER → 0%; Live CER → 1%; **There are still known Uplink problems with the TTY mobiles.**
- 2) Downlink better than Uplink (75 vs. 125 ms mute times); HO CERs a little worse than expected; TTY mode errors may occur.
- 3) Faded CERs ~ same as Baseline Tests. Fading + Noise CER Uplink ~0-1% at C/I = 12 dB; Fading + Noise Downlink CERs vs. C/I depends on Power Control (DDPC).
- 4) TTY transmission is as expected on both links when TTY is OFF at the mobile, CER ≥ 3%.
- 5) No False Alarms found in > 30 hours of testing.
- 6) TTY terminals displayed some errors and variability in live testing.

LAB TESTING OF TTY/TDD - CDMA

Lucent Technologies
Bell Labs Innovations



Test Categories:

- 1) **Baseline Testing** - unimpaired TTY transmission performance for live & streaming uplink, downlink & mobile-to-mobile calls for both EVRC & 13K vocoders.
- 2) **HO Testing** - unimpaired TTY transmission performance for live & streaming, uplink, downlink & mobile-to-mobile calls for both EVRC & 13K vocoders under hand-off.
- 3) **Impairments Testing** - TTY transmission performance for live & streaming, uplink & downlink calls for both EVRC & 13K vocoders with Noise on RF link.
- 4) **TTY Interoperability Testing** - unimpaired TTY transmission performance for live & streaming, uplink & downlink calls for both EVRC & 13K vocoders with TTY OFF at mobile.
- 5) **False Alarm Testing** - unimpaired and impaired TTY transmission performance for streaming uplink & downlink calls for both EVRC & 13K vocoders.

Test Results: (Ultratec Compact TTY - Ameriphone Q90)

- 1) Downlink CER ~ 0%; Uplink CER ~ 0%; Streaming CER → 0%; Live CER → 0%;
- 2) Downlink CER ~ 0%; Uplink CER ~ 0%; Streaming CER → 0%; Live CER → 0%;
- 3) CERs with Noise same as for Baseline Tests up to FER ~ 30% on Uplink & ~ 20% on Downlink.
- 4) TTY transmission is as expected on both links when TTY is OFF at the mobile, CER is high.
- 5) No False Alarms found in ~ 60 hours of testing.
- 6) TTY terminals displayed some errors and variability in live testing.

TTY/TDD FOA - TDMA

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Limited FOA (First Office Application) testing was done at 1900 MHz band frequencies only (TDMA) during May 2001.

Tests:

- Mobile to Landline Originations
- Landline to Mobile Terminations
- Mobile to Mobile Originations & Terminations
- Stationary & Drive Tests (including HOs)

Results:

- Uplink and downlink streaming tests passed for messages sent from the TTY/TDD terminal with no character errors.
- Downlink live tests passed for messages manually typed at the TTY/TDD terminal per the test plan with no character errors (error rate less than 1 in 1000 characters).
- Uplink errors were encountered when typing manually for the first one or two characters at the beginning of manual typing.
- HO errors were typically 2-3 characters; 1 TTY mode change.

TTY/TDD FOA - CDMA

Lucent Technologies
Bell Labs Innovations



FOA (First Office Application) testing planned for

Tests: (EVRC and 13K)

- Mobile to Landline Originations
- Landline to Mobile Terminations
- Mobile to Mobile Originations & Terminations
- Stationary and Drive Testing
- Voice Quality
- TTY Interoperability
- E-911

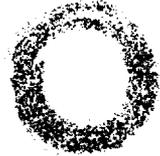
Results:

- Summary results of the tests will be provided to forum.

TTY/TDD Schedule & Milestones

TDMA Infrastructure:

Lucent Technologies
Bell Labs Innovations



- Limited FOA - late May, 2001
- Controlled Introduction - late June, 2001
- General Availability - August, 2001

CDMA Infrastructure:

- Ready for FOA - mid July, 2001
- General Availability - ≥ 30 days after FOA (customer permitting)

GSM Infrastructure:

- Delivery to AWS Labs - 31 October, 2001

TTY/TDD Mobiles:

- End-to-End VQ Lab Testing - In Progress
- Transition to Interoperability Lab - ~ August, 2001

EXHIBIT B

MOTOROLA
TTY COMPATIBILITY DEVELOPMENT STATUS REPORT
2nd Quarter 2001

Product	Standard	Status	Milestones	Progress
CDMA Handset	IS 127-3 IS 733-2	System Test	IOT: June 2001 UI: August 2001 SA: 1Q 2002	Motorola infrastructure testing began March 2001.
GSM Handset	TS 26.226 TS 26.230 TR 26.231	Implementation	IOT: September 2001 UI: September 2001 SA: 1Q 2002	CTM implementation verified bit exact with the standard. Optimization and integration activities in progress. NOTE: proposed standard changes have an undetermined delay on delivery schedule.
iDEN Handset		System Test	On plan	CER tests are in progress
TDMA Handset	IS 823-A IS 840-A	Integration	IOT: July 2001 UI: August 2001 SA: 1Q 2002	Ballot version of IS-823-A implemented. Infrastructure tests to date have CER < 1%.
CDMA Infrastructure	IS 127-3 IS 733-2	Ready for FOA		Infrastructure software in field has digital TTY support available now. Only handsets are needed to commence testing.
iDEN Infrastructure		System Test ⁵	On plan	CER tests are in progress.

Note: Motorola works with its carrier customers to provide them specific information related to their respective products.

Note: IOT is Inter Op Testing with RAM based parts for Character Error Rate testing
 UI is User Interface testing with HCO / VCO support
 ROM is availability of ROM based phones. These should be functionally identical to a RAM phone.
 SA is Ship Acceptance of production volume quantities

Al Lucas
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 Motorola
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⁵ iDEN System Release 9.6 (SR9.6) System Test is in progress.

CERTIFICATE OF SERVICE

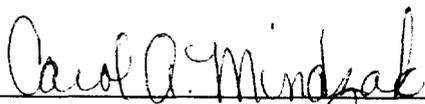
I, Carol A. Mindzak, a secretary with the law firm of Kurtis & Associates, P.C., do hereby certify that I have this 16th day of July 2001, filed the foregoing "REPORT TO THE FEDERAL COMMUNICATIONS COMMISSION ON CARRIER EFFORTS TOWARD ATTAINING DIGITAL TTY ACCESSIBILITY, AND THE STATUS OF THE VARIOUS TECHNOLOGICAL SOLUTIONS, AS PROVIDED BY CC DOCKET NO. 94-102, IN THE MATTER OF REVISION OF THE COMMISSION'S RULES TO ENSURE COMPATIBILITY WITH ENHANCED 911 EMERGENCY CALLING SYSTEMS" electronically with the Federal Communications Commission's Electronic Comment Filing System. I have also filed a diskette copy of this report with the Federal Communications Commission's copy contractor, International Transcription Service. In addition, on this date, I have served copies of this Report via hand delivery or e-mail to the following:

Magalie Roman Salas, Secretary
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