

Dec 2000: Lucent proposes another bug fix, which is approved, but the subcommittee doesn't baseline the fixes in order to give more time to find problems.

Jan 2001: Updates to the TTY specifications and Min Perf Specs are baselined and sent to V&V.

TDMA: TIA TR45.3.5

=====

October 2000: Proposed bug fixes to IS-823 TTY Extension to TIA/EIA 136-410.

December 2000: Proposed additional bug fix similar to the bug fix proposed for CDMA in Dec. 2000.

January 2001: Nokia and Ericsson present contribution questioning the necessity of any bug fixes. Nokia proposes change to standard to improve TTY performance during signaling.

February 2001: A problem is found with IS-840 TTY/TDD Min Perf Spec for TDMA. Nokia (the editor) will provide an update to fix problem and update based on Nokia's proposed change to IS-823.

March 2001: Changes to IS-823 are approved. Nokia commits to having a new version of IS-840 for review by next meeting. The subcommittee decides to ballot new versions of IS-823 and IS-840 together.

# APPENDIX K

## Glossary of Terms

### Telecommunications Standards and Assignment Organizations

#### ANSI - American National Standards Institute

The ultimate accolade for any standard is ANSI certification. This does not mean that ANSI has reviewed the standard, but that it has been circulated widely throughout the industry and that it conforms to their document design and publication guidelines. TIA standards, for example, start their public life as an IS- (Interim Standard) and then proceed within a few years to a full ANSI standard. The analog cellular standard started as EIA/TIA IS-3 and is now the ANSI standard identified as EIA/TIA-553.

#### ATIS - Alliance for Telecommunications Industry Solutions

The major US telecom standards organization beside the TIA, most responsible for ANSI SS7 standards. This organization was previously called ECSA; Exchange Carriers Standards Association. SS7 and wireless standards are developed within the T1 committee.

#### Bellcore - Bell Communications Research

Bellcore is not a standards organization, but they do write technical documents that are treated as if they were standards by many telecommunications carriers, particularly their former owners, the 7 regional bell operating companies. These documents include the GR-145 specification for interconnect, enhanced SS7 specifications beyond ANSI and the WACS low-mobility PCS system. Bellcore also performs many other research and consulting functions.

#### ETSI - European Telecommunications Standards Institute

The mission of ETSI is "to produce the technical standards which necessary to achieve a large unified European telecommunications market". This includes the specification of the GSM cellular and PCS standard.

#### IFAST - International Forum on ANSI-41 Standards Technology

A forum on international cellular carriers, vendors and service providers that attempts to resolve international roaming problems with AMPS-compatible systems (i.e. including IS-136 D-AMPS and IS-95 CDMA). The organization has taken responsibility for allocating the International Roaming MIN resources (MIN's starting with the digits 0 or 1) and new blocks of SID codes.

#### INC - Industry Numbering Committee

The Industry Numbering Committee (INC) is a standing committee of the Carrier Liaison Committee (CLC). The INC provides an open forum to address and resolve industry-wide issues associated with the planning, administration, allocation, assignment and use of resources and related dialing considerations for public telecommunications within the North American Numbering Plan (NANP) area.

#### ITU - International Telecommunications Union

The ITU is the global equivalent of ANSI for telecommunications standards. In fact, the world is divided into the majority of countries that adhere to ITU standards, and the US and Canada that tend to use ANSI standards. AMPS cellular is an exception, as it

has been implemented in many other countries. ITU standards that are used in AMPS cellular include: E.164 - the global numbering plan. E.212 - the global mobile identification plan. Q.7xx - a series of standards defining Signaling System #7 (used as an alternative to ANSI SS7 in AMPS countries outside the US and Canada).

**NANPA - North American Numbering Plan Administration**

The organization responsible for allocating numbering resources within the North American Numbering Plan Area: USA, some of its territories, Canada and several Caribbean nations. Controlled by Bellcore until January 1998, it is now managed by Lockheed-Martin. It is responsible for assignment of new area codes within the North American Numbering Plan and office code assignments within US states and territories.

**NENA - National Emergency Number Association**

NENA, along with NASNA (National Association of State 9-1-1 Administrators), APCO (Association of Public Safety Communications Officials) and the TIA are responsible for promoting enhanced 9-1-1 standards for wireless systems.

**TIA - Telecommunications Industry Association**

**WWITF - Wireline Wireless Integration Task Force**

### **Government and Regulatory Organizations**

**Australian Communications Authority (ACA)**

The organization responsible for the management of radio spectrum and telecommunications in Australia, formed by a merger of AUSTEL and SMA. APUMP represents people who are unhappy with the decision to eliminate analog cellular by the year 2000 in favor of the three GSM systems.

**RSP - New Zealand Radio Spectrum Authority**

Responsible for the management of radio spectrum in New Zealand.

**US Dept. of Commerce**

The Office of Telecommunications provides a great online source of worldwide wireless telecommunications information.

**FCC - US Federal Communications Commission**

The organization responsible for the management of telecommunications in the United States. Their responsibilities for public radio communications, such as cellular, include allocation of frequencies, the development of regulations that govern their use and monitoring to ensure that regulations are followed.

### **Wireless Telecommunications Trade Associations**

**ATIS - Alliance for Telecommunications Industry Solutions**

**CTIA - Cellular Telecommunications Industry Association**

A trade association of wireless carriers in the United States, Canada and other countries. Originally a cellular organization, it now has members that are Manufacturers, PCS, ESMR and Satellite carriers.

**CWTA - Canadian Wireless Telecommunications Association**

A trade association of wireless carriers in Canada.

**MMTA - Multi-Media Telecommunications Association**

An association of companies focused on computer-telephony integration. They announced in November 1996 that they were merging with the TIA.

**PCIA - Personal Communications Industry Association**

Formerly Telocator, this organization represents Paging, PCS, ESMR, SMR and mobile data service providers as well as communications site managers, equipment manufacturers, and others providing products and services to the wireless industry.

**TIA - Telecommunications Industry Association**

United States Telephone Association.

A trade association for US local exchange carriers.

## **Wireless Forums**

**CDG** CDMA Development Group

A trade association dedicated to the promotion of CDMA wireless technology.

**MIPS** Mobile Internet Phone Services Forum

A new group dedicated to promoting the development of Internet access technologies, services and features from mobile devices.

**PACS Providers Forum**

PACS (Personal Access Communication System) is a PCS system based on Bellcore's WACS and Japan's PHS, that will provide 64kbps voice and data, but is restricted to low mobility applications.

**Universal Wireless Communications Consortium**

Promoters of the IS-136 TDMA digital cellular and PCS standards, mostly through conferences and symposiums.

**WDF** The Wireless Data Forum is an independent, protocol-neutral trade group dedicated to promoting the wireless data industry. WDF's members include wireless operators and equipment providers, application developers and information technology companies working to advance wireless and mobile data products and services.

## **Glossary**

**Analog Signal** A signal that varies in a continuous manner, such as voice.

**ANI** Automatic identification of the calling station

**ANSI** American National Standards Institute.

**ATIS** Alliance for Telecommunications Industry Solution (formerly ECSA). Responsible for ANSI SS7 standards and US GSM standardization.

**BS** Base Station

**CPAS** Cellular Priority Access Service

**ESN** Electronic Serial Number

**GETS** Government Emergency Telephone Service

**HLR** Home Location Register (database of subscriber records)

**IFAST** International Forum for AMPS Standards Technology

**INC** Industry Numbering Committee

**IS** TIA Interim Standard.

**JEM** Joint Experts Meeting

**J-STD** Joint ATIS and TIA standard.

**LERG** Local Exchange Routing Guide

**LEA** Law Enforcement Agency  
**MS** Mobile Station (i.e. wireless phone)  
**MSC** Mobile Switching Center (aka MTSO)  
**NAG** Numbering Advisory Group  
**PACA** Priority Access Channel Assignment  
**PN** TIA Project Number. Identifies a project during development of a standard.  
**SP** ANSI Standards Proposal. ANSI equivalent of a PN  
**TLDN** Temporary Local Directory Number  
**TIA** Telecommunications Industry Association  
**TTY** Text Telephony  
**TDD** Telecommunications Device for the Deaf  
**VLR** Visited Location Register  
**WIN** Wireless Intelligent Network

**APPENDIX L**  
**Industry Implementation Status Reports**  
Contained within are written industry TTY implementation  
status reports as submitted to the Secretariat.

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Alaska Communications Systems Wireless

TTY Status Report  
January 7 2002

Alaska Communications System Wireless consists of 3 Ericsson Switches offering TDMA digital and analog service in Anchorage, Fairbanks, Juneau, Sitka, Ketchikan and the Kenai Peninsula in the state of Alaska.

1. **Network Infrastructure Software Development**  
ACS Wireless is relying on our switch vendor for Version 7 software for all three switches to insure compliance with the FCC's order for TTY deployment deadline
2. **Handset Deployment and Testing Plans**  
ACS Wireless is relying on its handset vendors for the development and testing of TTY capable handsets. Once handsets are available, ACS Wireless will perform field tests.
3. **Beta Testing and Lab Testing**  
Tests will be performed when vendor software and TTY handsets are available
4. **Release and General Availability to Carriers of Network Software**  
Ericsson software is available.
5. **Availability to Carriers of Full Acceptance Test Units**  
Full acceptance tests depend on handset vendors.
6. **Efforts Towards Achieving Digital Wireless Solution Compatibility with Enhanced TTY Devices**  
Dependent on handset vendors for enhanced TTY devices.
7. **Carrier Coordination of Testing with PSAP**  
ACS Wireless will coordinate testing with any PSAP that requests testing.
8. **Carrier Testing Activities, Including Field Testing and Consumer End to End Testing**  
Field testing and consumer end to end testing will take place after vendor software has been installed and compatible handsets have been tested.
9. **Retail Availability of Necessary Consumer Equipment**  
Retail availability will be implemented by ACS Wireless retail outlets when compatible handsets are ready for rollout.
10. **Geographic Scope of Network Deployment**  
ACS Wireless will meet the June 30<sup>th</sup> 2002 deployment deadline with availability in all markets served by ACS Wireless.

Respectfully Submitted  
Nicholas Miller  
Wireless Operations Manager

**Please Note:** AT&T Wireless' current network, supporting approximately 16 million customers in markets nationwide, operates on the TDMA (ANSI-136) air interface. The company is in the process of building a new network based upon the GSM air interface standard, for which AT&T Wireless is ensuring TTY compatibility per the FCC's regulations. Please note, however, that the overwhelming majority of the company's current customer base is supported by the TDMA network.

#### Network Infrastructure Software Development

**TDMA Network:** AT&T Wireless has received software from all three of our network platform vendors. Not all of the software received to date is Generally Available.

**GSM Network:** AT&T Wireless received TTY software for Nokia GSM transcoders during Q4, 2001. Ericsson delivered an E-CTM server and Nortel delivered an MSC CTM trunk selection patch necessary to begin CTM circuit-pool testing during Q4, 2001.

#### Handset Development and Testing Plans

##### **TDMA Handsets:**

Ericsson, Nokia, and Motorola: All three vendors delivered TTY-capable TDMA handsets during Q4, 2001.

##### **GSM Handsets:**

Ericsson: Ericsson provided a TTY-capable GSM handset to our lab in Q4, 2001

Motorola: Motorola reports that they are planning to provide a TTY-capable GSM handset that should be available to our lab in Q1, 2002

Nokia: Nokia reports that they are planning to provide a TTY-capable GSM handset that should be available to our lab in Q1, 2002

#### Beta and Lab Testing

AT&T Wireless has in place a full integration lab for Ericsson, Lucent, and Nortel TDMA infrastructure equipment. As of the date of this report, TTY software for Lucent R17.0, Nortel MTX-10, and Ericsson Version 7 ANSI has been loaded into test switches within the AT&T Wireless test lab for regression and TTY feature testing.

In addition to the TDMA lab, AT&T Wireless also has in place a GSM integration lab for Ericsson BSS, Nokia BSS, and Nortel MSC equipment. During Q4, 2001, AT&T Wireless installed and integrated an Ericsson E-CTM server into our Ericsson BSS lab environment.

For both TDMA and GSM networks, TTY-compatible software will be thoroughly tested in the AT&T Wireless lab before being released to their respective FOA (First Office Application) market(s).

## Release and General Availability to Carriers of Software

**TDMA Network:** AT&T Wireless has obtained information from all three of our TDMA (ANSI-136) infrastructure vendors concerning the release of their TIA/EIA IS-823A software for general availability. The information obtained from each is summarized below:

Ericsson: Ericsson's support of IS-823A as a correction to Version 7 ANSI became generally available as of Q4, 2001

Lucent: Lucent has integrated IS-823A support into 5ESS software release 5E15.1 BWM01-0008, and it became generally available in Q3, 2001. TTY software has been installed in all Lucent switches within the AT&T Wireless network. TTY functionality will be enabled in these markets during Q1, 2002.

Nortel: Nortel supports IS-823A in MTX10, DSPM version EFRX10BR. MTX10 became generally available during Q4, 2001 but the general availability date of the DSPM EFRX10BR load which contains the TTY/TDD feature is still to be determined.

**GSM Network:** AT&T Wireless has received the following information regarding the general availability of TTY-capable GSM network equipment:

Ericsson: Ericsson's CTM node should be generally available in Q1, 2002

Nokia: Nokia's CTM software for network transcoders should be generally available in Q1, 2002

Nortel: The software patch FFD03 to Nortel GSM13 necessary to support trunk selection based on CTM indicator status (required to support the Ericsson E-CTM server) should be generally available in Q1, 2002

## Availability to Carriers of Full Acceptance Test Units

**TDMA Handsets:** AT&T Wireless has obtained information from three TDMA (ANSI-136) handset vendors concerning the general availability (GA) of TTY-compatible handsets. The information obtained is summarized below:

Ericsson: Ericsson reports that they are planning to have an IS-823 handset available for GA in Q1, 2002

Nokia: Nokia reports that they are planning to have an IS-823 handset available for GA in Q1, 2002

Motorola: Motorola reports that they are planning to have an IS-823 handset available for GA in Q2, 2002

**GSM Handsets:** AT&T Wireless has obtained information from three GSM handset vendors concerning the general availability of CTM-capable handsets (as defined by 3GPP TS 26.226 and related standards). The information obtained from each vendor is summarized below:

Ericsson: Ericsson reports that they are planning to have a handset supporting CTM available for general availability in Q1, 2002

Motorola: Motorola reports that they are planning to have a handset supporting CTM available for general availability in Q2, 2002

Nokia: Nokia reports that they are planning to have a handset supporting CTM available for general availability in Q2, 2002

## Carrier Testing Activities, Including Field Testing and Consumer End-to-End Testing

### **GSM TTY-Capable Handset Test Plan:**

In November, AT&T Wireless prepared and submitted to the Terminal Working Group of GSM North America a recommended procedure for TTY handset verification testing. This test procedure recommendation replaced two prior AT&T Wireless submissions to this body. Our current proposal greatly simplifies the TTY test process by using off-the-shelf test equipment. Standardized test results will be obtained by using Gallaudet TTY Tools software for performance analysis. The procedure also includes tests to verify that a TTY-capable handset will operate properly in a GSM network using TTY circuit-pooling.

### **November TTSI Test Event:**

AT&T Wireless participated in the ATIS TTSI field test event, which took place between 12 and 16 November in Lisle, IL. The AT&T Wireless public network (using Lucent infrastructure equipment) was used for the TDMA field-test portion of these tests.

### **Nortel Lab Test Testing:**

AT&T Wireless is in the final stages of lab testing the most current release of Nortel TDMA TTY support software in our Redmond, WA lab. A FOA of this software is expected to take place in mid January, 2002.

### **Ericsson Lab and FOA Testing:**

AT&T Wireless' Atlanta market was the FOA location for Ericsson's TTY software in November. This FOA included software for both vocoder types (TRAB2 and TRAB3) used in Ericsson TDMA systems.

## Retail Availability of Necessary Consumer Equipment

Two Panasonic TDMA TTY-compatible handsets (models EB-TX310 and EB-TX320) were accepted by AT&T Wireless during Q3, 2001. These Panasonic handsets are currently available in our retail stores.

**Progress of TTY-Digital Deployment Solutions**  
**CC Docket No. 94-102**  
**4<sup>th</sup> Quarterly Report**  
**December 31, 2001**

**#1 Network infrastructure software development:**

Caprock Cellular utilizes Nortel Networks equipment to provide TDMA digital services in Texas RSA 4. A report from Nortel Networks states that development of software is complete, and product tests have been completed as well. Testing was limited to Panasonic prototype handset, as other equipment was not available during the test.

**#2 Handset development and testing plans**

Caprock Cellular must rely on handset vendors to develop the required handsets. When handsets are available testing can be performed with area PSAPs to insure compatibility.

**#3 Beta testing and lab testing**

Caprock Cellular must rely on Nortel Networks and handset vendors for initial conformance testing.

**#4 Release and general availability to carriers of network infrastructure software**

Nortel Networks has stated that the required software load, MTX10, will be generally available first quarter of 2002. The exact date of deployment of this software load is not known at this time, but is tentatively scheduled for the 2<sup>nd</sup> Quarter of 2002.

**#5 Availability to carriers to full acceptance test units**

Nortel Networks plans to test and confirm the solution performance during the six-month extension allowed for this purpose.

Caprock Cellular Limited Partnership  
Progress of TTY-Digital Deployment Solutions  
CC Docket No. 94-102 - 2<sup>nd</sup> Quarterly Report

**#6 Efforts toward achieving digital wireless solution capability with enhanced TTY devices.**

The solution provided by the MTX10 software load addresses Baudot type messages only. Other capabilities may be included later, after standards are adopted.

**#7 Carrier coordination of testing with PSAP**

See response to item #2 above.

**#8 Carrier testing activities, including field testing, consumer end-to-end testing, and other necessary tests.**

Caprock Cellular cannot begin testing activities until the correct software load is installed in the switch and handsets are generally available.

**#9 Retail availability of necessary consumer equipment**

At this time it is unknown when handsets will be available.

**#10 Geographic scope of network infrastructure deployment**

According to Nortel Networks, the MTX10 software is the only requirement for implementation. The mobile switch, if currently at MTX09, nor the cellsite equipment will require hardware changes. (Caprock Cellular does not own the mobile switch, Plateau Telecommunications provides switching for Caprock's cellsites. Due to this fact Caprock cannot control implementation dates for the required software.)

North Carolina RSA 3 Cellular Telephone Company  
d/b/a Carolina West Wireless  
TTY Report  
Fourth Quarter 2001

**Background**

Carolina West Wireless uses TDMA technology  
Infrastructure vendor is Nortel  
Phone manufactures include Nokia, Motorola, Ericcison and NEC

**Status**

The infrastructure vendor has released the MTX10 software. The schedule to deploy the MTX10 software is the first quarter of 2002.

Phone manufactures have moved the availability of equipment out to the first quarter of 2002.

Carolina West Wireless is unable to predict precise dates for testing and consumer availability until phone manufacturers make the equipment available.

Carolina West Wireless continues to actively work with its vendors and the TTY Forum to ensure TTY availability as quickly as possible.

January 2, 2002

To: TTY Forum

From: Susan Palmer and Ken Evans

TTY Forum #20 Report  
Cingular Wireless LLC

Overview

Cingular Wireless LLC (Cingular) notes that progress in testing the TTY solutions has continued since Forum 19. Communication amongst all parties remains excellent. Cingular has participated in ATIS coordinated testing in both CDMA and TDMA environments. Several hundred land line-to-mobile and mobile-to-mobile tests were made. Using total character error rate (TCER) as a measure, the results to date have been favorable. In late January 2002, Cingular will make a GSM market available to ATIS for the purpose of coordinating GSM interoperability testing.

In January 2002, ATIS will be testing CDMA, GSM and TDMA TTY solutions with various Public Safety Answering Point (PSAP) equipment vendors. This is to insure compatibility with E-911 service. Cingular is committed to work together with manufacturers and consumers to resolve any technical issues that may be identified by this testing.

Manufacturers have provided a limited number of handsets for testing, however, we are still concerned that handset availability will be an issue for market testing and general deployment.

As mentioned in Forum # 19 Report, to have effective TTY access, supporting documentation and information regarding handset and handset connectivity must be given to service providers in time to develop appropriate customer care and sales support. Methods and procedures must be developed to ensure that TTY compatible handsets and cables are available to customers in a timely fashion. This information is needed by March 1, 2002 to meet the June 30, 2002 deployment date.

ERICSSON

TMMA: The TTY software was given general availability (GA) status on December 1, 2001. Cingular has received the needed software, which is running in our Lisle Laboratory. Deployment of this software in the Ericsson switches in our network will be completed in April 2002. The December 31, 2001 date has been met. The June 30, 2002 deployment requirement is on track.

**GSM:** Testing has been completed in our Pleasanton Laboratory. A first office application (FOA) is scheduled for January 10, 2002, with deployment to follow. The December date has been met. The June 30, 2002 deployment requirement is on track.

### NORTEL

**GSM:** Despite our best efforts, we have been unable to obtain what we need to test and implement a TTY solution from this manufacturer at this time. Testing is scheduled for early March, with a GA date of May 15, 2002. This is only six weeks prior to June 30, 2002 when the FCC requires that we have TTY fully implemented. Thus, our ability to meet the June deadline is in serious jeopardy.

**TDMA:** Cingular has the necessary software for the TTY solution. However, this software cannot be used until Cingular completes planned switch upgrades from "MTX - 9" to "MTX - 10". This upgrade will start on March 1, 2002. Again, despite our best efforts we have been unable to obtain a TTY solution to test and implement at this time.

### LUCENT

The Lucent TTY solution will be installed in all Lucent switches by January 25, 2002. Testing in Lucent switches has yielded good results. We have met the December 31, 2001 date and are on track for the June 30, 2002 date.

### INTEROPERABILITY TESTS

There have been two interoperability testing events conducted by the industry and coordinated by the TTSI. Both TDMA and CDMA testing was started and the results have been good for most scenarios. However, some tests have yielded problems that will require additional testing to arrive at a resolution. Required testing for MSC to MSC and MSC to PSAP has not been completed. GSM will not be available for interoperability testing until January 2002. We may need up to four additional testing events to complete interoperability testing. This scenario leaves little time to identify and resolve problems and roll out the solution prior to the June 30, 2002 date.

**Corr Wireless Communications, L.L.C.**

Corr Wireless Communications, L.L.C. (Corr Wireless) is working with vendors to insure compliance with the FCC implementation deadline.

.....

# Dobson Cellular Systems

January 11, 2002

Dobson Cellular Systems (DCS)/ American Cellular Corporation (ACC)  
TTY Report – 4th QTR/TTY #20

Network Infrastructure Software Development

DCS/ACC utilizes TDMA infrastructure from Lucent and Nortel. DCS/ACC relies on these two vendors to complete software development and upgrades. Lucent is ready with it's ECP Release 17 and Nortel has released MTX-10.

Handset Development and Testing Plans

DCS/ACC relies on its handset vendors for the development and testing of TTY capable handsets. Panasonic has replied that two phones, the Allure and Versio are compatible. Motorola has the 120-T and Nokia 6360 as well as Analog 918, 252 and 282 are compatible.

Beta Testing and Lab Testing

DCS does not have a lab for testing. Once the TTY software is deployed from Lucent and Nortel we can begin field-testing.

Release and General Availability to Carriers of Network Software

See: Network Infrastructure Software Development above.

Availability to Carriers of Full Acceptance Test Units

DCS/ACC is waiting on commitments from our handset vendors.

Carrier Coordination of Testing with PSAP

DSC/ACC will conduct TTY testing with PSAP's that request. We will also inquire to PSAP's that we have implemented Phase I E911 on their availability to test with us.

Carrier Testing Activities, Including Field Testing and Consumer End-to-End Testing

DCS/ACC will conduct consumer testing end-to-end in the coming months utilizing our relationships developed during Phase I E911 implementation.

Retail Availability of Necessary Consumer Equipment

Availability of the phones mentioned above.

Geographic Scope of Network Development

Although there can be complications with the availability of handsets and software testing, DCS/ACC remains committed to the June 30, 2002 deadline.

Sincerely,

Sean O'Hara  
Special Project Manager  
Dobson Cellular Systems

.....

**Farmers Cellular Telephone, Inc.**  
**TTY Report**  
**January 8, 2002**

- Network infrastructure software/hardware development and testing

Farmers Cellular Telephone, Inc.'s ("Farmers Cellular's") network consists of only one Nortel switch. We offer analog service as well as TDMA digital. Farmers Cellular has purchased the latest software upgrade from Nortel. Nortel Networks' development is complete, and product tests have been completed as well. Nortel tested with Panasonic prototypes. (Other handset vendors were not available during Nortel's NBSS10.1 test cycle).

- Handset development and testing plans

Farmers Cellular handset vendor status: Ericsson is on schedule. Motorola has not given an update, and Nokia is on schedule.

- Schedule for deployment of the software/hardware in the Farmers Cellular switches

The minimum baseline software requirement for this feature to be deployed in Farmers Cellular switches is MTX10 or higher. Software has been installed on Farmers Cellular switch.

- Beta testing and lab testing

Turbocode/ HiSpeed is a proprietary feature on Ultratec/Ameriphone TTY device and is not supported by TDMA standards. If TDMA standards are enhanced to support these devices, Nortel will support this in a future release. However, standards are designed to avoid supporting propriety methods and there is no known effort to standardize the propriety features.

- Release and general availability to carriers of network infrastructure software

Under Nortel's recommendation, Farmers Cellular will engage the chosen TDMA TTY handset vendor during network testing to do interoperability testing with the Nortel Networks solution.

- Plans to test with the Public Safety Community (PSAP's)

Farmers Cellular will schedule this testing with the PSAP centers during its network testing. Farmers Cellular will work with Nortel to identify PSAPs that would be willing to test an end-to-end solution.

- Carrier Testing activities

Testing will begin upon receipt of software.

- Retail Availability

Farmers Cellular is dependent upon the availability of handsets from vendors.

- Geographic scope of network infrastructure deployment

Farmers Cellular will test the four PSAPs in our geographic area when the software is available.

Farmers Cellular remains committed to meeting the FCC's tentative mandate to provide E911 TTY access to our network. The software to support IS-823 has been delayed, but Nortel's newly-scheduled release date should still allow compliance. Nortel will not support 50-baud TTY for their first release.

**Midwest Wireless Holdings L.L.C**  
**TTY Status Report**  
**December 19, 2001**

**Background**

Midwest Wireless Holdings L.L.C. is a rural carrier that operates TDMA digital cellular service in its Minnesota, Iowa and Wisconsin markets. Due to the complexity of this issue, Midwest must rely on its switching vendor, Nortel Networks, to provide the necessary switch software, and the capabilities of our two major handset providers, Nokia and Motorola, in order for our company to meet compliance deadlines.

**Status**

Nokia reported they were supposed to begin testing with Nortel in October. They also reported the schedule is on track, and they are confident of meeting the FCC deadline.

Nortel announced the general release of MTX10 effective December 7, 2001. Nortel reports operators will be able to deploy the Nortel Networks TTY solution i.e. MTX10, which is based on the current IS-823A standard, to meet the FCC deadline for implementation pending the availability of stable commercial grade handsets. Nortel reports the TTY feature in MTX10 was fully verified in late November and minor issues were uncovered. Nortel Networks forecast beginning verification of the corrected code late this December with their lead customers, but acknowledged due to the holidays this activity may not be complete until early January 2002.

Midwest Wireless does not plan to install MTX10 until late 1<sup>st</sup> or early 2<sup>nd</sup> qtr. 2002, so will not be in compliance with the 12/31/01 software compliance deadline. However, that should not change our expectations of meeting the June 30, 2002 deployment date.

Respectfully submitted  
Gary Christopherson  
Midwest Wireless Holdings L.L.C.

January 9, 2002

Via Electronic Mail and Federal Express

Ed Hall  
The Alliance for Telecommunications Industry Solutions  
1200 G Street, NW  
Suite 500  
Washington, DC 20005

Dear Mr. Hall:

Motorola is pleased to submit a status report related to our efforts at attaining TTY compatibility with our digital phones and infrastructure. Motorola is a domestic supplier of cellular handsets in TDMA, CDMA, GSM, and iDEN technologies. We also provide infrastructure equipment in CDMA and iDEN technologies.

We are working closely with our carrier customers to provide them with the equipment necessary to meet the Federal Communications Commission's June 30, 2002 TTY deployment deadline. At this time, we are on track to enable these carriers to meet their obligations.

The attached report is provided to the TTY Forum for its report to the Commission for the fourth quarter of 2001. Please contact me at the number below if you have any questions.

Regards

Alfred R. Lucas  
Vice President and Director  
Office of Access Excellence  
Motorola  
Voice: 561-739-2505  
TTY: 561-730-2506

Enclosure

**MOTOROLA**  
**TTY COMPATIBILITY DEVELOPMENT STATUS REPORT**  
**4th Quarter 2001**

<b>Product</b>	<b>Standard</b>	<b>Status</b>	<b>Milestones</b>	<b>Progress</b>
CDMA Handset	IS 127-3 IS 733-2	Integration & System Test	IOT: June 2001 UI: October 2001 ROM: December 2001 SA: 2Q 2002	Completed ATIS sponsored Live Net testing in Nov. Begin Operator based testing in mid Dec 2001. Customer approval software available in 1Q2002.
GSM Handset	TS 26.226 TS 26.230 TR 26.231	Integration & System Test	UI: October 2001 IOT: October 2001 ROM: January 2002 SA: 2Q 2002	Started IOT in October with outside infrastructure manufacturer. More testing planned in December.
iDEN Handset		Carrier Testing	On plan	Handsets tested by Carrier during December 2001 FOA
TDMA Handset	IS 823-A IS 840-A	Integration & System Test	IOT: September 2001 UI: September 2001 ROM: October 2001 SA: 1Q 2002	Completed ATIS sponsored testing in November. Provided TTY test units to two independent carriers.
CDMA Infrastructure	IS 127-3 IS 733-2	Ready for FOA	FOA Jan 02	Completed ATIS sponsored testing in November. FOA is likely in Jan02
iDEN Infrastructure		Carrier Testing	On plan	Carrier FOA testing complete in December 2001

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 the availability of ROM based phones. These should be functionally identical to a RAM phone.  
 SA is Ship Acceptance of production volume quantities

Al Lucas  
 Office of Access Excellence  
 Motorola  
 Phone: 561-739-2505  
 TTY: 561-739-2506

Nextel Communications, Inc.  
2001 Edmund Halley Drive, Reston, VA 20191



January 9, 2002

Via Electronic Mail and Federal Express  
Megan Hayes  
The Alliance for Telecommunications Industry Solutions  
1200 G Street, NW  
Suite 500  
Washington, D.C. 20005

Re: Nextel Communications, Inc. Fourth Quarter 2001 Report to the TTY Forum

Dear Ms. Hayes:

Pursuant to the Fourth Report and Order of the Federal Communications Commission ("Commission") in CC Docket No. 94-102,<sup>3</sup> Nextel Communications, Inc. ("Nextel") hereby submits this report on the status of its efforts to attain TTY accessibility on Nextel's iDEN handsets and network. Working closely with its vendor, Motorola, Inc. ("Motorola"), Nextel is pleased to report that its TTY accessibility progress continues to move ahead in a timely manner. Pursuant to this schedule, Nextel intends to fulfill the Commission's June 30, 2002 TTY deployment deadline.

Nextel is a provider of digital Commercial Mobile Radio Services using Motorola's iDEN technology. Nextel is one of only two such iDEN providers in the United States. Thus, Nextel has worked closely with Motorola in the research and development of a TTY compatibility solution for the iDEN product and network. Since the Telecommunications Industry Association ("TIA") approved the Lucent solution for providing TTY accessibility on digital networks, Motorola has invested significant time and resources in creating a solution that will provide the same accessibility on iDEN networks.<sup>4</sup>

Having completed all Motorola and Nextel lab testing of the TTY-capable iDEN handset and network infrastructure, Nextel conducted a First Office Application ("FOA") test of the TTY capabilities in Irvine, California during December 2001. The FOA, which resulted in no significant "bugs" or other problems with either the handset or network TTY functionalities, tested a broad range of TTY call scenarios. Nextel tested TTY mobile-to-mobile calls, land-to-TTY mobile calls and TTY mobile-to-land calls. Additionally, Nextel tested its numerous other features and functionalities, e.g., call waiting, call forwarding, to ensure proper functioning with the TTY device. All of these test calls were successful. Finally, Nextel's FOA tested the

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<sup>3</sup> *In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Calling Systems*, Fourth Report and Order, CC Docket No. 94-102, FCC 00-436, released December 14, 2000 ("Fourth R&O").

<sup>4</sup> See, e.g., Fourth R&O at para. 3.

Hearing Carry Over ("HCA") and Voice Carry Over ("VCO") capabilities of the iDEN TTY handset and network. These tests also yielded successful results.

Having deployed the TTY network infrastructure in Irvine, California for the FOA test in December, Nextel is now deploying the infrastructure components in its New York Market for a Second Office Application ("SOA") in January 2002. The SOA will be complete by early January, at which time Nextel can begin full nationwide deployment of the TTY infrastructure. This deployment schedule should provide Nextel sufficient time to fully deploy the capabilities throughout its nationwide network, conduct TTY testing with at least one Phase I Enhanced 911-ready PSAP, conduct testing with other carriers to ensure inter-carrier TTY operability, and launch its TTY service on or before June 30, 2002.

Nextel appreciates the opportunity to provide this report to the TTY Forum as part of the forum's quarterly TTY report to the Commission. If you have any questions about this report, please do not hesitate to contact me at 703-433-8315.

Sincerely,

Robert D. Montgomery  
Senior Manager – Regulatory Technology Development



NOKIA Americas Standards

*Submitted by:*

Chris Wallace

V.P. Nokia Americas Standards

*FOR EXTERNAL USE*

October 10, 2001

## **Nokia Status Report to TTY Forum #19 – October 2001**

Nokia manufactures mobile phones for wireless technologies; AMPS, TDMA, CDMA and GSM; at both 800 and 1900MHz. Some phones are also developed with multiple technologies in an individual handset. Nokia supplies network infrastructure for GSM.

Nokia is currently developing FCC compliant TTY Compatibility in seven new phone programs with specific models having CDMA, TDMA, GSM and AMPS.

Nokia is committed to meet FCC deadlines for digital TTY according to industry standards set and agreed to.

### **HARDWARE SOLUTIONS:**

Nokia continues to develop mobile handset products to support TTY/TDD Compatibility with TSB-121 three-pin headset functions. Other handset projects will have a built-in 2.5mm jack four-conductor "Stereo" connection in the handset body; with adapting interconnect cables to comply with TIA/EIA TSB-121.

As has been raised as an issue in the TTY Forum, Nokia remains concerned by the potential issues associated with inconsistencies introduced into the TTY environment from the use of after-market cables. Nokia also remains concerned about issues associated with the consistent implementations of TSB-121 by all parties in the TTY solution.

### **MOBILE TERMINAL SOFTWARE SOLUTIONS:**

#### **CDMA IS-127-2**

Nokia CDMA Products are developed by Nokia's San Diego facility

Six to eight models are under development for TTY Compatibility.

Lab Testing has occurred with Lucent and Nortel infrastructure with the acceptable results.

Depending upon environment performances challenges remain.

Currently scheduling testing with Motorola and Ericsson infrastructure, which is anticipated to be in 1Q 2002.

Participated in TTSI sponsored tests with mixed results.

Continuing to test with infra vendors with improved performance.

Field Testing to begin this month.