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January 14, 2002

Standards Committee T1

Carrier Liaison Committee

Telecommunications  
Industry Forum

Ordering and Billing  
Forum

Network Interconnection  
Interoperability Forum

Industry Numbering  
Committee

Protection Engineers  
Group

Standards Committee O5

Network Reliability  
Steering Committee

Internetwork  
Interoperability Test  
Coordination Committee

Telecommunications  
Fraud Prevention  
Committee

Generic Requirements  
Users Group

International Forum on  
ANSI-41 Standards  
Technology

Interactive Voice  
Response Forum

TTY Forum

Administrative Council for  
Terminal Attachments

IMSI Oversight Council

VIA HAND DELIVERY

Magalie Roman Salas  
Office of the Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

RECEIVED

JAN 14 2002

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Re: TTY Forum's Aggregate Report of Carriers  
for 4<sup>th</sup> Quarter 2001, CC Docket No. 94-102

Dear Ms. Salas:

Enclosed are an original and four copies of the TTY Forum 20 Meeting Summary. Appendix L contains an aggregate report of wireless service providers, handset and infrastructure manufacturers for 4<sup>th</sup> Quarter 2001 filed on behalf of ATIS' sponsored TTY Forum and in response to the Commission's Fourth Report and Order in the above-captioned case. Please date-stamp and return the enclosed extra copy of this filing to our messenger.

Please contact me at 202/434-8830 if you have any questions or comments.

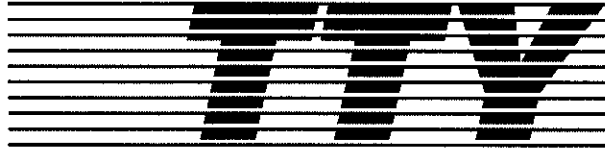
Sincerely,

Toni E. Gilbert  
Staff Attorney

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List ABCDE

Enclosures

cc: Kris Monteith, Chief, Policy Division, WTB  
Pam Gregory, Director, Disabilities Rights Office, CIB  
Mindy Littell, Attorney Advisor, Policy Division, WTB



TTY Forum

# **TTY Forum – 20**

## **Meeting Summary Report**

December 11, 2001  
ATIS Conference Center  
Washington, DC

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## TTY/TDD Forum – 20

December 11, 2001

ATIS Conference Center

1200 G Street, NW, Suite 500

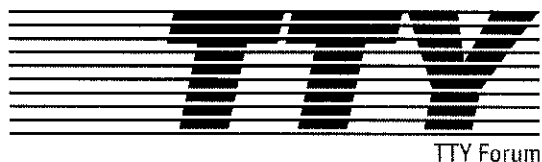
Washington, DC

### Agenda

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Chaired by Ed Hall, ATIS

1. Call to Order, Introductions and Attendance Roster
2. Call for and Number of Contributions
3. Review & Approve Agenda
4. TTY Forum #19 Summary
5. TTY Liaison Reports: *FCC; CTIA; NAD; TDI*
6. Review TTY Forum #19 Agreements and Action Items
7. Industry Implementation Status Reports
8. Review Appendix E-User Intervention Document (Action Item 19.4 and 19.5)
9. Technical Activities
  - a. TTSI Report
    - i. TDMA Testing
    - ii. CDMA Testing
    - iii. GSM Testing
  - b. Review Appendix J-Technical Standards Reference
  - c. Other
10. Terminal product labeling for TTY accessible devices (Action Item 19.8)
11. Next Meeting
  - Tuesday, March 5, 2002
  - Tuesday, June 4, 2002
12. New Business
  - HAC-FCC NPRM WT Docket #01-309 (November 14, 2001)
  - Roll-out Issues
13. Adjournment



## TTY/TDD Forum – 20

December 11, 2001

ATIS Conference Center  
1200 G Street, NW, Suite 500  
Washington, DC

### Meeting Summary

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#### 1. Call to Order, Introduction and Attendance Roster

Ed Hall, ATIS, Chair, called the meeting to order at 9:09 a.m. He thanked all the participants in attendance for their participation. All participants took the opportunity to introduce themselves.

#### 2. Call for and Numbering of Contributions

Ed Hall introduced all contributions, and asked for any additional contributions. All contributions provided to the Secretariat electronically are available for download on the TTY Forum web site at <http://www.atis.org/atis/tty/ttydocs.htm>, or by sending a request to Megan Hayes ([mhayes@atis.org](mailto:mhayes@atis.org)). Contributions were submitted and numbered as follows:

Number	Title
TTY20/01.12.11.01	Agenda
TTY20/01.12.11.02	Roster
TTY20/01.12.11.03	TTY19 Agreements and Action Items
TTY20/01.12.11.04	TTSI Report to TTY Forum – 20
TTY20/01.12.11.05	Appendix J
TTY20/01.12.11.06	FCC NPRM (November 14, 2001)
TTY20/01.12.11.07	TTY19 Meeting Summary
TTY20/01.12.11.08	Labeling and Marketing Plan
TTY20/01.12.11.09	Sony Ericsson Presentation
TTY20/01.12.11.10	Gallaudet Testing Results
TTY20/01.12.11.11	TTY Mode Switch User Questions Revised
TTY20/01.12.11.12	Roll Out Guidelines and Considerations
TTY20/01.12.11.13	TTY-20 Agreements & Action Items
TTY20/01.12.11.14	TTY-20 Meeting Summary

#### 3. Review and Approve Agenda

The agenda was distributed and approved without modification.

#### 4. TTY Forum #19 Summary

Ed Hall asked if there were any suggested modifications to the TTY Forum #19 Meeting Summary. There were none and the document was accepted as final.

## 5. TTY Liaison Reports

5a. FCC—Mindy Litell thanked all entities for reports filed last quarter. She noted that the first deadline, December 31, 2001, is quickly approaching. She expressed her interest in hearing the company status reports given at this meeting, both to see progress and to judge if the second deadline, June 30, 2002, would be met.

5b. CTIA—No report at this time.

5c. NAD and TDI—Jim House, TDI, reported that he had worked with the TTY Working Group discussing labeling and marketing, and his contribution (TTY/2001/01.12.11.08) will be discussed during agenda item number ten “Terminal Product Labeling for TTY Accessible Devices.”

## 6. Review TTY Forum #19 Agreements and Action Items

Ed Hall reviewed all agreements and action items from the TTY Forum #19. He detailed where these items would be reviewed in the agenda. There were no further comments submitted on these items at this point.

## 7. Industry Implementation Status Reports

Ed Hall noted that Sony Ericsson submitted a written report, and that verbal reports would be accepted from other participants. He noted that the verbal reports should be followed by a written submission to the TTY Forum Secretariat by January 9, 2002, 5 p.m. Eastern Time. Reports should be e-mailed to Megan Hayes ([mhayes@atis.org](mailto:mhayes@atis.org)) in final form Microsoft Word format.

### **Cingular**

Ken Evans reported that Cingular has both TDMA and GSM technologies and uses three different vendors. He reported that progress with TDMA is proceeding with all three vendors and roll out should begin on schedule. He expressed concern with the status of GSM technology from Nortel, explaining that although Cingular had received the software solution from Nortel, there were bugs to be worked out and the software had yet to be tested and installed. He expressed his concern with the ability to meet the June 30, 2002 deadline for GSM in all markets due to the work still needed on the Nortel technology.

Ken Evans also mentioned that the company needs more information on the perceived need for the handsets for testing and retail. Several participants, including Susan Palmer, Cingular, noted the need for consumer input in the roll out process of these new TTY compatible devices. Ed Hall suggested adding discussions of roll out issue under agenda item #12, “New Business.”

## **AT&T**

Lori Buerger reported that the AT&T status is very similar to that of Cingular. She noted that their three vendors progress is similarly situated with regards to both TDMA and GSM, and that they are finding similar problems in the launching of the Nortel GSM technology. She noted that as this forum is meeting, she has another colleague involved in the Nortel testing. She noted that AT&T is comfortable with their ability to meet the deadline dates at this time. In regards to handsets, she informed the group that there is a Panasonic version of the TTY compatible phone currently available in stores. Pieter Seidel, Panasonic, noted that the available phone is a TDMA Tri-Band phone.

## **Sony/Ericsson**

Matt Kaltenbach presented Contribution TTY20/01.12.11.09, which is Sony Ericsson's TTY Forum – 20 Report. In regards to network infrastructure status, he reported that the testing is complete on the TDMA network and General Availability (GA) was granted on December 5, 2001. He reported that the GSM network development was complete and testing and performance evaluation has begun. He reported Sony Ericsson's expectation that the first activation of this network will be during the first quarter of 2002. He reported that the CDMA network code is currently under development with testing slated for mid-December 2001.

In regards to handsets, Matt Kaltenbach reported that TDMA handsets have completed developmental testing and volume availability is expected March 31, 2002. GSM handsets have also completed developmental testing and volume availability is expected on February 20, 2002. He noted that CDMA handsets have encountered problems in the developmental test process and that the release plans for these handsets remain open, as solutions are sought for the problem.

Matt Kaltenbach reported on the testing status of the devices and technology at Sony Ericsson, including testing occurring in the ATIS-sponsored incubator group, TTY Technical Standards Implementation (TTSI). A participant noted some concern over the 3% error rate displayed in the testing report. Mr. Kaltenbach explained that this 3% error rate occurred randomly as a result of a "hiccup" in the network. Peiter Seidel noted that error rates in voice quality often need to be averaged due to these random events, it is not an event that occurs only in TTY compatible technology. David Nelson, NAD, noted his concern that a crowded network could compound this kind of error and affect the quality of the call. Mr. Kaltenbach responded that the call completed error rate on a crowded network would be no different from an error rate seen on a normal day. Andrea Williams, CTIA, noted that the ability to complete a call was directly related to the amount of spectrum available in any given area. Mr. Seidel noted that with TDMA there are two places that a call can be affected by heavy network traffic: in call completion and during hand-off. He noted that if the network capacity is full, the call might be lost during hand-off, however, this is a problem that occurs in all calls, and is not a TTY specific issue. Beth Wilson asked about TTY\_SILENCE, and Mr. Kaltenbach replied that they are still looking at why it occurs and the best way for it to be resolved within the industry.

Ms. Wilson referred to the diagram in the Sony Ericsson report, which showed an extra attachment device being used to enable TTY compatibility with a handset. Mr. Kaltenbach replied that this would be a temporary solution with the eventual goal being the integration of the TTY device in the handset. Peter Lee, Ameriphone, explained that new models are currently in

development to match specifications. Bob Montgomery, Nextel, explained that with Nextel systems the switch from voice to TTY could be done at either the handset or the TTY device. Ron Schultz, Ultratec, noted that with Ultratec devices all that would be required for compatibility with digital handsets would be a different cable.

### **Nextel**

Bob Montgomery reported that Nextel had completed developmental testing for FOA, and they were in the deployment stage for infrastructure and handsets. He noted that New York would be the next market set for deployment and the target date was June 30, 2002. He noted that Nextel uses iDEN technology, which is proprietary to Motorola.

### **Sprint PCS**

Scott Freiermuth reported that Sprint PCS is working with four network vendors, with CDMA technology. He reported that the Lucent technology had been provisionally released, with ongoing testing due to some issues with the handset. Limited testing has occurred with Motorola, but wider testing was needed to accommodate different loads. Mr. Freiermuth explained that Sprint PCS was in a situation similar to that of Cingular with respect to their Nortel infrastructure. Baseload software had been received and testing still needed to occur. He also noted that that software from Samsung had been received, but testing would not begin until testing was complete on the Nortel switch. He reported that there were some minor bugs in some of the handsets tested, and that further testing would occur. Mr. Freiermuth stated that Sprint PCS was confident of adhering to the June 30, 2002 deadline.

### **Nokia**

Chris Wallace reported that a TTY capable TDMA handset has been announced. He further reported that there have been problems with CDMA technology, but those problems are being addressed. GSM testing was expected at the end of December 2001. Mr. Wallace explained that the lab-version of GSMA was delivered, and Nokia is not expecting any infrastructure deadline issues.

## **8. Review Appendix E—User Intervention Document**

Mr. Hall noted that at TTY Forum – 19, the consumer community was asked to review the User Intervention Document. (Please see Action Item 19.4: The consumer community will review line item #13 in the TTY User Intervention Document (Appendix E) regarding “Is it usable in an “eyes busy” environment” and re-state it, if needed, to clarify confusion.) Jim House, TDI, noted that in this item “eyes busy” refers to an environment with a lot of visual distractions. Al Sonnenstrahl, CAN, noted that he refers to this as a “visually noisy” environment, and he hopes to use terminology that the hearing community can easily understand. Beth Wilson noted that the primary concern of this item would be the avoidance of having important messages appear on the handset while the user is focusing on the TTY. A consumer participant noted that the most important consideration is that continuation of the call should require no action on the handset during a call. Several industry participants asked if this would mean that consumers are suggesting that features causing a display on the handset, such as caller id and call waiting, be eliminated for TTY users. The consumer participants responded that was not their intention.



They suggested that to avoid industry confusion, Item #13 should be removed from the User Intervention Document.

***AGREEMENT REACHED: Line Item #13 in the User Intervention Document regarding the usability of a device in an "eyes-busy" environment will be removed.***

***AGREEMENT REACHED: Line Item #7 in the User Intervention Document will be changed to the following wording:***

***"Does the TTY mode setting interfere with the operation of other features of the handset system?" (e.g., does connecting the cable or enabling the TTY mode disable the vibrate feature or the direct dialing capability?)***

## 9. Technical Issues

### 9a. TTSI Report

Ed Hall explained that TTSI is an incubator that was initiated by Ericsson, and the synergy that has been generated in this forum has been incredible. Jim Turner, ATIS, presented Contribution TTY20/01.12.11.04, the TTSI report to TTY Forum – 20, which includes information on testing activity ongoing in TTSI. He noted that several test cases had been run and the data was then plugged into a database that was developed in part by Matt Kaltenbach. This database and its contents can be found on the TTSI web site. Mr. Turner noted that although several vendors had participated in these tests, not all vendors had chosen to be included.

During the TTSI Report, Judy Harkins, Gallaudet, noted that the error rate in analog devices had gone up and, therefore, the benchmark for digital had changed. Ed Hall explained that the industry was still striving for an error rate of less than 1%.

A participant asked if there had been testing on VCO/HCO capability. Mr. Turner replied that there has been some preliminary testing, but that the results are inconclusive. A consumer noted that it would be less cumbersome if the toggle for switching to VCO/HCO was located on the TTY device, as opposed to having to go through a menu process on the mobile handset. Lee Whritenour, Verizon Wireless, explained that HCO/VCO mode can be set once, and does not need to be switched for every call.

Concerns were expressed that the cable linking the TTY devices did not always fit properly. A participant replied that this was a problem when a cable from a third party was used as opposed to the cable from the manufacturer. Ed Hall noted that this is an industry problem and not necessarily an issue for the TTY forum. Mr. Whritenour offered to provide more information for the TTY forum on the standards used for the cable connection in TTY devices. Jim House suggested that perhaps the industry should consider labeling strongly recommending the use of the manufacturer's attachments, not equipment from third party sellers. Ron Schultz pointed out the importance of investigating your purchase giving the example that the cable that comes with Ultratec devices will not necessarily fit all phones. Susan Palmer noted that this was just one of several issues that could be noted as consumers began using the phones. Ed Hall stated that from this conversation he was understanding that the TTSI should continue and various consumer

groups (Gallaudet, SHHH, TDI, NAD, etc.) should be invited to participate in the next round of tests. A trial use by the hearing impaired community was also suggested. Mr. Turner noted that there had been some members of the Gallaudet community already involved in the TTSI testing.

***ACTION ITEM: SHHH and Gallaudet University will assist the TTSI Incubator in VCO/HCO testing and consumer trials. The TTSI Incubator will determine how to move forward with VCO/HCO testing and consumer testing in the Washington, DC area.***

***ACTION ITEM: Verizon Wireless will find the standard that addresses the physical requirements of the 2.5 mm jack and provide the information to the TTY Forum for inclusion in Appendix J. This information will also be provided to TR45.1.***

Jim Huntley, Gallaudet, presented Contribution TTY20/01.12.11.10, which is a report of testing results he achieved in an independent test on a small subset of available equipment in New Jersey. He explained that these trials were all done in a mobile to land call environment. The results were favorable (below 1% error rate) in all tests except analog and 13K. He noted that echo cancellers still seemed to have a dramatic effect on performance.

#### 9b. Review Appendix J—Technical Standards Reference

Ed Hall presented Appendix J—Technical Standards Reference, contained in document TTY20/01.12.11.05 for information.

### 10. Terminal Product Labeling for TTY Accessible Devices

Jim House presented contribution TTY20/01.12.11.08 as a jumping-point for the discussion on product labeling and marketing of TTY devices. He recommended a collaborative effort with other advocacy groups as well and industry representatives to establish labeling guidelines for the equipment as it is being produced. David Nelson, NAD, reminded the group that you often do not see the box of the cell phone you are purchasing before you purchase it and, therefore, there must be some other way to inform the consumer about their purchase.

Al Sonnenstrahl noted that often labeling and packaging are done by a third party, and so all packaging requests would have to be contracted up front. Susan Palmer reiterated that these guidelines from the community would have to be produced in a timely manner in order to produce accurate labels before roll-out. A participant noted that the simpler the language, the more effective it would be. Andrea Williams noted, in respect to the suggestion that CTIA require carriers to use the same type of labeling, that CTIA is a trade association, and can only make suggestions to the industry, not mandate a certain type of labeling.

Steve Coston, Sony Ericsson, encouraged input from the consumer groups to the carriers so that it may be passed through the industry. Pieter Seidel, Panasonic, noted his agreement with the need for labeling and pointed out that it may be important to note a difference in labeling for compatibility with the analog standard versus compatibility with the digital standard. Susan Palmer expressed her opinion that guidelines are the key here to ensure that labeling remains

accurate with the rapidly changing technologies. Ed Hall noted consensus among the group for the continuing need for discussion regarding labeling.

***AGREEMENT REACHED: The Terminal Product Labeling group will be closed.***

***AGREEMENT REACHED: The Terminal Product Identification Committee Working Group of the TTY Forum will be formed to work the labeling issue and bring a recommendation back to the TTY Forum Plenary. The group will be Chaired by Jim House, and include as members: Beth Wilson, Susan Palmer, Al Lucas, Matt Kaltenbach, David Nelson, Ron Schultz, Chris Wallace, Peter Lee, Linda Day, Lee Whritenour and Scott Freiermuth.***

## 11. Next Meeting

***AGREEMENT REACHED: TTY Forum – 21 will be held March 5, 2002 at the ATIS Conference Center in Washington, DC.***

***AGREEMENT REACHED: TTY Forum – 22 will be held June 4, 2001 at the ATIS Conference Center in Washington, DC.***

## 12. New Business

### 12a. HAC-FCC NPRM WT Docket #01-309 (November 14, 2001)

Ed Hall introduced the FCC notice of proposed rulemaking found in TTY20/01.12.11.06, regarding re-examination of the exemption of public mobile service phones from the Hearing Aid Compatibility Act. He noted that comments are due on the notice of proposed rulemaking by January 11, 2002.

Before leaving, Mindy Litell, FCC, noted that if this rule is enacted, it would be helpful for the industry to work with the community towards a solution. She stated that the Commission would be gratified if the industry took the same lead as they did in the TTY Forum in working with the community.

Andrea Williams noted that hearing aid compatibility tends to boil down to technical issues including interference and internal couplings. She told the Forum that the FCC had no jurisdiction over the manufacturers of Hearing Aids the way they do over the telecommunications industry. She also noted that a group has been established to try and determine an acceptable level of interference with mobile phones and hearing aid devices. She explained that there is an ANSI standard in existence that assigns a number to the level of interference caused by the phone and the level caused by the hearing aid, and the total interference is the sum of those two numbers. She explained that the wireless industry is prepared to go forward using this standard, but their ability is linked to the capability of the hearing aid manufacturer's capability to go forward. She went on to explain that the hearing aid manufacturers had indicated that they are not ready to go forward, noting problems in the testing process, which leaves the wireless industry at a crossroads in terms of implementation.

Ken Evans expressed his feeling that the wireless industry is being held hostage by another industry, and his concern that the consumers are the ones losing out. He asked if there was any way to put pressure on the hearing aid industry in a similar way that the FCC is able to pressure the telecommunications industry.

Andrea Williams noted that the surfacing of this issue has moved the hearing aid industry to increase immunity levels, and it has led to some improvements. Susan Palmer noted that this issue presents a good opportunity for industry to work again with consumers to find a solution.

Beth Wilson pointed out the complexity of the issues with hearing aid immunity, and she added her support in revoking the exemption and making hearing aid compliance a requirement for digital cell phones. She expressed her concern that money is going towards testing rather than towards finding solutions. Peiter Seidel agreed that the solution should ultimately solve the problem and that the issue would require co-operation between the industry and the community. He pointed out that HAC is not an issue for the TTY Forum. Ed Hall noted that the industry would have to answer some questions on this issue in the future, and he suggested that a forum like TTY, with its various stakeholders, could be a fallback position for the industry.

#### 12b. Roll-Out Issues

Various concerns regarding the roll-out of TTY compatible equipment were raised, and they are contained in TTY20/01.12.11.12. Scott Freiermuth noted that all carriers will have roll-out issues and, perhaps, it is not an appropriate topic for the TTY Forum. Andrea Williams agreed stating that roll-out issues may fall into a competitive area. Lee Whritenour also agreed noting that the industry is under mandates to fill an obligation in the educating of their workforce and other customer care issues.

Susan Palmer stated that there are resources in the TTY forum that can be used to address these issues without entering a competitive area. Jim House suggested that the industry may want to consider having a demo TTY device set-up in the store for consumers to experiment with. Beth Wilson suggested that the consumer community needs to be educated on such issues, such as using third party cables and determining if a phone is digitally TTY compatible or if it is only compatible with analog. Judy Harkins suggested that the industry would benefit from partnering with TTY manufacturers to work on the marketing of these products and the application of customer support. Cary Barbin, Gallaudet, noted that a serious concern in the deaf community is price—and the price paid for minutes spent waiting for relay calls to be completed and messages to be typed.

Based on the concerns raised, Ed Hall recommended calling the issues raised “Roll-Out Guidelines and Considerations” and turning them over to the TPI Working Group for exploration. The resulting suggestions would be valuable tools for members, and would be included as an appendix in the next meeting summary.

***AGREEMENT REACHED: The topic of Roll-Out Guidelines and Considerations will be turned over to the TPI Working Group for exploration. The resulting suggestions will be included as an appendix in the next meeting summary.***

Participants raised questions regarding the ability of non-initialized phones being connected to 911 operators. It was noted that the industry has been mandated to allow all 911 calls—including TTY calls—to be completed from any handset.

***ACTION ITEM: Ed Hall will extract information regarding non-initialized phones and 911 calls from previous meeting notes.***

***ACTION ITEM: The Manufacturers will provide information to the TTY Forum regarding the behavior of 911 TTY calls in a non-activated SIM terminal.***

### **13. Adjournment**

Ed Hall declared the meeting adjourned at 4:17 p.m.

**TTY – 20**  
**Meeting Roster**  
**December 11, 2001**  
**Washington, DC**

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Al Sonnenstrahl	Deaf Seinors of Ameica	301-770-7555-TTY	301-770-7555	sonny@clark.net
Jim Turner	ATIS	630-972-1454		jturner@atis.org
Steve Urbanski	Motorola	847-523-7054	815-884-1395	steve.urbanski@motorola.com
Chris Wallace	Nokia	972-894-4947	972-894-5525	chris.wallace@nokia.com
Lee Whritenour	Verizon Wireless	908-306-6485	908-306-6489	lee.whritenour@verizonwireless.com
Andrea Williams	CTIA	202-736-3215	202-785-8203	awilliams@ctia.org
Beth Wilson	SHHH	301-657-2248	301-913-9413	bwilson@shhh.org
John Wynen	Research in Motion	519-888-7465	519-883-4909	jwynen@rim.net

The following companies submitted their TTY Implementation Status Reports for the second quarter of 2001 through the TTY Forum, but did not attend TTY Forum #18.

Alaska Communications Systems Wireless  
Caprock Cellular Limited Partnership  
Carolina West Wireless  
Corr Wireless Communications LLC  
Dobson Cellular Systems  
Farmers Cellular Telephone Inc.  
Midwest Wireless Holdings  
PCS One  
Pine Belt Cellular  
Rural Cellular Corporation  
Southern LINC  
Telecorp PCS  
VoiceStream Wireless

## **APPENDIX A**

### **Agreements and Action Items**

#### **AGREEMENTS REACHED AND ACTION ITEMS FROM TTY FORUM - 20**

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**20.1** Line Item #13 in the User Intervention Document regarding the usability of a device in an “eyes-busy” environment will be removed.

**20.2** Line Item #7 in the User Intervention Document will be changed to the following wording: “Does the TTY mode setting interfere with the operation of other features of the handset system?” (e.g., does connecting the cable or enabling the TTY mode disable the vibrate feature or the direct dialing capability?)

**20.3** SHHH and Gallaudet University will assist the TTSI Incubator in VCO/HCO testing and consumer trials. The TTSI Incubator will determine how to move forward with VCO/HCO testing and consumer testing in the Washington, DC area.

**20.4** Verizon Wireless will find the standard that addresses the physical requirements of the 2.5 mm jack and provide the information to the TTY Forum for inclusion in Appendix J. This information will also be provided to TR45.1.

**20.5** The Terminal Product Labeling group will be closed.

**20.6** The Terminal Product Identification Committee Working Group of the TTY Forum will be formed to work the labeling issue and bring a recommendation back to the TTY Forum Plenary. The group will be Chaired by Jim House, and include as members: Beth Wilson, Susan Palmer, Al Lucas, Matt Kaltenbach, David Nelson, Ron Schultz, Chris Wallace, Peter Lee, Linda Day, Lee Whritenour and Scott Freiermuth.

**20.7** TTY Forum – 21 will be held March 5, 2002 at the ATIS Conference Center in Washington, DC.

**20.8** TTY Forum – 22 will be held June 4, 2001 at the ATIS Conference Center in Washington, DC.

**20.9** The topic of Roll-Out Guidelines and Considerations will be turned over to the TPI Working Group for exploration. The resulting suggestions will be included as an appendix in the next meeting summary.

**20.10** Ed Hall will extract information regarding non-initialized phones and 911 calls from previous meeting notes.

**20.11** The Manufacturers will provide information to the TTY Forum regarding the behavior of 911 TTY calls in a non-activated SIM terminal.

#### **AGREEMENTS REACHED AND ACTION ITEMS FROM TTY FORUM – 19**

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**19.1** The TTY Forum Chair will communicate to the TTSI Incubator Group that there should be a white paper written identifying the problem with SMS messaging tones with TTY. The white paper should also address any other features that use auditory alerts and may cause higher character error rates.

**19.2** The TTSI Incubator Group should plan to include testing during high-traffic hours.

**19.3** TTY Forum participants agreed to use Gallaudet University’s testing script version 1 (1.1) for all FOA type testing, and to continue to use Lober and Walsh for all lab testing.



**19.4** The consumer community will review line item #13 in the TTY User Intervention Document (Appendix E) regarding “Is it usable in an “eyes busy” environment” and re-state it, if needed, to clarify confusion.

**19.5** Line Item #7 of the TTY User Intervention Document (Appendix E) will be reviewed and edited off-line by Gallaudet to cover the interference of TTY with other phone features, including dialing.

**19.6** The Voice Mail Recommendations will be passed on to the IVR Forum for their review, via a liaison from the TTY Forum.

**19.7** The revised Appendix E of the TTY Forum Meeting Summary was approved as revised.

**19.8** There will be a TTY Forum Working Group to address drafting guidelines for the industry on labeling equipment to indicate that it is TTY Compatible (members will include: Beth Wilson, Chair, Al Lucas, Matt Kaltenbach, Chris Wallace, Ken Evens, Jim House, David Nelson, Linda Day, Ron Schultz and Al Sonnenstrahl).

#### AGREEMENTS REACHED AND ACTION ITEMS FROM TTY FORUM – 18

**18.1** Contribution TTY18/01.06.12.13, “Testing Against User Requirements” will be added to Appendix D: TTY Test Completion Matrix of the TTY Forum Meeting Summary.

**18.2** The Secretariat will add contribution TTY18/01.06.12.13, “Testing Against User Requirements” to Appendix D: TTY Test Completion Matrix of the TTY Forum Meeting Summary.

**18.3** Judy Harkins will provide the URL for the web site describing the testing tools technology to the TTY Secretariat to make the information more readily available to TTY Forum participants.

**18.4** The list of questions regarding user intervention (Contribution TTY18/01.16.12.15), will be considered for further discussion of user intervention.

**18.5** The product labeling issue will be deferred until the next TTY meeting due to time constraints.

**18.6** Regarding Features and Functions:

**CALL WAITING (CW)**

CW interferes with TTY communications.

CW as a feature is disruptive and often not used by TTY users. Disabling CW by default for phones in TTY mode is an acceptable solution to the consumer community.

CW can be disabled in a GSM environment (either permanently or via the handset menu).

CW cannot be disabled via the handset menu in a TDMA environment; it has to be disabled at the switch.

**VOICEMAIL/TTY MAIL (VM)**

Some systems do not record and play back to TTY machines as well as others.

VM should be placed on the next TTY Forum agenda and referred to the AVSS/IVR Forum.

**SHORT MESSAGING SERVICE (SMS)**

SMS signals may cause interruption in TTY communications.

SMS is a desired feature for the consumer community.

Queuing of SMS messages during a TTY conversation is not supported in some networks.

**18.7** Elizabeth Lyle will submit a written proposal for a consolidated report for submission to the FCC. This report will be posted to the TTY Forum web site.

**18.8** The next meeting of the TTY Forum (#19) will be held September 26 at the ATIS Conference Center in Washington, DC.

**18.9** TTY Forum #20 will be held December 11 at the ATIS Conference Center in Washington, DC.

#### **AGREEMENTS REACHED AND ACTION ITEMS FROM TTY FORUM - 17**

**17.1** The TTY Forum recognized ATIS as its Secretariat and official sponsor.

**17.2** Ericsson, Lucent, and Nokia will look into the voice quality issue in terms of IS 127-2 CDMA and TDMA and report back to the TTY Forum whether or not there is a problem.

**17.3** Consumer groups will review the "user intervention" handset function and report back at the next TTY Forum on whether or not the function is considered a viable option.

**17.4** It was agreed to disband the E-Protocol Working Group.

**17.5** It was agreed that the TTY Forum would file an ex parte to the FCC to report the solution proposed by the E-Protocol Working Group and the action taken by the TTY Forum.

#### **AGREEMENTS FROM TTY FORUM — 16**

**16.1** TTY Secretariat, Megan Hayes, will add a non-attending participants list of those who submit implementation status reports to the chair but were unable to attend the TTY Forum

**16.2** The industry implementation status reports will be added as an appendix to the meeting summary (Appendix L). All written reports will be sent to the chair within ten working days following the forum. This agreement will be sent out the list serve to ensure that all TTY participants (past and present) are aware of the agreement. The final Meeting Summary will be submitted to the FCC and will become public record.

**16.3** TTY Forum industry members find that it is not within the scope and purview to address the e-protocol issue at this time. However, the chair will pass the concept and recommendation to SDO's (e.g. T1P1, TR45)

**16.4** A working group will be created to explore the e-protocol issue. There will be an effort to ensure that all industry sectors are represented.

#### **AGREEMENTS FROM TTY FORUM – 15**

**15.1** Toni Dunne, NENA, will be the principle point of contact for coordinating with PSAPs at a point in carriers, infrastructure, and mobile handset vendors field testing.

**15.2** The TTY Forum will hold its next meeting on October 24, 2000 (second choice is October 25, 2000) at Gallaudet University. Meetings thereafter will be held on an "as needed" basis. The summary of the report from the October 2000 meeting will be formally forwarded to the FCC with a cover letter written by the Co-Chairs. Furthermore, on a voluntary effort, carrier will post a status update on their Website and/or the TTY list serve on 3/01, 9/01, and 3/02.

#### **AGREEMENTS FROM TTY FORUM – 14**

**14.1** Establish Appendix J which will be a "living" document of technical terms and organizations and Appendix J, also a "living" document of technical standards development essential to the TTY Forum's Scope.

### **AGREEMENTS FROM TTY FORUM – 13**

**13.1** Lucent announced they will distribute the TTY vocoder solution, royalty-free, to mftrs implementing the solution. Lucent noted that it is not relinquishing the patent rights, just making the solution available royalty-free.

### **AGREEMENTS FROM TTY FORUM – 9**

**9.1** The TTY Forum agrees to submit User Requirements to TR45 in December, 1998.

**9.2** Appendix G will be created as a living document to identify membership of the TTY Forum Test Procedure Study Group that will meet to track test plan modifications, facilities, and dates, user expert, point of contact.

**9.3** Appendix H will be created to identify the operational characteristics of TTY devices.

**9.4** The TTY Forum will develop a list of TTYs that fall within the domain of reasonable operational characteristics to provide an informational guide for carriers. The list will be available to the public via web sites and mailings.

**9.5** The TTY Forum agrees that IWF is broadly defined as a translation method to complete a call that is transparent to the user. The IWF is not limited to either voice or data. An IWF may not be confined to a single network but may be shared across multiple networks.

**9.6** The TTY Forum agrees to submit the SRD for the 2.5 mm Jack to TR45 in December, 1998.

**9.7** The TTY Forum agrees to submit the SRD for Circuit Switched Data to TR45 in December, 1998

### **AGREEMENTS FROM TTY FORUM – 8**

**8.1** The TTY Forum agrees that all testing will be done in test labs simulating field conditions.

**8.2** The TTY Forum agrees that the short-term solution will now be referred to as voice-based solutions. The long-term solution is now referred to as data based solutions.

**8.3** An experienced TTY user will be available at the beginning of lab testing to provide counsel or training, if necessary.

### **AGREEMENTS FROM TTY FORUM – 7**

**7.1** The TTY Forum should remain operational until solutions are provided and implemented for all digital technologies, to the satisfaction of the TTY Forum.

**7.2** The baseline for the digital solution is wireless analog performance.

**7.3** Accept Contribution #12 as a working document to represent the basis of the test plan. Test Plan as modified by the technology groups (CDG,UWCC,GSMNA) will be sent to all phone manufacturers. Test plan will measure the performance of various digital air interface technologies.

**7.4** Where possible, VCO/HCO should be included in the testing, design, and availability of TTYs, cellular phones, and air interface technologies.

**7.5** The TTY Forum will submit a request for a three month extension to the FCC.

### **AGREEMENTS REACHED AT TTY FORUM - 6**

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**6.1** Any carrier not in compliance with the Consumer Notification Process established at TTY Forum should be brought to the attention of the TTY Forum for resolution.

**6.2** Working Group #1 is officially dissolved having completed its initial charter. Any further testing results would be forwarded directly to the TTY Forum.

6.3 A lack of TTY technical standard has resulted in a variance of TTY performance levels manifested when used on digital networks. As such, in developing the "short-term" digital solution, certain least used models of TTY may not be supportable on all digital air interfaces.

#### **AGREEMENTS REACHED AT TTY FORUM - 5**

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5.1 As an initial step, carriers who can offer TTY users at least one digital phone model for each digital technology that a carrier offers at a reasonable price by October 1, 1998 would be considered in compliance of the E9-1-1/TTY compatibility requirements.

5.2 The FCC can use the information contained in the notification letter in any way they feel would expedite getting the information to the consumer.

5.3 All test results submitted will be included in the next Quarterly Status Report.

#### **AGREEMENTS REACHED AT TTY FORUM - 4**

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4.1 Objective test (Throughput Test) approved and to be sent to manufacturers and carriers with a matrix to record testing completion dates and documentation.

4.2 TTY Forum Test Completion Matrix approved.

4.3 Consensus reached that Testing Matrix should go to every manufacturer listed at CTIA as well as Wireless and Wireline Carriers. CTIA/PCIA will escalate/elevate TTY Forum efforts to reach wireless equipment manufacturers and inform of urgency and criticality of rapid response to the Testing Matrix via a letter from the TTY Forum and CTIA/PCIA. The group recognizes that participation is voluntary. Copies of letter and matrix responses will be sent to the FCC.

4.4 RFI will be put on issues list to explore possibility of interference between phone and TTY device.

4.5 Consensus to put TTY Forum's current research opinion on output voltages (coupling information) into a formal document and present to manufacturers for feedback. Give 30 days for feedback.

4.6 Subjective test (End User Test) to be finalized by committee. Testing will be handled through Gallaudet with assistance from Wireless manufacturers and TTY manufacturers. Will replicate authentic 9-1-1 calls with a deaf/hearing impaired caller and a trained calltaker.

4.7 CTIA will produce a list of Analog Phones that are compatible with TTY devices to be included in notification efforts and on web sites due as a Contribution at the next TTY Forum.

4.8 Gallaudet University and Consumer groups will draft a Consumer Requirements Document due as a Contribution at the next TTY Forum.

4.9 CTIA/PCIA will send letter to wireless equipment manufacturers requesting that they support Gallaudet University in their testing efforts by sending equipment.

4.10 Standards Requirements Documents (SRD) due for V.18 and the 2.5 mm jack as Contributions at next TTY Forum.

#### **AGREEMENTS REACHED AT TTY FORUM - 3**

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3.1 6 sponsored spots for identified consumer groups, relinquished if member misses 2 consecutive meetings.

3.2 Accept modified "readability test" to be used by phone manufacturers to benchmark TTY over digital capabilities, to determine success rate for transport. (See Contribution TTY/98.02.11.06) Two tests: Manufacturers Readability Test, End User Test

3.3 Error rate is defined as “character” not “bit” for the purpose of this forum. (Shift error rate of ratio 1/8 (i.e. 1 shift error causes up to eight text errors and will be counted as such) to be determined)

3.4 Develop User Requirements Document. The outcome of Working Group #2. Represents the effort to provide for future advancements in technology by looking at solutions beyond 45.45 baud, Baudot.

3.5 Define process to update Notification Document: refer updated information to CTIA to be distributed to T-CAT.

#### **AGREEMENTS REACHED AT TTY FORUM - 2**

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2.1 Combine Working Group #1 and Working Group #3. Develop new set of deliverables based on the October 1, 1998 deadline.

Short term solution: solve for backward compatibility.

Develop Standard Test to measure error rate of TTY over digital.

#### **AGREEMENTS REACHED AT TTY FORUM - 1**

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1.1 “Solve for 45.45 Baudot, not to preclude looking for other solutions.”

Look for long term and near term solutions.

Near term - send through vocoder

Long term - circumvent vocoder, enhance quality and connectivity

Provide for the analog function of wireless phones.

The only body that can change the agreements reached is this body. All agreements remain intact until/unless action is taken in this forum.

## APPENDIX B

### Recommended Text Consumer Notification

#### ATTENTION TTY USERS

##### Background

A TTY (also known as a TDD or Text Telephone) is a telecommunications device that allows people who are deaf, hard of hearing, or have speech or language disabilities to communicate by telephone. A TTY has a keyboard used to type a conversation, which then is transmitted as tones over a wired telephone line. The tones are translated to text that appears on a person's TTY screen.

##### 911 and TTY Access Through Wireless Services

Federal law requires the telecommunications industry to provide a way for TTYs to communicate through wireless systems to make 911 calls. There are two types of wireless phones – analog and digital.

Analog – It is possible today to use some analog wireless phones reliably to call 911 with a TTY.

Digital – It is not possible today to use a digital wireless phone reliably to call 911 with a TTY.

Research is being done to improve the ability of digital phones to work reliably with TTYs. The industry is working to resolve this matter by October 1998.

[Optional: For more information, contact . . . ]

DATE OF PUBLICATION:

## APPENDIX C

### TTY Forum Issue Statements

- 6.1 The TTY Forum doesn't support one solution over the other but it seems that the 2.5 mm jack is preferred
- 6.2 It is acceptable in concept to retrofit the TTY at no cost to the user. Concern was expressed regarding warranty work, and who would perform work on equipment. The retrofit should not eliminate or impact any functionality previously available to the user. Time to retrofit should be reasonable. A liaison should be established between manufacturers and user groups to ensure "certain conditions" are met.
- 6.3 The issue of the false propagation of errors, created by the incorrect receipt of a shift character should be addressed through use of an appropriate test script. The script should contain multiple shifts space apart so that a realistic distribution of character errors would result, based on frequent (although not universal) practice of correcting shift errors by user action. A normal distribution between 1 and ? with a median of about 8 would be appropriate.
- 9.1 The issue of whether less than full rate transmission is an acceptable solution, if it can be shown to provide improved CER performance.
- 9.2 The User Requirements Document will be modified by the consumers before the December TR45 meeting.

## APPENDIX D

### TTY FORUM MANUFACTURER TESTING COMPLETION MATRIX

Manufacturer	Technology	Through Put Test (Contribution)	Type of Test (Field, Lab)	Contact Name & Number
Philips	Analog	98.07.21.07		Ken Wells
Motorola	Analog	98.05.20.20	Lab	Paul Mollar
Sendele	Analog	98.07.21.05	Lab	Steve Sendele
Motorola	CDMA	98.05.20.20	Lab	Paul Mollar
Lucent	CDMA	98.05.20.10	Lab	Ahmed Tauf
Lucent	CDMA	No Gain Solution 99.01.26.09	Lab	Dr. Steven Benno
Lucent	CDMA	99.09..09.16	Fixed Point Proof / Concept	Dr. Steven Benno
Nokia	CDMA	98.05.20.17	Lab	Mohamed El-Rayes
Qualcomm	CDMA	98.05.20.12	Lab	Nikolai Leung
Motorola	CDMA	99.05.18.15	Lab	
Ericsson	GSM	98.02.11.07	Lab	Christopher Kingdon
Nokia	GSM	98.05.20.17	Lab	Mohamed El-Rayes
Motorola	GSM	98.05.20.20	Static	Paul Mollar
Ericsson	GSM	98.11.04.14	Static	Steve Coston
Ericsson	All Digial	99.09.09.12 / .13	Static	Steve Coston
Nokia	GSM/TDM A	99.09.09.15	Theory	Doug Neily
Ericsson	TDMA	98.02.11.05	Lab	Christopher Kingdom
Ericsson	TDMA	99.01.26.10	Field	Steve Coston
Motorola	TDMA	98.05.20.20	Field	Paul Mollar
Nokia	TDMA	98.05.20.17	Lab	Mohammed El-Rayes
Philips/CPT	TDMA	98.07.21.07	Field	Jim De Loach 510-445-5510
Lober & Walsh	TDMA	98.09.08.10	Lab	Josh Lober
CPT	TDMA	98.07.21.08	Lab	Josh Lober
Ericsson	TDMA	98.11.04.14	Static	Steve Coston
AWS	TDMA	99.05.18.11	Static	Adrian Smith
NOKIA	TDMA	99.05.18.14	Lab	Massoud Fatini



Lucent	TDMA/CD MA	99.05.18.13	Lab	Steve Benno
Ameriphone	TDMA/CD MA	99.05.18.12	Static	Peter Lee
Lober & Walsh	IDEN	98.09.08.11	Lab	Josh Lober