Before the
Federal Communications Commission
Washington, DC

In the Matter of	)	
	)	
Section 68.4(a) of the Commission's Rules	)	WT Docket No. 01-309
Governing Hearing Aid Compatible Telephones	)	
	)	
	)	

Initial Report on Hearing Aid Compatibility Compliance Efforts Submitted by ATIS Incubator Solutions Program #4

The Alliance for Telecommunications Industry Solutions (ATIS), on behalf of the ATIS Incubator Solution Program #4 (AISP.4-HAC or Incubator), hereby files this Initial Report on the efforts of wireless device manufactures and carriers to comply with the Federal Communications Commission's (Commission) hearing aid compatibility requirements. This report is filed pursuant to the reporting requirements adopted by the Commission in its August 14, 2003, *Report and Order*[1] (*R&O*) in the above-referenced docket, and is filed on behalf of the members of the AISP.4-HAC.[2]

I. Background

The *R&O* established new rules relating to hearing aid compatibility (HAC) and wireless phones. Among other things, the *R&O* adopted the American National Standards

[1] *Report and Order*, WT Docket No. 01-309, released Aug. 14, 2003.

[2] The members of the AISP.4-HAC are listed in Section II.C of these comments.

Institute (ANSI) C63.19 technical standard for compatibility of digital wireless phones with hearing aids[3], requiring manufacturers and carriers to make available a minimum number of HAC-compatible telephones, and established labeling requirements for HAC-compliant telephones. The *R&O* also required wireless carriers and digital wireless handset manufacturers to report on their efforts toward compliance. For the first three (3) years after the effective date of the *R&O*, these reports must be filed semiannually. After the first three years and through the fifth year of implementation, the reports must be filed annually.[4]

On March 8, 2004, the Commission issued a *Public Notice*, DA 01-630, announcing May 17, 2004, as the deadline for the filing of the first report.[5] In the *Public Notice*, the Commission noted that ATIS was collecting reports from manufacturers and carriers for the purpose of submitting a collective report.

ATIS is a technical planning and standards development organization accredited by ANSI and committed to rapidly developing and promoting technical and operational standards for communications and related information technologies worldwide using a pragmatic, flexible and open approach. Over 1,100 industry professionals from more than 350 communications companies actively participate in ATIS' open industry

[3] *American National Standards for Methods of Measurement between Wireless Communications Devices and Hearing Aids* ANSI C63.19-2001 (C63.19 standard).

[4] *R&O* at ¶89.

[5] This *Public Notice* also announced future filing dates of: November 17, 2004, May 17, 2005, November 17, 2005, May 17, 2006, November 17, 2006, November 19, 2007, and November 17, 2008.

committees, fora and "Incubators."[6] The ATIS membership spans all segments of the industry, including local exchange carriers, interexchange carriers, wireless equipment manufacturers, competitive local exchange carriers, data local exchange carriers, wireless providers, cellular and other providers, broadband providers, software developers and internet service providers.

II. General Overview

This Initial Report filed by AISP.4-HAC represents collective inputs from ATIS Incubator members and, pursuant to discussions with Commission staff, is being submitted in lieu of individual status reports from those members. As explained more fully below, AISP.4-HAC was established by ATIS at the request of the wireless industry in July of 2003 as a solutions-driven, technical body dedicated to resolving compatibility and interference issues between wireless devices and hearing aid devices. AISP.4-HAC is composed of technical experts from the wireless industry representing wireless manufacturers and service providers, as well as technical experts representing the hearing aid industry. Representatives for consumer advocacy and disability groups (e.g., SHHH, Gallaudet University, Georgia Tech Information Technology Technical Assistance and Training Center) also participate in AISP.4-HAC meetings. The Incubator is focused on the technical issues addressing interoperability and compatibility of wireless devices with hearing aids, including the evaluation and test methodology of the measurement standard as referenced in the C63.19 standard.

[6] ATIS Incubators are industry-driven work groups that provide the industry with a "fast-track" process for resolving technical and operational issues. For more information, see the ATIS incubator web site at: http://www.atis.org/incubator.shtml.

A. Fast-Track Process

AISP.4-HAC uses a "fast track" process to identify, agree to and manage changes to the standard in order to facilitate compliance with the deadlines set forth in the *R&O*. This fast track process enables the industry and individual members to:

- Identify issues;
- Address requirements, assumptions, agreements;
- Document consistent processes;
- Make general recommendations for any applicable changes to products/processes/standards;
- Expedite prototypes to test, trial and validate changes;
- Address interoperability and compatibility issues;
- Validate networks;
- Document product specifications;
- Coordinate rollouts/launches with carriers; and
- Finalize implementation for each product.

As part of this "fast track" process, the Incubator took a "snapshot" of the C63.19 standard and is providing input from its membership on questions or open issues related to this standard. Based on this input, the Incubator makes recommendations on necessary changes to make the standard clear, unambiguous and executable by the wireless industry. Once the necessary changes have been defined, these changes are tested to ensure that the intent of the standard has not been altered. Proven, accepted changes are passed back to IEEE C63.19 Working Group[7] for its review and action. All changes are reviewed by the IEEE Working Group under its normal ballot process.

[7] Accredited Standards Committee IEEE C63, established by the Institute of Electrical and Electronics Engineers, Inc. (IEEE), focuses on the development of definitions and methods of measurement of electromagnetic noise and signal strengths, as well as the development of methods of control of, and guidelines for, influence, coupling and immunity. The IEEE C63 Committee's C63.19 Working Group focuses on issues related to the ANSI C63.19 standard.

B. Executive Management

The executive management team of AISP.4-HAC is comprised of one (1) Chair, two (2) Co-Chairs, and representatives from ATIS. In order to promote an equitable and balanced approach, the team includes representatives from a wireless service provider, a wireless manufacturer, and the hearing aid manufacturing industry.[8] The management team is responsible for keeping the Incubator members focused on their objectives, commitments, deliverables and deadlines.

C. Membership

The AISP.4-HAC has the following membership as of May 16, 2004:

VOTING MEMBERS
American Cellular Corporation
AT&T Wireless Services, Inc.
Audiovox
Brookings Municipal Utilities d/b/a Swiftel Communications
Carolina West Wireless
Cingular Wireless LLC
Corr Wireless
Cricket Communications
Dobson Cellular Systems, Inc.
Epic Touch
Hearing Industries Association
Key Communications
Keystone Wireless
Kyocera Wireless
Leap Wireless
Louisiana Unwired, LLC
Motorola
NEC America, Inc.
NEXTEL
Nextel Partners Inc.
Nokia
Panasonic
Research In Motion Limited
Samsung

[8] A representative from the Hearing Industries Association serves as co-chair of AISP.4-HAC.

Siemens Information and Communication Mobile
Sprint PCS
Sony Ericsson Mobile Communications (USA), Inc.
T-Mobile USA
Verizon Wireless
Western Wireless Corporation

WORKING PARTICIPANTS
American Academy of Audiology
American Academy of Dispensing Audiology
Alexander Graham Bell Association for the Deaf and Hard of Hearing
APREL Labs
American Speech-Language-Hearing Association
American National Standards Institute
ANSI ASC C63
Cellular Telecommunications & Internet Association
ETS-Lingren
Gallaudet University – Rehabilitation Engineering Research Center
Information Technology Technical Assistance and Training Center
PC Test Engineering Laboratory, Inc.
Self Help for Hard of Hearing
Siemens Hearing Instruments

III. Purpose of Report

The purpose of this Initial Report is to document the status of the Incubator's accomplishments, objectives and testing methodology for wireless devices that will utilize the ANSI C63.19 standard, as defined in the AISP.4-HAC Hearing Aid Compatibility Test Specification (HACTS) document, to satisfy the Commission's mandates in the *R&O*.

Additionally, this Initial Report will document:

- An increased understanding across the wireless device and hearing aid industries of measurement practices for the Incubator's HACTS document;
- Measurement data that will either support or disprove any of the more "significant" changes made by the Incubator from C63.19 to the AISP.4-HACTS document;

- The examination of repeatability for a given phone;
- The examination of reproducibility from lab to lab; and
- A planned approach by the wireless industry to satisfy the Commission's HAC requirements.

An extensive series of round robin testing[9] will be conducted among ten (10) labs, including three (3) independent facilities, to ensure that testing is being performed correctly and that HAC results reported to the Commission will be accurate and repeatable.

In order to ensure consistency among the various labs, each lab facility will measure and report data using a calibrated RF dipole. This "pilot measurement" will serve as a baseline for the initial variability inherent among the labs. Variability in test results from the dipole will be analyzed to adjust any lab setups before testing begins in later round robin exercises. More detailed information about the testing process is included in Section V.B.1 of this Initial Report.

[9] Round robin testing is a method for comparing lab results by having several labs test the same device.

Until all the results from the labs are compared and inconsistencies identified and adjusted, specific handset measurements cannot be validated. Therefore, these lab (wireless device) measurements will not be included in this Initial Report. However, future reports will include Status Report Forms (see Attachment A) completed by Incubator member companies to report each company's HAC compliance data. In addition, the following summary table will be updated in all future filings:

Consolidated Status Report on Hearing Aid Compatibility	Number
Wireless Industry Companies Participating in AISP.4-HAC:	29
Service Providers:	19
Wireless Device Manufactures:	10
Compliant Phone Models M3 or T3 and Above, per C63.19 Std:	TBD

IV. AISP.4-HAC Mission Statement and Scope

The Incubator's mission is to investigate and identify interference issues affecting the performance of hearing aids and wireless devices, and to determine methods of enhancing interoperability and usability for consumers with hearing aids. The hearing aid and digital wireless industries face complexities and challenges in attempting to make their products compatible. Through an open and impartial consensus process, AISP.4-HAC is investigating and developing recommendations to the C63.19 standard for measuring hearing aid immunity, magnetic coupling and interference caused by wireless devices.

AISP.4-HAC began by baselining the modified ANSI C63.19 standard to determine if the standard, with consensus changes applied, reasonably accurately predicts end user

usability. The Incubator is also re-examining the technical parameters and test methods in the C63.19 standard and investigating methods of hearing aid immunity, magnetic coupling and hearing aid interference. AISP.4-HAC is communicating its findings to the Commission and the Food and Drug Administration (FDA), and is providing the IEEE C63.19 Working Group with recommended changes to the C63.19 standard, as appropriate. Managing all issues/changes through the fast track process will enable the Incubator to expedite issue resolution and validate recommendations necessary to achieve its objective for hearing aid compatibility within the timeframe established by the Commission in the *R&O*.

V. Working Groups

Working Groups have been formed within the Incubator to: (1) direct the focus of experts on specific issues; (2) promote effective member collaboration on ideas; and (3) document recommendations for review and discussion by the full Incubator. Each request for a Working Group must have a defined scope and specific deliverable. The full AISP.4-HAC then decides if the Working Group should be created. Once the deliverable is accomplished, the Working Group is dissolved. The Working Group deliverable is then brought to full AISP.4-HAC for adoption as an Agreement Reached.

A. Inactive Working Groups

The following is a list of Working Groups that have completed their deliverables and have been dissolved or that have been formed and awaiting the deliverable(s) of other Working Groups to begin their work:

Accreditation Working Group

AISP.4-HAC was under the initial impression that the FCC would require lab accreditation for test labs performing HAC testing. Therefore, a Working Group was formed to address this issue. However, initial research indicated that there was little interest from accreditation bodies in developing a formal accreditation process and the Commission later clarified that accreditation would not be required. In the meantime, a Hearing Aid Compatibility Test Specification for round robin testing was developed by the Test Plan Working Group (explained more fully below) to ensure consistent, accurate and repeatable testing results. After this testing is complete, the Incubator will examine whether to establish a new Working Group to review various mechanisms for quality control for new entries into this field and make recommendations to the Incubator based on the issues identified.

Simpler Hearing Aid Testing Working Group

The deliverable for this Working Group was to define fewer test points for hearing aids. This was accomplished with the new release of the C63.19 standard. This Working Group has been closed.

Harmonizing E 60118.13 and C63.19 Working Group

The deliverable from this Working Group was to show how the far field E 60118.13 test method used in Europe could predict the usability of the hearing aid like the near field C63.19 standard. This was accomplished in the new release of C63.19 standard by allowing the TEM Cell test method for testing hearing aids. This Working Group has been dissolved.

Standards Process vs. Incubator Process Working Group

The deliverable for this Working Group was to propose how to incorporate necessary changes into the C63.19 standard quickly within the bounds of the mandate from the FCC. The close working relationship AISP.4-HAC and the IEEE C63 Committee resulted in the IEEE C63 Committee modifying their normal standards process to facilitate the changes AISP.4-HAC required. This Working Group's work is "on hold" until additional changes are identified. Round robin testing will likely identify the need for additional changes in order to ensure repeatability and reproducibility. Now that the C63.19 balloting process is closed, it will be important for the FCC to agree that the necessary changes can be made to the test plan before those changes can be formally incorporated into the standard.

B. Active Working Groups

Currently, there are two (2) active AISP.4-HAC Working Groups: (1) Test Plan; and (2) Labeling and Consumer Outreach.

1. Test Plan Working Group

This Working Group was created to conduct a thorough review of the C63.19 standard and determine how to enable reliability and accuracy in a wireless device lab's test results when using this standard.[10] The Working Group decided to conduct round robin testing and evaluate the wireless device labs' test results. Although this round robin testing was to start in October of 2003, the changes made to the C63.19 standard have postponed the start of the testing to May of 2004. The Working Group believes the additional time spent refining the standard is warranted by the improvements that have been implemented to the original C63.19 standard. These changes should help to eliminate areas that were prone to errors in the original 63.19 standard.

The Working Group will maintain the HACTS document. This document is a composite of the wireless manufacturers/labs test efforts based the latest version of the C63.19 standard. Attached to this specification as an appendix is the C63.19 standard reflecting the most recent changes initiated by the Working Group. Changes made to the HACTS document are tracked and given to the IEEE C63.19 Working Group as a contribution for change. Future changes to the standard will result from lessons learned during the round robin test efforts and implemented in the HACTS document using the fast track process.

[10] The C63.19 standard has two distinct test areas – hearing aids and wireless devices; this test specification pertains to wireless devices only.

Attachment B to this Initial Report is the AISP.4-HAC Wireless Device/Lab Test Matrix. The round robin testing is very complex, ensuring that lab consistency is baselined for all participants before anyone begins testing wireless devices. The participants in the Test Plan Working Group have provided pre-test packages to ATIS for their representative labs that identify equipment used, calibration methods and test procedures. Within the round robin test schedule, a total of ten (10) labs measuring seventeen (17) different phones are being evaluated. This Working Group will collect all test data and analyze it to determine lab consistencies, measurement variability and uncertainties.

The following are some of the more substantive changes that this Working Group has implemented in the HACTS document and forwarded as a contribution to the IEEE C63.19 Working Group for changes to the standard:

> **Elimination of the simulated ear in T-coil test process:** The C63.19 standard was based on the work that had been done on landline phones. A landline phone is sealed against the ear when in use. Thus, a sealed ear was specified in performing the T-Coil test. Wireless phones do not typically seal to the ear when in use and the use of the sealed ear in the T-coil test was inducing errors. There are at least four (4) different types of simulated ears that could be needed to match the different types of wireless devices. The Working Group members came up with an alternative test method that eliminates the need for simulated ears in the T-coil test. The new method is far less error prone than the old method and should result in a more consistent T-coil test. This change has subsequently been accepted in the latest version of the C63.19 standard.
>
> **Addition of a Validation Dipole Test:** A simple method was needed to test whether a laboratory's equipment was working properly and thus that the wireless device test results were reliable. The Working Group decided to follow the Specific Absorption Rate (SAR) test method and specify a dipole design to be used for this purpose. A different dipole design was needed for each of the different mobile frequencies – 835 MHz, 850 MHz, 900 MHz and 1900 MHz. The test is to illuminate the dipole and compare the measurement readings to a calculated value. Modeling is currently underway to determine test criteria.

Defining the test scan increments: The C63.19 standard defines the area to be tested as nine 1 cm squares. It does not define the scan increment within the square. The largest contributor to error uncertainty is the scan rate. The Working Group recommended the use of a 2mm scan rate to minimize error uncertainty. However, the probe manufacturers have stated that a scan rate of less than 5mm is meaningless since the probe size is 5mm wide. The round robin testing will measure at both 2mm and 5mm increments to determine if a 5mm scan rate can interpolate the scan rate of 2mm.

Separation of the Acoustic and magnetic measurements: One method for improving T-Coil response is to add a T-coil to the wireless device. Positioning the T-coil as far away from the antenna as possible would reduce interference and improve the user's experience. The C63.19 standard, as originally adopted, however, would actually penalize such a design change. The HACTS document separates the magnetic from the acoustic test. This allows for the center of the grid to become the "hot spot" over the T-coil and not the acoustic opening. The latest version of the C63.19 standard has adopted this change.

Positioning of the test probe: The current C63.19 standard has the probe aligned to the top edge of the wireless device. This alignment is problematic because a slight change in test unit positioning can result in major differences in the results. The Working Group has changed the alignment method to better coincide to the SAR test methods. Many of the test facilities are reusing SAR equipment. The closer the two test methods align, the better the test results. The Working Group has recommended that the probe be aligned over the acoustic opening of the wireless device; this point would then become the center of the grid.

Improving consistency: There are many factors that can affect the test results for a wireless device. The Working Group has incorporated methods into the HACTS document to help mitigate these factors, including: (1) each test starts with a fully charged wireless device battery; and (2) each phone's display is not illuminated before the test scan is started.

Change Management: The Working Group continues to discover omissions and problems in the test specification, including a lack of procedures for: (1) making the radial measurements in the T-Coil test section; and (2) calculating the error uncertainty for the magnetic test equipment. These issues are being reviewed and consensus solutions created. The Incubator will work with the FCC to ensure that these solutions are incorporated into the Commission's HAC regulations.

The Test Plan Working Group recognizes the importance of ensuring that any proposed changes do not frustrate the goal of the Commission in adopting its HAC rules. The

round robin tests will help verify that the changes being made by the Test Plan Working Group do not alter the initial intent of the C63.19 standard.

2. Labeling and Consumer Outreach Working Group

This Working Group draws on the extensive expertise of consumers, audiologists and representatives from Gallaudet University and Georgia Tech Information Technology Technical Assistance and Training Center, as well as various advocates in the hearing loss field. The deliverable for this Working Group is to develop a labeling and outreach plan that is consistent, concise and clear.

The Working Group has the following objectives:

- Enable companies to comply with the FCC requirements;
- Enable consumers to make informed choices;
- Enable sales people to offer products that best meet the customer's needs; and
- Provide hearing health professionals with data needed to assist those with hearing aids who want to use digital wireless devices.

The Working Group determined that customers will have multiple points of contacts such as wireless stores, hearing health professionals, consumer groups, etc. It was decided that common descriptive language is needed to avoid confusion. The Working Group has been working on creating verbiage that provides information about the ANSI C63.19 rating process. The Working Group discovered that hearing professionals and audiologists also need more technical information.

The Working Group has already accomplished a number of significant goals:

Letter Rating Change. Based on input from consumers and hearing health professionals, the Working Group discovered that the C63.16 standard's letter designations for HAC wireless devices ("U" for acoustic and "UT for magnetic) were

confusing to consumers because different letter designations are used to denote hearing aid coupling modes ("M" for microphone and "T" for T-coil). The most significant outcome from this Working Group to date, therefore, was to suggest to the IEEE C63.19 Working Group that the letter designations for HAC wireless devices be made consistent with those currently in use for hearing aid coupling modes (from "U" and "UT" to "M" and "T"). This request was adopted in the new release of the C63.19 standard.

HAC Wireless Device Labels. The *R&O* requires labeling on wireless device boxes. The Working Group has developed several labels that could be used for this purpose. Consumers on the SHHH and ASHA web sites are evaluating these labels and the Working Group will make recommendations based on their feedback.

Stakeholder Database. A database of key stakeholders has been developed. This database will be used for future educational and informational mailings and will be available to all Incubator members for future contacts with the HAC stakeholders.

Insert Language. The Incubator has drafted language which may be used by wireless device manufacturers, audiologists, hearing instrument dispensers and service providers to explain HAC in product manuals or other documents.

Educational Event Listing. A listing of important events and educational opportunities for consumer and industry education has been compiled. The Incubator is investigating how to best utilize these events to educate consumers and HAC stakeholders on the HAC requirements and the AISP.4-HAC's compliance efforts.

AISP.4-HAC Event Participation. Members of this Working Group have agreed to actively participate in a range of conferences and special events.

HAC Information. Non-proprietary information for consumers and audiologists will be developed and reviewed by members of the Working Group.

Technical Library. A repository of hearing aid compatibility information will be developed by ATIS and made available to the public as well as to Incubator members.

VI. Conclusion

Through AISP.4-HAC, the wireless industry is working cooperatively to ensure compliance with the Commission's HAC requirements. AISP.4-HAC members have made significant achievements and accomplishments in just nine (9) months utilizing an open and impartial consensus process to facilitate, investigate and develop

recommendations for the C63.19 standard for measuring hearing aid immunity, magnetic coupling and interference caused by wireless devices. The Incubator also works with the hearing aid industry to educate and inform consumers regarding HAC and wireless devices. All findings, assumptions, and agreements reached are documented on the ATIS ASIP.4-HAC web site, http://www.atis.org/atis/hac/hachome.htm, established as a communications tool for Incubator members. All reports, minutes and agreements reached are communicated to the Commission and the FDA as status updates on the direction of the Incubator's efforts, progress, and accomplishments.[11]

AISP.4-HAC will continue to serve as an Incubator for the wireless industry to enable further investigation of test methods and compatibility issues between wireless devices and hearing aids. The wireless industry's success in meeting the Commission's HAC deadlines can only be achieved through the Commission's continued empowerment and support of ASIP.4 – HAC. The Incubator appreciates the Commission's continued support regarding AISP.4-HAC's recommended changes to the C63.19 standard, as well its acknowledgment of the Incubator's continuing work with the IEEE C63.19 Working Group. The Commission's support will enable the wireless industry to identify and incorporate necessary changes utilizing the fast track process and allow the industry to meet the Commission's established HAC deadlines.

[11] The Executive Committee of AISP.4-HAC will also meet with the Commission as appropriate to provide updates on the work of the Incubator. For that purpose, representatives of the Incubator met with the Wireless Telecommunications Bureau (WTB) and the Office of Engineering Technology (OET) in April 2004 to provide an update of the Incubator's accomplishments and continued work to assist the industry in meeting the deadlines established by the Commission for wireless compatibility to hearing aids.

WHEREFORE, THE PREMISES CONSIDERED, ATIS, on behalf of AISP.4-HAC, respectfully submits this Initial Report on Hearing Aid Compatibility Compliance Efforts for inclusion on the record in this proceeding.

Respectfully submitted by:

ATIS on behalf of AISP.4-HAC,

Megan L. Campbell
General Counsel
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May 17, 2004

AISP.4-HAC REPORTING COMPANY MEMBERS

American Cellular Corporation
AT&T Wireless Services, Inc.
Audiovox
Brookings Municipal Utilities d/b/a Swiftel Communications
Carolina West Wireless
Cingular Wireless LLC
Corr Wireless
Cricket Communications
Dobson Cellular Systems, Inc.
Epic Touch
Key Communications
Keystone Wireless
Kyocera Wireless
Leap Wireless
Louisiana Unwired, LLC
Motorola
NEC America, Inc.
NEXTEL
Nextel Partners Inc.
Nokia
Panasonic
Research In Motion Limited
Samsung
Siemens Information and Communication Mobile
Sprint PCS
Sony Ericsson Mobile Communications (USA), Inc.
T-Mobile USA
Verizon Wireless
Western Wireless Corporation

Attachment A

Status Report **Hearing Aid Compatibility *R&O*: FCC 03-168**		
		Report Date:
Company Name:		
Address:		
City:	**State:**	**Zip Code:**
Company Contact:		
Phone:	**Fax:**	**Email:**
1) Digital Wireless Phones Tested:		
2) Laboratory Used:		
3) Test Results for Each Phone Tested:		
4) Identification of Compliant Phone Models and Ratings Per C63.19:		
5) Status of Product Labeling:		
6) Outreach Efforts:		
7) Retail Availability of Compliant Phones:		
8) Status of Incorporating HAC Features into Newer Phone Models:		
9) ANSI C63.19 Changes / Status / Revision:		
10) Total Number of Compliant and Non-compliant Phone Models Offered at This Report Date:		
11) Ongoing Efforts for Interoperability Testing with Hearing Aid Devices:		
12) Differences in Handset Offerings among Regions for Supported Service Area (Service Provider Only)		
Phone Model:	**ANSI C63.19 Rating:**	
Product Labeling Information:		
Outreach Efforts:		
Retail Availability of Compliant Phones:		
Efforts to Incorporate Hearing Aid Compatibility into Newer Models:		
Activities Related to ANSI C63.19 or Other Standards Work:		
Total Number of Compliant Phones Offered:		
Total Number of Non-Compliant Phones Offered:		
Ongoing Efforts for Interoperability Testing with Hearing Aids:		
Information regarding Differences in Handset Offerings among Regions in Service Areas (For Service Providers only):		

Attachment B

Wireless Device/Lab Test Matrix										
Phone \ Lab	Kyocera *CDMA*	Motorola	Nokia	PC Test	RIM	Siemens	Sony-Ericsson *GSM*	APREL	ETS / TEM	OU-EMC
Kyocera										
(CDMA)	R1	R2	R3							
(CDMA)	R1			R3	R2					
Motorola										
(GSM)		R1				R2	R3			
(CDMA)	R2	R1			R3					
(TDMA)		R1						R2		R3
(iDEN)		R1			R2			R3		
Nokia										
(GSM)	R3		R1				R2			
(CDMA)	R3		R1						R2	
(TDMA)		R3	R1							R2
Panasonic										
(GSM)				R1		R3	R2			
(GSM)		R3	R2	R1						
RIM										
(GSM)			R3		R1		R2			
(CDMA)				R2	R1	R3				
Siemens										
(GSM)		R2				R1	R3			
(GSM)			R2	R3		R1				
Sony-Ericsson										
(GSM)					R3	R2	R1			
(GSM)		R3		R2			R1			

Wireless Device and Lab Test Matrix Description Key:

The matrix includes wireless device manufacturers and the technologies each supports (listed in the left column) and wireless device test labs (listed in the top row). Each wireless device manufacturer is responsible for testing its own devices initially in first (R1) test round. (For example, in R1 Manufacturer Kyocera will test its two CDMA products in Lab Kyocera, Motorola will test Motorola, Nokia will test Nokia, etc. In the second round (R2), manufacturer Kyocera will send one CDMA device to Lab Motorola to be tested, and one CDMA device to Lab RIM to be tested. Each manufacturer will follow suit with R2 tests. In round three (R3), Lab Motorola will forward the Kyocera device to Lab Nokia, and Lab RIM will forward the Kyocera device to Lab PC Test for tests. All Labs are responsible for forwarding the device to the next test lab as defined in the matrix.