

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

In re: )  
 )  
Hearing Aid Compatibility Requirements for ) WT Docket No. 06-203  
Wireless Telecommunications Devices )  
 )  
 )

To: The Wireless Telecommunications Bureau

**Reply Comments of the  
Alliance for Telecommunications Industry Solutions'  
Incubator Solutions Program #4- Hearing Aid Compatibility**

The Alliance for Telecommunications Industry Solutions (ATIS), on behalf of its Incubator Solutions Program #4-Hearing Aid Compatibility (AISP.4-HAC) hereby files these reply comments in response to *Public Notice* released November 8, 2006, in the above-referenced docket. In the *Public Notice*, the Federal Communications Commission (FCC) seeks comments on topics to be addressed in the FCC's hearing aid compatibility (HAC) report. The wireless industry is continuing its discussions with advocates for consumers with hearing aids to determine whether alternatives to the existing FCC HAC rules can better benefit all consumers. While the industry is hopeful that consensus can be reached regarding an alternative in the near future, consensus has already been reached among wireless service providers, wireless manufacturers and advocates for consumers with hearing aids regarding a set of principles surrounding the FCC's HAC requirements.

In these reply comments, AISP.4-HAC: (1) outlines the principles surrounding the FCC's HAC requirements that have been collectively agreed upon by the wireless industry members of AISP.4-HAC and advocates for consumers with hearing aids; (2) refutes the statements made by one industry group that the wireless industry appears to be "abandoning" the HAC standard and regulations; (3) agrees with recommendations by advocates for consumers with hearing aids that the FCC should permit wireless device labels to reflect the actual independent "M" and "T" ratings of the devices; and (4) provides information about the commitment of wireless manufacturers offering all consumers, including those with hearing aids, a broad array of wireless devices.

**I. The Wireless Industry and Advocates for Consumers with Hearing Aids Have Reached Consensus Regarding Key Principles for HAC Requirements**

Wireless manufacturers, wireless service providers, and advocates for consumers with hearing aids have collectively agreed to certain principles surrounding the FCC's HAC requirements.<sup>1</sup> The principles<sup>2</sup> are:

- (1) The wireless industry and advocates for consumers with hearing aids are continuing to work together to address concerns of wireless consumers with hearing aids. All parties agree that recommendations for specific FCC rule changes regarding numbers of HAC devices are premature and cannot be included in reply comments based on the on-going dialogue. Such recommendations will be filed in the near future either as a single agreement or in separate filings.
- (2) The ongoing dialogue between the wireless industry and advocates for consumers with hearing aids has been valuable and has afforded all parties with opportunities

---

<sup>1</sup> Those participating in WG-10 and/or the consensus discussions include: wireless service providers (Alltel, AT&T Mobility LLC, f/k/a Cingular Wireless LLC, Sprint Nextel, T-Mobile USA and Verizon Wireless), wireless manufacturers (Motorola, Inc., Nokia, Research In Motion Ltd, Samsung Telecommunications America LP, and Sony Ericsson Mobile Communications (USA) Inc.) and advocates for consumers with hearing aids (Hearing Loss Association of America, Technology Access Program of Gallaudet University and Alexander Graham Bell Association for the Deaf and Hard of Hearing).

<sup>2</sup> The wireless industry is working to develop more detailed information pertaining to these principles. This information will be included in the future recommendations that will be filed with the FCC.

- to better understand each others' needs and concerns. The wireless industry better understands the needs of consumers with hearing aids in terms of the types of devices and services that are desired for making and receiving calls. Advocates for consumers with hearing aids better understand the technical challenges and operational complexities underlying the offering of HAC devices and services.
- (3) HAC wireless devices should support US bands. Design changes for HAC should not diminish the overall performance of the devices.
  - (4) In achieving an appropriate balance between consumers with hearing aids and technical challenges faced by the wireless industry, the FCC's HAC requirements beginning in 2008 may need to be revised to reflect a reduction in the required minimum number of M-rated devices accompanied by an increase in the required minimum number of T-rated devices.
  - (5) Notwithstanding the benchmarks and minimum requirements set forth in number (4) above, it is understood that the wireless industry has an obligation to incorporate HAC wherever readily achievable.
  - (6) The wireless industry is committed to offering all consumers, including those who wear hearing aids, a broad array of handset devices and services. Tier 1 service providers agree to include in their annual reports to the FCC information on product "tiering" of HAC wireless devices available to consumers.
  - (7) The wireless industry and advocates for consumers with hearing aids agree there is a need to regularly "refresh" offerings of HAC devices. New technologies should also incorporate FCC HAC requirements to reflect advancements available in the mass market.
  - (8) The wireless industry and advocates for consumers with hearing aids agree that there should be a review of HAC milestones at a future date.

## **II. The Technical Challenges Surrounding HAC Are Significant**

As stated in its comments in this proceeding, the wireless industry faces significant and complex technical issues involving hearing aid compatibility. These challenges are a result of the physics involved in developing current mobile phone designs to meet HAC specifications that support hearing aid consumer needs. This is not a lack of resolve or effort on the part of the wireless industry as was detailed in the previously filed technical comments. AISP.4-HAC recognizes that these technical issues are complex and understands that such complexities can lead to confusion.

The Hearing Industries Association (HIA), in its comments, appears to misunderstand these issues and to ignore the tremendous work done by the wireless industry to make HAC a reality. HIA indicates that AISP.4-HAC “appears to be discarding the ANSI standard and abandoning HAC regulations because the problem is not serious enough and the solution is not effective.”<sup>3</sup> This is absolutely false. The wireless industry, individually and working through AISP.4-HAC, supports the C63.19 Standard and, within its contexts, has been a strong proponent of changes to the C63.19 Standard that make reliable HAC testing and deployment possible.<sup>4</sup> The industry has also been a vocal proponent of changes to the standard and to the FCC’s HAC rules to ensure that consumers can better understand HAC labels.<sup>5</sup> There is no doubt that consumers with hearing aids have benefited from the work already accomplished by the wireless industry and AISP.4-HAC. The wireless industry also will work with HIA to assist in the labeling of hearing aids with their immunity ratings as initially intended by the ANSI C63.19 Standard and as requested by consumers.

Having been invited to participate in all full AISP.4-HAC meetings and having participated in review of technical data in AISP.4-HAC working groups, HIA now claims to find AISP.4-HAC’s comments regarding the technical challenges “surprising.”<sup>6</sup> The technical challenges surrounding HAC are not new. AISP.4-HAC has been identifying

---

<sup>3</sup> Comments of the Hearing Industries Association (HIA) at p. 2.

<sup>4</sup> AISP.4-HAC has been actively involved in ANSI ASC C63™ and has contributed to the improvements made to the C63.19 Standard over the last three years. ATIS made 81 comments for improvements and clarifications, 60 of which were incorporated into the standard. These include the addition of the planar dipole as a method of calibrating the test setup, the addition of a gauge to insure proper probe distance, a telecoil calibration test method like the one used in the RF section and the provision of all of the theoretical and measurement data for the dipoles.

<sup>5</sup> See *Order on Reconsideration and Further Notice of Proposed Rulemaking*, WT Docket No. 01-309 (rel. June 21, 2005).

<sup>6</sup> Comments of the Hearing Industries Association at p. 2.

challenges for more than three years. At every stage, AISP.4-HAC's findings have been shared with the FCC, with ANSI ASC C63™ and with all invited participants such as HIA. AISP.4-HAC will continue to work with HIA to further explain the technical issues underlying the development and deployment of HAC devices.

As explained in more detail in AISP.4-HAC's comments, the technical challenges are complex and related to a variety of factors including modulation type, frequency band, form factors and antenna locations:

- Modulation Type – Each air interface faces unique challenges regarding HAC. For example, GSM's use of the Time Division Multiple Access ("TDMA") can interfere with hearing aids, which may detect the GSM device's pulsed transmission and distorts the hearing aid's frequency response. CDMA devices characteristically have a random pulse structure for their transmission signal that can cause interference that is static-like in nature when using a variable vocoder rate and more like white noise when using the full vocoder rate.
- Frequency Band/Power Output - The 850 MHz and 1900 MHz band each present unique technical and operational challenges for HAC. GSM devices at 850 MHz operate at up to twice the peak power of devices in the 1900 MHz band. When operating at a greater distance away from a base station, these devices also increase the output power of the handset, which can increase the possibility of interference. At 1900 MHz, it is very difficult to control the current distribution, which is an important method of creating HAC compliant devices.
- Form Factor Challenges – HAC is also affected by a device's form. For instance, frequency issues make it extremely difficult to make a thin monolithic "candy bar" GSM, iDEN or CDMA HAC compliant product. "Candy bar" designs also present other HAC challenges as the entire phone structure radiates as a typical dipole antenna. Ultra-thin phones present unique design challenges for achieving HAC compliance because there is physically less available space in which to embed HAC solution elements and because the radiating antenna structures are closer to the user's hearing aid.
- Antenna Considerations -- Antenna design also affects HAC and devices with antennas near the earpiece tend to perform poorly on HAC compliance.

- Cases – The type of material used in device casings may also affect HAC. For instance, metal casings are conductive and give rise to currents in the housing that do not exist in plastic casings. These currents cause electric and magnetic fields outside the phone that can adversely affect hearing aids. Phones with metal housings may greatly reduce or eliminate HAC-improvement design elements, which must be physically located inside the phone near the earpiece.

### **III. The FCC Should Permit Wireless Device Labels to Reflect Actual Independent “M” and “T” Ratings**

The AISP.4 HAC supports the comment filed by numerous consumer groups, including Hearing Loss Association of America (HLAA), which requests that wireless devices be allowed to reflect the actual ratings of the device in both the “M” and “T” mode.<sup>7</sup> This separation of M and T ratings would allow devices measuring T4 to be labeled as such, even if the device only has an M3 rating. Such labeling would allow those consumers who prefer to use their hearing aids in telecoil mode to more easily identify phones that would more likely provide them a better experience.

### **IV. Wireless Manufacturers and Service Providers Are Committed to Offering HAC Devices and Services**

The wireless industry has been working diligently to identify and, where possible, overcome challenges associated with offering all consumers, including those with hearing aids, a broad array of wireless devices. AISP.4-HAC therefore questions the basis for HIA’s request that the FCC ask “whether the handset industry is still committed to doing their best to eliminate the hearing aid compatibility problem.”<sup>8</sup>

---

<sup>7</sup> Comments of Hearing Loss Association of America, Alexander Graham Bell Association for the Deaf and Hard of Hearing, American Academy of Audiology American Association of People with Disabilities, Deaf and Hard of Hearing Consumer Advocacy Network, National Association of the Deaf, and Telecommunications for the Deaf and Hard of Hearing, Inc. at p. 10.

<sup>8</sup> Comments of HIA at p. 3.

Wireless manufacturers have demonstrated their commitment to the development of HAC devices by the tremendous amount of work that has been done to date. When the FCC adopted its HAC rules and pointed to the C63.19 Standard in 2003, there were no HAC-certified wireless devices on market. In the three years since the adoption of the rules, manufacturers have worked diligently to develop a variety of HAC compliant products. Despite the challenge of building to an imperfect standard that was in flux, wireless manufacturers continue to increase the number of available HAC handsets<sup>9</sup> and, in fact, AISP.4-HAC understands that some CDMA carriers may already meet or exceed the 50 percent threshold for current product lines.

This work continues at a feverish pace and includes the work being done by manufacturers and service providers as part of AISP.4-HAC to determine whether there are alternatives to the existing FCC HAC rules that can better benefit all consumers, including those with hearing aids. Since the inception of AISP.4-HAC's Working Group #10 - 50% Rule Analysis (WG-10) in October 2006, this working group has held twenty-five official meetings, including eight meetings with advocates representing hearing aid consumers that have included the review of technical data and discussion of acceptable alternatives to the current FCC 50% requirements.

---

<sup>9</sup> See Initial Report on Hearing Aid Compatibility Compliance Efforts Submitted by ATIS Incubator Solutions Program # 4 (Filed by AISP.4-HAC on May 17, 2004); Status Report #2 (Filed by AISP.4-HAC on November 17, 2004); Hearing Aid Compatibility Status Report #3 (Filed by AISP.4-HAC on May 17, 2005); Hearing Aid Compatibility Status Report #4 (Filed by AISP.4-HAC on November 17, 2005); Hearing Aid Compatibility Status Report #5 (Filed by AISP.4-HAC on May 17, 2006); and Hearing Aid Compatibility Compliance Efforts Status Report #6 (Filed by AISP.4-HAC on November 17, 2006).

There can be no doubt that wireless manufacturers and service providers are committed to working to ensure that wireless consumers with hearing aids have access to a broad variety of products and services.

**WHEREFORE, THE PREMISES CONSIDERED,** ATIS, on behalf of its AISP.4-HAC, respectfully submits its reply comments in this proceeding.

Respectfully submitted by:

ATIS on behalf of AISP.4-HAC,



---

Thomas Goode  
General Counsel  
Alliance for Telecommunications  
Industry Solutions  
1200 G Street, NW  
Suite 500  
Washington, DC 20005

January 31, 2007