

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)
Section 68.4(a) of the Commission's Rules) WT Docket No. 06-203
Governing Hearing Aid Compatible Telephones)

Reply Comments of the Technology Access Program of Gallaudet University

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I. Introduction

The Technology Access Program (TAP) of Gallaudet University respectfully submits these reply comments in WT Docket No. 06-203 regarding the hearing aid compatibility of wireless devices. TAP is a partner in the Rehabilitation Engineering Research Center on Telecommunications Access, which funds our research in this area. TAP filed initial comments in this proceeding.

II. Participation with Industry and Consumers in Discussion of Handset Benchmarks

TAP staff members have continued during January to meet and confer with industry and consumer representatives on various proposals to possibly alter the benchmarks for RF compatibility and telecoil compatibility in 2008 and beyond. We have agreed to the broad principles of agreement that ATIS is filing with the Commission in this reply period, and hope that the work that was done to arrive at these principles will communicate to the Commission the seriousness of these attempts to reach consensus

III. Questionnaire data from hearing aid users about owning a WD (2006)

In the amendment to the HAC status report #6 from ATIS, one of the key observations noted is: “(2) As in past years over 90% of the participants were able to find WDs that worked for them.” While it is unclear how this percentage was derived from the results of the experiments described in Attachment D, the raw data is freely available for analysis by other interested parties. In examining the data from ATIS TP5, it was found that 82% (46/56) of participants rated the performance of at least one handset they tried at the exhibit as “Acceptable” or “Excellent.”

Also in the amendment to the HAC status report #6, a series of questions are raised, one of which is: “(1) Is the 50% regulatory requirement for HAC RF emissions necessary when over 90% of the testing participants in TP5 testing at the 2006 HLAA conference report that they currently have a usable WD?” This statement appears to be derived from questionnaire data that was also gathered in TP5. In examining this data it was found that of 53 participants responding to a question regarding WD ownership, 72% (n=38) reported owning a WD. Of those who owned a WD, 21 were telecoil users, 7 were microphone users, 2 did not respond to the question and 8 reported using the WD without their hearing aid. Neither the degree of usability of the WD nor the satisfaction of these users with their WD was queried. However, it is of interest to note that 8 of the 38 WD owners (21%) indicated they used the WD without their hearing aid.

Another study submitted for the record in this proceeding found similar results for the number of participants who owned a WD for voice communication;¹ in this study, participants who owned WDs were queried about their satisfaction with the phones they owned. Individuals who primarily used their WD in t-coil mode were queried about whether they own a WD; and if they owned a WD, whether they were satisfied with it. Of the 58 study participants, 71% (n=41) indicated they owned a WD. Of those who owned a WD, 61% (n=25) were satisfied with it. In summary, 43% of participants in this study owned a wireless device they found satisfactory. Of those owning a WD, the remaining 39% (n=16) were not satisfied for a variety of reasons including: 1) being unable to couple to the WD in their preferred mode (telecoil) because of interference, 2) the amount of interference experienced, 3) an accessory was required for telecoil coupling to reduce interference, and 4) the volume was not loud enough.

It seems clear that none of the sample statistics from these 2006 studies suggest that hearing aid wearers are finding usable WDs at a rate of better than 90% and certainly not a rate that is comparable to individuals who are not hearing aid wearers.

IV. More information from both industries is needed in the record

As we engage in discussions with consumer advocates and industry on an appropriate level of compliance with the HAC rule, we have little specific information about design solutions that have been attempted, modeled, or evaluated

¹ Julstrom, S., Kozma-Spytek, L., and Isabelle, S. "Magnetic Performance Requirements for Wireless Device/Hearing Aid Telecoil Mode Compatibility," Submission for the Record in WT Docket 06-203 (January 11, 2007).

for today's air interface technologies, technologies that have recently entered the market, and technologies that are about to be introduced in the near future.

A. Individual reports on design studies and modeling for existing and new air interfaces are needed

We are concerned that the filings to date from most wireless manufacturers are not providing the Commission with adequate or specific information to evaluate whether sufficient effort has been made to achieve *solutions* over the three and a half years since the HAC rules were issued. It is our observation that companies have had difficulty in being open about options for design solutions within the ATIS HAC Incubator, understandably due to competitive concerns in such a forum. We note that, in the November 2006 status report to the FCC, only one manufacturer, LG, noted specific design steps that had been taken to accommodate HAC.

The problems with GSM as an air interface are documented in the ATIS filing, but we note that, despite these problems, there are some passing GSM handsets in relatively new styles now on the market. Since FCC waivers on HAC GSM handsets have expired, these handsets would logically seem to have design features that allow them to pass. Examples are the Samsung SCH-T809/SGH-D820 slider-style phone and the slim-clamshell Motorola RAZR V3; also the RIM 8705 G Blackberry is shown as passing.² These models provide possible evidence of the feasibility of compliance for GSM, and the Commission should be aware of how such compliance was achieved. The industry assertion that HAC can be achieved only

² Comments of the Alliance for Telecommunication Industry Solutions ("ATIS") on behalf of the ATIS Incubator Solutions Program #4-Hearing Aid Compatibility in WT Docket 06-203 (January 12, 2006), C-2.

through the development of unmarketable products calls for a serious challenge from the Commission.³ We also note that GSM has to some extent already been accommodated by a relaxation of 10 dB in the ANSI C63.19 RF emission limits in the 850 MHz band. Since the Commission would like the rule to remain technology-neutral, there is a special obligation to investigate the least-compatible air interface so that it does not excessively depress expectations of performance of wireless devices more generally.

The ATIS filing focused on the GSM and CDMA air interfaces but did not address iDEN, WCDMA, Wimax, or Voice over IP. The Commission should require technical reports that show evidence of serious assessment of the effects that these technologies will have on the provision of HAC devices. For example, if power levels affect compliance, specific information about power levels for the new technologies should be reported to the FCC. To date, this information has not been reported. Similarly, the possible effects of planned new frequency bands for wireless air interfaces (e.g., 700 MHz, 1700 MHz, 2100 MHz and 2500 MHz) need to be assessed, but the expected impact of these new frequencies has not been mentioned in this record. It is critical for the Commission to ascertain what has been done to assess and plan for HAC over these air interface technologies and the newer frequencies now, while these technologies are still being developed. As the Commission is aware, if we wait too long, achieving accessibility and compatibility with these newer technologies could result in expensive and very possibly less effective retrofits.

³ *Ibid*, 10.

As networks evolve, it may be advisable to treat declining/exiting technologies differently in terms of compliance policy. For example, GSM networks are now moving toward WCDMA, although GSM will continue in parts of those networks for some years. If WCDMA proves to be a benign air interface with regard to HAC, the Commission should consider whether at some point in the future GSM might be considered an exiting/declining technology, and treated as TDMA has been treated in some past proceedings. In order to take such action the Commission needs to know both the network migration path and the effects on HAC of the various technologies.

The ATIS filing also does not address the effects of various display technologies on hearing aids in telecoil mode, although this is an issue on which we have inquired about repeatedly in the Incubator forum. It is our understanding that the type of display technology used may affect the HAC experience for telecoil users. The Commission should request evaluative data on display technologies as well as data on the effects of display shielding. Since screens are becoming larger and, as noted in our initial comments, PDAs provide many more accessibility options to consumers with hearing loss,⁴ we ask the Commission to request specific assessments of display types for HAC from the wireless industry.

In summary, on all of these issues, we request that the Commission inquire more deeply into what industry has done beyond testing handsets and adjusting the ANSI C63.19 standard. Specifically, we request that the Commission obtain

⁴ Comments of the Technology Access Program of Gallaudet University in WT Docket 06-203 (January 12, 2006), 7.

individual technical reports from wireless device manufacturers, with sufficient detail to determine what technical changes were considered and tested and what compatibility benefits, if any, were achieved. We understand that some of the information that we are requesting the FCC to gather may be considered proprietary under 47 C.F.R. §0.459, but that such materials should nevertheless be submitted to the FCC, even if these are marked as privileged and confidential and held from routine public disclosure.

B. Hearing aid immunity in the marketplace

According to hearing aid industry tests, the immunity of hearing aid microphone components to RF interference improved by 30 dB between 1997 and 2002.⁵ The overall immunity was greater for the 850 MHz band than for the 1900 MHz band, and this trend was the rationale for relaxing the ANSI C63.19 emission requirements for wireless devices operating in the 850 MHz band.

It is our understanding from conversations with some hearing aid industry representatives that most models of aids sold today would equate to M2 or better (although tested to a different standard) because the market for hearing aids is international and some other countries have immunity requirements. However, there are no industry reports on immunity in the record of the current proceeding. We believe that more definitive information and estimates of the penetration of immune hearing aids in the U.S. marketplace are needed. Will RF immunity

⁵ Danish Electronics, Light & Acoustics: *Improvement in Hearing Aid Immunity*. Project No. A930005-1, performed by the Technical-Audiological Laboratory for EHIMA. Odense, Denmark: Delta, 2003b.

continue to improve, or has it reached a plateau? Could immunity be further improved if the wireless device industry were able to share its own methods of shielding WD components from RF with the manufacturers of hearing aids?

Improved immunity in telecoil components has also reportedly been achieved, but the status of that technology in the American marketplace also needs to be provided for the record.

V. The FCC should adopt the 2007 version of ANSI C63.19, with adjusted SNR for telecoil compatibility

In 2006, changes regarding telecoil compatibility passing levels were proposed and balloted in C63.19. To date, the revised version has not made its way completely through the ANSI approval process, but when this work is completed, we respectfully request that the Commission point to this new version. The adjustments include corrections to errors in a table that specified signal-to-noise ratios (SNR) that should result in a WD that passes for telecoil compatibility. Evidence that the higher SNR levels are more accurate is supplied from the 2006 study by Julstrom, Kozma-Spytek, and Isabelle, cited in section III of this comment. Also as noted section III, only 43% of a sample of telecoil users were satisfied with their own wireless phones, and only half of the user ratings for T3 or better phones in the ATIS's TP5 were deemed "acceptable" or "excellent" by users who were tested. The new SNR levels will ensure better performance for telecoil users. Another change in this revision was to partially de-couple the M rating from the T rating, to allow a WD that has an M3 rating to be labeled M3/T4, if the T rating is

higher than the M rating (i.e., T4). This was done to provide added flexibility to manufacturers who could not achieve M4, but who could provide an excellent audioband magnetic signal for telecoil coupling. (Further de-coupling will not be warranted unless there is evidence that RF immunity in hearing aids continues to improve and is widespread in the American market.).

VI. Conclusion

For the Commission to fully appraise the effects of the rule to date, more information is needed from both the wireless device and hearing aid industries. We request that the FCC adopt the revised (2007) ANSI C63.19 standard when it becomes fully ratified, as this will benefit users of telecoil, whose needs are, after all, at the heart of the Hearing Aid Compatibility Act. We express doubts about industry assertions that a large proportion of hearing aid users are already satisfied with marketplace offerings of wireless devices. In spite of this, we remain optimistic that industry and consumer representatives will continue to educate each other and attempt to arrive at consensus that will assist the Commission in moving ahead.

Respectfully submitted,



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