

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)
)
Section 68.4 (a) of the Commission's Rules) WT Docket No. 01-309
Governing Hearing Aid-Compatible) RM-8658
Telephones)
)

To: The Commission

REPLY COMMENTS

Cingular Wireless LLC ("Cingular"), by its attorneys, hereby replies to comments submitted in response to the *Notice of Proposed Rule Making* ("NPRM")¹ in the captioned proceeding. The Commission sought comment on whether the public mobile service phone exemption from the Hearing Aid Compatibility Act of 1988 ("HAC Act")² should be eliminated.³ As discussed below, the Commission should retain the HAC Act exemption because currently no known technologically feasible method exists for making digital wireless handsets work effectively with hearing aids without addressing the susceptibility of hearing aids to interference.

INTRODUCTION

Although wireline phones have become universally hearing aid compliant, digital wireless handsets are technologically distinct and pose unique radio frequency ("RF")

¹ *Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones*, WT Docket No. 01-309, *Notice of Proposed Rule Making*, FCC 01-320 (rel. Nov. 14, 2001).

² Hearing Aid Compatibility Act of 1988, Pub. L. 100-394, Aug. 16, 1988, 102 Stat. 976, codified at 47 U.S.C. § 610.

interference and compatibility problems. For example, even if every digital wireless handset were made technically compliant with the HAC Act using methods known to work in the wireline arena, there would be no guarantee that those handsets would be usable by those who wear hearing aids. The objectives of the HAC Act can only be achieved through the cooperative efforts of handset and hearing aid manufacturers, as well as interagency coordination among the FCC, the Food and Drug Administration (“FDA”) and other federal agencies.

The Commission should not limit or remove the HAC Act exemption until hearing aid and handset manufacturers research and develop solutions to address both the interference and compatibility issues. If, however, the Commission elects to remove or limit the exemption, it should do so in a way that makes clear that responsibility for compliance rests with handset and hearing aid manufacturers, rather than CMRS carriers who do not manufacture equipment. Further, CMRS carriers should not be subject to reporting requirements because the manufacturers will have the relevant information regarding handset and hearing aid compatibility. CMRS providers should only be required (i) to offer hearing aid compliant handsets or accessories once they become available from manufacturers, and (ii) to supply information obtained from manufacturers regarding compatibility between specific handset models and hearing aids to consumers upon request.⁴

³ *NPRM* at ¶ 1.

⁴ *See* Comments of Cingular Wireless LLC, WT Docket No. 01-309, at 10-13 (Jan. 11, 2002) (“Cingular Comments”). While ANSI standard C63.19 has been developed to provide some information regarding the performance of certain combinations of digital handsets and hearing aids, doubts remain regarding the repeatability of these results. Therefore, Cingular reiterates that further joint testing by handset and hearing aid manufacturers is needed. *See id.* at 6.

I. THERE ARE CURRENTLY NO KNOWN TECHNOLOGICALLY FEASIBLE MEANS FOR MAKING DIGITAL WIRELESS HANDSETS COMPLIANT WITH THE HAC ACT

The HAC Act requires covered phones to provide an “internal means for effective use with hearing aids that are designed to be compatible with telephones which meet established technical standards for hearing aid compatibility.”⁵ Section 68.316 of the Commission’s rules sets forth the only “established technical standard” for determining whether a wireline telephone is “hearing aid compatible.”⁶ Under that standard, phones must “couple” with a hearing aid through the purposeful “leaking” of a magnetic field from the telephone, which is then detected by a hearing aid “designed to be compatible” with the telephone.⁷

The only hearing aids designed to be compatible with these “leaky” phones are those that contain a telecoil. A telecoil is a small, coiled wire within the circuitry of a hearing aid that serves as an antenna. The antenna picks up signals that emanate from this “leaked” magnetic field and processes the signals into audible sound which is then delivered directly into the ear canal of the hearing aid user, a method known as “inductive coupling.”⁸ As the Cellular Telecommunications and Internet Association (“CTIA”) has noted, “the term ‘hearing aid compatibility’ [has become] synonymous with inductive coupling.”⁹ Although the HAC Act

⁵ 47 U.S.C. § 610(b)(1); *see also* 47 C.F.R. § 68.4(a)(3).

⁶ *See* 47 C.F.R. § 68.316.

⁷ *See id.*; Comments of the Cellular Telecommunications and Internet Association, WT Docket No. 01-309, at 5 (Jan. 11, 2002) (“CTIA Comments”); Comments of the Telecommunications Industry Association, WT Docket No. 01-309, at 3 (Jan. 11, 2002) (“TIA Comments”). Hearing aids with telecoils are the only ones “designed to be compatible with telephones.” Yet only 20% of hearing aids have these telecoils. *See* TIA Comments at 5; Comments of the Association of Access Engineering Specialists, WT Docket No. 01-309, at 6 (Jan. 11, 2002) (“AAES Comments”).

⁸ *See* CTIA Comments at 7.

⁹ *Id.* at 6.

indicates that other “internal” methods for achieving compatibility may develop, no such technology exists today.¹⁰ Consequently, there are currently no known technologically feasible means for making digital wireless handsets HAC Act compliant.

A. Digital Wireless Handsets Cannot Provide Internal Means for Effective Use Until Interference and Compatibility Issues Are Resolved

The overwhelming majority of comments from hearing aid users and organizations indicate that compatibility could be achieved if the audible interference between digital CMRS handsets and hearing aids was eliminated.¹¹ The “compatibility” to which these commenters refer is not the kind contemplated by the HAC Act (*i.e.*, inductive coupling), however, and should more appropriately be referred to as “usability.” This confusion has led several commenters to assert that it is technologically feasible for digital wireless handsets to be HAC Act compliant because there are some models of digital wireless handsets that appear to work for some hearing aids users.¹²

¹⁰ Comments of the Rehabilitation Engineering Research Center on Telecommunications Access, WT Docket No. 01-309, at 23 (Jan. 11, 2002) (“RERC Comments”). RERC is a technological research body established and funded by the FDA, the agency within which jurisdiction for hearing aids falls.

¹¹ *See, e.g.*, Comments of the Consumer Action Network, WT Docket No. 01-309, at 2 (Jan. 11, 2002) (“interference with hearing aids”) (“CAN Comments”); Comments of the Alexander Graham Bell Association, WT Docket No. 01-309, at 6 (Jan. 11, 2002) (“Static and buzzing in their hearing aids”) (“AGB Comments”); Comments of Self Help for Hard of Hearing People, WT Docket No. 01-309, at 2 (Jan. 11, 2002) (“interference with hearing aids”) (“SHHH Comments”); Comments of Telecommunications for the Deaf, Inc., WT Docket No. 01-309, at 2 (Jan. 11, 2002) (“difficulty. . . due to interference”); Comments of Cochlear America, WT Docket No. 01-309, 3 (Jan. 11, 2002) (“audible interference”) (“Cochlear America Comments”); Comments of Harry D. Harper, WT Docket No. 01-309, at 1 (Jan. 11, 2002) (“feedback”); Comments of Charlene MacKenzie, WT Docket No. 01-309, at 1 (Jan. 11, 2002) (“buzzing interference”).

¹² *See, e.g.*, Comments of the Council of Organizational Representatives, WT Docket No. 01-309, at 1 (Jan. 11, 2002); CAN Comments at 2-3; AGB Comments at 8; SHHH Comments at 8; Comments of the Hearing Industries Association, WT Docket No. 01-309, at 8 (Jan. 11, 2002) (“HIA Comments”).

This “compatibility” misconception merely refers to the lack of interference between certain handsets and certain hearing aids and does not indicate that the phone has an internal means for ensuring *effective use* with hearing aids. As noted above, the HAC Act effectively applies only to hearing aids containing telecoils -- barely 20% of all hearing aids.¹³ By contrast, the issue of interference potentially affects every hearing aid. Accordingly, the fact that a handset does not cause audible interference to a hearing aid does not mean that it is HAC Act compliant.¹⁴

The very design of the current inductive coupling method makes it technologically infeasible for digital handsets to become “compatible” as required by the HAC Act. RF interference occurs because the telecoil, as well as other circuitry in the hearing aid, may pick up digital wireless handset transmissions and process them into audible noise.¹⁵ Thus, even if every digital wireless handset were redesigned to add components that could “leak” a magnetic field, the digital transmissions would still create sufficient audible interference to preclude satisfaction of the “effective use” requirement of the HAC Act. Until these interference and compatibility issues are resolved, digital wireless handsets cannot provide internal means for effective use with hearing aids and the HAC Act exemption should be retained.

¹³ See, e.g., CTIA Comments at 9; AAES Comments at 5-6; Comments of Sprint PCS, WT Docket No. 01-309, at 3 n.8 (Jan. 11, 2002) (“Sprint PCS Comments”).

¹⁴ See Comments of U.S. Access Board, WT Docket No. 01-309, at 2 (Jan. 11, 2002) (“Traditionally, HAC has referred only to effective magnetic coupling, not to minimizing interference.”) (“U.S. Access Board Comments”).

¹⁵ See, e.g., CTIA Comments at 7-8; TIA Comments at 10-11.

B. A Broad Range of Alternative Solutions Must Be Developed

The telecoil was developed in the 1940's when researchers discovered that wireline telephones inadvertently leak a magnetic field from the handset speaker.¹⁶ Under the HAC Act, manufacturers of wireline telephones were required to facilitate inductive coupling by guaranteeing that each phone they produced leaked in this manner. Although this serendipitous discovery allowed telecoil-equipped hearing aids to function with wireline phones, it effectively prevented hearing aids, including many equipped with telecoils, from working with digital wireless handsets. This stems from the fact that telecoils receive RF transmissions from digital wireless handsets and process them as audible interference, thereby rendering the handset incompatible in many cases.

Fortunately, advances in digital technology suggest that inductive coupling can and should be replaced by alternative solutions for ensuring digital handset use by hearing aid users. Many of the newest hearing aid models feature digital technologies that *may* permit coupling with digital handsets via miniature wireless links or similar processes.¹⁷ In fact, technological advancements in Cochlear implants demonstrate that a new form of digital compatibility is possible.¹⁸ Congress contemplated innovative solutions of this type when it enacted the HAC Act,¹⁹ and the Commission should encourage concerted and cooperative efforts by hearing aid and handset manufacturers to further research, identify and deploy a broad range of alternative solutions. Until a broad range of innovative solutions are developed, validated and implemented

¹⁶ See AAES Comments at 5; RERC Comments at 23.

¹⁷ See RERC Comments at 24.

¹⁸ See Cochlear America Comments at 8.

¹⁹ See H. Rep. No. 97-888 at 5.

by both hearing aid and handset manufacturers, however, the HAC Act exemption should be retained.

II. HEARING AID SUSCEPTIBILITY TO INTERFERENCE MUST BE ADDRESSED THROUGH A COOPERATIVE, INTERAGENCY EFFORT BY THE FCC, THE FDA AND OTHER FEDERAL AGENCIES

The primary objective of the HAC Act is to provide hearing aid users with reasonable access to telecommunications technology. Cingular fully supports the Commission and the hearing aid community in this effort. In order for this objective to be met, however, the issues of interference and compatibility must be addressed through the cooperative efforts of several federal agencies.²⁰ Once these issues are adequately addressed, the cooperative and energetic efforts of handset *and* hearing aid manufacturers (in conjunction with hearing aid users and area experts), under the joint leadership of the Commission and the FDA, will likely lead to effective solutions.²¹

There are many complex factors that interact to create RF interference to hearing aids. In order to perform their core function, digital wireless handsets must transmit RF energy that may cause interference. To eliminate this problem, the handset industry and other commenters, including hearing aid manufacturers, suggest that hearing aids should be shielded.²² Hearing aid manufacturers point out, however, that they are severely limited by miniaturization and other

²⁰ See Cingular Comments at 8-9.

²¹ See, e.g., *id.* at 8; Comments of the American National Standards Institute, WT Docket No. 01-309, at 17 (Jan. 11, 2002) (“ANSI Comments”); Comments of Matsushita Electric Corporation of America, WT Docket No. 01-309, at 9 (Jan. 11, 2002) (“Matsushita Comments”); TIA Comments at 22; Comments of AT&T Wireless Services, Inc., WT Docket No. 01-309, at 8 (Jan. 11, 2002); CTIA Comments at 18; AAES Comments at 14; U.S. Access Board Comments at 2.

²² See, e.g., TIA Comments at 12; CTIA Comments at 12; AAES Comments at 12; HIA Comments at 1.

requirements.²³ Virtually all agree that further testing is needed,²⁴ but also admit that it is especially difficult to determine, in advance, which hearing aids will interact poorly with particular handsets, because each individual hearing aid is unique.²⁵

Resolution of the interference and compatibility problems is further complicated by the fact that, unless the Commission intends to assert ancillary jurisdiction over hearing aids as “receivers,” only the handsets are within FCC jurisdiction, while hearing aids are within FDA jurisdiction. The FDA has taken measures to protect the interests of the hearing aid community and has promulgated regulations governing the sale and distribution of hearing aids.²⁶ Accordingly, Cingular urges the Commission to work closely with the FDA to ensure that hearing aids are adequately hardened against RF interference.

A standard has been developed that, in spite of some misgivings, can measure the potential interference hearing aids may experience in use with various digital wireless handsets and provide a method for benchmarking performance.²⁷ Being able to determine which hearing aids can be used with which handsets will not only enable manufacturers to inform consumers of the choices available to them, but will lead to further research to determine how that usability can be more widely replicated. Furthermore, technological improvements have been made to both hearing aids and handsets that have decreased the amount of interference experienced by

²³ See HIA Comments at 4-5.

²⁴ See *id.* at 6-7; Matsushita Comments at 15; AAES Comments at 9; TIA Comments at 22; CTIA Comments at 16.

²⁵ See HIA Comments at 4-5.

²⁶ See 21 C.F.R. §801.420.

²⁷ See ANSI Comments at 7-14.

hearing aid users.²⁸ In fact, one expert suggests that most of the interference currently experienced is the result of the use of older model hearing aids, which will be drastically reduced as newer models become more ubiquitous.²⁹ Thus, the Commission should closely examine the progress that has been made to date and incorporate successful test results into any final Commission action.

CONCLUSION

If the Commission limits or revokes the HAC Act exemption, it will not only require the impossible, but also fail to achieve the primary objective of the HAC Act -- to provide hearing aid users with reasonable access to digital wireless technology. Accordingly, Cingular urges the Commission to retain the exemption. The objectives of the HAC Act can only be achieved through the cooperative efforts of handset and hearing aid manufacturers, as well as interagency coordination among the FCC, the FDA and other federal agencies. If the Commission elects to limit or revoke the exemption, it should do so in a way that makes clear that responsibility for compliance rests with handset and hearing aid manufacturers, rather than CMRS carriers who do not manufacture equipment. CMRS carriers should not be subject to reporting requirements because the manufacturers will have the relevant information regarding handset and hearing aid compatibility and should only be required (i) to offer hearing aid compliant handsets or accessories once they become available from manufacturers, and (ii) to supply information

²⁸ See HIA Comments at 4; AAES Comments at 13, 15-19 (listing 60 patents that have recently issued improving the effective use of hearing aids with handsets).

²⁹ See, e.g., AAES Comments at 14-15 (quoting Gert Ravn, convener of IEC 118-13 Committee on Hearing Aid Immunity and executive at Delta Acoustics Laboratory).

regarding compatibility between specific handset models and hearing aids to consumers upon request.

Respectfully submitted,

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