

Before the
Federal Communications Commission
WASHINGTON, D.C. 20554

In the Matter of
Section 68.4(a) of the Commission's Rules
Governing Hearing Aid-Compatible Telephones
WT Docket No. 01-309
WT Docket No. 06-203 (Terminated)

REPORT ON THE STATUS OF IMPLEMENTATION OF THE COMMISSION'S
HEARING AID COMPATIBILITY REQUIREMENTS

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By the Chief, Wireless Telecommunications Bureau

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I. INTRODUCTION

1. In this Report, the Wireless Telecommunications Bureau (“Bureau”), in consultation with the Office of Engineering and Technology (“OET”) and other Bureaus and Offices of the Commission, reviews the status of implementation of the Commission’s hearing aid compatibility requirements. This Report fulfills the Commission’s directive for staff to examine, shortly after three years after the effective date of the hearing aid compatibility rules, the following three topics: (1) the impact of the Commission’s rules in achieving greater compatibility between hearing aids and digital wireless phones; (2) the development of new technologies that could provide greater or more efficient accessibility of wireless telecommunications to hearing aid users; and (3) the impact of hearing aid compatibility requirements on cochlear implant and middle ear implant users and their ability to use digital wireless phones.¹ Accordingly, this Report reviews the current state of wireless telephone compatibility with hearing aids and offers the Commission specific recommendations designed to further facilitate implementation of hearing aid compatibility requirements.

2. Based upon careful consideration of the record before it, the Bureau: (1) assesses the impact of the Commission’s hearing aid compatibility requirements in achieving compatibility between digital wireless phones and hearing aids; (2) evaluates whether to recommend changes to the hearing aid compatibility rules, including potential revised or additional compatible handset deployment benchmarks, consistent with a joint proposal that was submitted by representatives from the wireless industry and consumer advocacy groups for the deaf and hard of hearing; (3) considers potential measures to improve the availability of information to consumers; (4) examines the development of new technologies that could provide greater or more efficient accessibility of wireless telecommunications to hearing aid users; (5) considers whether changes to the hearing aid compatibility rules may be necessary to address changes in technology and regulation; (6) explores the impact of hearing aid compatibility requirements on cochlear implant and middle ear implant users, and their ability to use digital wireless phones; and (7) discusses developments relating to the labeling of hearing aids with their immunity rating.

II. BACKGROUND

A. Hearing Aid Compatibility Requirements

3. In the *Hearing Aid Compatibility Order* adopted in 2003, the Commission took a number of actions to further the ability of persons with hearing disabilities to access digital wireless telecommunications.² Among other measures, the Commission required manufacturers and digital wireless service providers collectively to take steps to increase the number of hearing aid-compatible handset models available, and established phased-in deployment benchmark dates for the offering of

¹ Section 68.4(a) of the Commission’s Rules Governing Hearing Aid-Compatible Telephones, WT Docket No. 01-309, *Report and Order*, 18 FCC Rcd 16753, 16782-83 ¶ 74 (2003); *Erratum*, 18 FCC Rcd 18047 (2003) (*Hearing Aid Compatibility Order*). The Commission adopted these requirements for digital wireless telephones under authority of a provision of the Hearing Aid Compatibility Act of 1988, codified at Section 710(b)(2)(C) of the Communications Act of 1934, as amended, 47 U.S.C. § 610(b)(2)(C).

² See generally *Hearing Aid Compatibility Order*, 18 FCC Rcd 16753.

hearing aid-compatible digital wireless handset models.³ In promulgating the hearing aid compatibility requirements, the Commission addressed hearing aids that operate in either of two modes -- acoustic coupling or inductive coupling. Hearing aids operating in acoustic coupling mode receive and amplify all sounds surrounding the user, including desired sounds, such as a telephone's audio signal, as well as unwanted ambient noise.⁴ Hearing aids operating in inductive coupling mode avoid amplifying unwanted ambient noise by turning off the microphone and using a telecoil to receive only audio signal-based magnetic fields generated by telecoil-compatible telephones.⁵

4. The Commission's hearing aid compatibility rules apply generally to providers of digital commercial mobile radio services (CMRS) "to the extent that they offer real-time, two-way switched voice or data service that is interconnected with the public switched network and utilizes an in-network switching facility that enables the provider to reuse frequencies and accomplish seamless hand-offs of subscriber calls," as well as to manufacturers of wireless phones used in the delivery of such services.⁶ However, because relevant technical standards have been established to date only for Broadband Personal Communications Services, Cellular Radio Telephone Service, and Specialized Mobile Radio Services in the 800 MHz and 900 MHz bands, only those services are currently subject to the specific requirements under Section 20.19 of the rules.⁷ In the *700 MHz Service Report and Order* adopted in April 2007, the Commission established a timetable for the development of the necessary technical standards for new services and frequency bands that have governing service rules in place and for incorporation of requirements based on those standards into its rules.⁸ Specifically, the Commission stated its expectation

³ See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16780 ¶ 65; 47 C.F.R. § 20.19(c). At that time, the Commission reported that approximately six million Americans used hearing aids to improve their hearing. *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16756 ¶ 5. The Commission observed, *inter alia*, that "as wireless service has evolved to become increasingly more important to Americans' safety and quality of life, the need for persons with hearing disabilities to have access to wireless services has become critical." *Id.* at 16757 ¶ 7.

⁴ *Id.* The *Hearing Aid Compatibility Order* described acoustic coupling as follows:

In acoustic coupling mode, the microphone picks up surrounding sounds, desired and undesired, and converts them into electrical signals. The electrical signals are amplified as needed and then converted back into sound by the hearing aid speaker.

Hearing Aid Compatibility Order, 18 FCC Rcd at 16763 ¶ 22.

⁵ *Id.* In telecoil mode, with the microphone turned off, the telecoil picks up the audio signal-based magnetic field generated by the voice coil of a dynamic speaker in hearing aid-compatible telephones, audio loop systems, or powered neck loops. The hearing aid converts the magnetic field into electrical signals, amplifies them as needed, and converts them back into sound via the speaker. Using a telecoil avoids the feedback that often results from putting a hearing aid up against a telephone earpiece, can help prevent exposure to over amplification, and eliminates background noise, providing improved access to the telephone.

⁶ 47 C.F.R. § 20.19(a); see also In the Matter of Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket 06-150, *Report and Order and Further Notice of Proposed Rulemaking*, 22 FCC Rcd 8064, 8117-18 ¶ 142 (2007) (*700 MHz Service Report and Order*). CMRS is defined as mobile service that is provided for profit, interconnected, and available to the public. 47 C.F.R. § 20.3; see 47 U.S.C. § 332(d)(1). We note that telephones used with public mobile services, as well as those used with private radio services, are exempt from the general statutory requirement that all telephones meet hearing aid compatibility standards. 47 U.S.C. § 610(b)(2)(A); see also 47 C.F.R. § 68.4. In 1994, Congress amended Section 332 of the Communications Act, replacing the public mobile service and private radio service categories with CMRS and private mobile [radio] service (PMRS). See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16764-65 ¶ 26. "Public mobile service" is defined to include certain services covered under Part 22 of our rules. 47 U.S.C. § 610(b)(4)(B); 47 C.F.R. § 68.3.

⁷ See 47 C.F.R. § 20.19(b); *700 MHz Service Report and Order*, 22 FCC Rcd 8119 ¶¶ 145-147. The existence of an established, applicable technical standard is a statutory requirement for imposing hearing aid compatibility requirements. See Pub. L. No. 100-394, 102 Stat. 976 (1988), codified at 47 U.S.C. § 610.

⁸ *700 MHz Service Report and Order*, 22 FCC Rcd 8119-20 ¶¶ 148-150.

that appropriate technical standards for the wireless communications services bands listed in Section 27.1(b) will be established within 24 months of the *Federal Register* publication of the *700 MHz Service Report and Order*, and committed that, if this occurs, it will initiate a further proceeding at that time to establish a specific timetable for deployment of hearing aid-compatible handsets based on the adopted standards for services in the relevant bands.⁹

1. Existing Deployment Benchmarks and Requirements

5. In the 2003 *Hearing Aid Compatibility Order*, the Commission established a number of deployment benchmarks and other related requirements. These requirements were later modified slightly in the *Hearing Aid Compatibility Reconsideration Order* adopted in 2005.¹⁰ With respect to acoustic coupling operation, the Commission generally required each covered manufacturer and service provider to offer specific numbers of handset models per air interface in its product line (*i.e.*, CDMA, TDMA, GSM, and iDEN)¹¹ that the manufacturer or service provider offers that meet, at a minimum, an M3 rating (formerly denominated a U3 rating) for reduction of radio frequency (RF) interference between handsets and hearing aids in acoustic coupling mode, as set forth in the American National Standards Institute (ANSI) C63.19 technical standard.¹² The Commission also established separate requirements to offer handset models that meet at least a T3 rating (formerly denominated a U3T rating) to enable inductive coupling with hearing aids operating in telecoil mode.¹³ If a handset manufacturer or service provider offers a multi-band handset in order to comply with these requirements, the handset must be hearing-aid compatible in each frequency band.¹⁴ The Commission further established that, before a handset can be offered in satisfaction of these obligations, the handset manufacturer must first certify that it is compliant

⁹ *Id.*

¹⁰ See Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, *Order on Reconsideration and Further Notice of Proposed Rulemaking*, WT Docket No. 01-309, 20 FCC Rcd 11221, 11208-09 ¶¶ 26-27 (*Hearing Aid Compatibility Reconsideration Order*).

¹¹ See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16780 ¶ 65. The term air interface refers to the system that ensures compatibility between mobile radio service equipment, such as handsets, and the service provider's base stations. Currently, the leading air interfaces include Code Division Multiple Access (CDMA), Global System for Mobile Communications (GSM), Integrated Dispatch Enhanced Network (iDEN), Time Division Multiple Access (TDMA) and Wideband Code Division Multiple Access (WCDMA). We note that WCDMA is also known as Universal Mobile Telecommunications System (UMTS). We use WCDMA, rather than UMTS, throughout this report for consistency and ease of reference.

¹² See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16780 ¶ 65; 47 C.F.R. § 20.19(b)(1), (c)(1)-(3). The 2001 version of ANSI Standard C63.19, which the Commission adopted in the *Hearing Aid Compatibility Order*, used a "U" nomenclature for RF interference reduction, and this nomenclature is referenced in Section 20.19 of the Commission's rules. Subsequently, the 2006 version of this standard substituted the "M" nomenclature. For purposes of clarity, we will use the "M" nomenclature throughout this Report when referring to RF interference reduction ratings, unless referring to specific text that uses the "U" nomenclature.

¹³ See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16780 ¶ 65; 47 C.F.R. § 20.19(b)(2), (d). The 2006 version of ANSI Standard C63.19 substituted "T" nomenclature for the "UT" terminology that was used in the 2001 version of the standard. For purposes of clarity, we will use the "T" terminology throughout this Report when referring to inductive coupling compatibility ratings.

¹⁴ See Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, Cingular Wireless LLC Petition for Waiver of Section 20.19(c)(3)(i)(A) of the Commission's Rules, *Memorandum Opinion and Order*, WT Docket No. 01-309, 20 FCC Rcd 15108, 15115 ¶ 17 (2005) (*Dual-Band GSM Waiver Order*) (Commission permitted handset manufacturers and service providers offering dual-band GSM wireless handsets operating in both the 850 MHz and 1900 MHz bands additional time, until August 1, 2006, for making available handsets with a U3 (*i.e.*, M3) or higher rating in both bands). This order is discussed more fully below.

with the compatibility requirements through the Commission's equipment authorization process as set forth in Section 2.1033(d) of the Commission's rules.¹⁵

6. In the absence of falling within an exception or waiver,¹⁶ the following summarizes the deployment benchmarks under the Commission's current hearing aid compatibility requirements:

Radio Frequency Interference

- By September 16, 2005, each digital wireless handset manufacturer had to make available to digital wireless service providers at least two M3-rated handset models for each air interface it offers.¹⁷ By this same date, each digital wireless service provider had to make available to consumers at least two M3-rated handset models for each air interface it offers and make available in its retail stores all of these handset models for testing by consumers.¹⁸
- By September 16, 2006, each Tier I carrier providing digital wireless services had to make available to consumers at least five M3-rated handsets for each air interface it offers or 25% of the total number of handset models it offers, and make available in retail stores all of these handset models for testing by consumers.¹⁹
- By February 18, 2008, at least 50% of all digital wireless handset models offered by manufacturers or digital wireless service providers per air interface offered must meet an M3 rating.²⁰

Inductive Coupling

- By September 18, 2006, each digital wireless handset manufacturer had to make available to wireless service providers, and each digital wireless service provider had to make available to consumers, at least two T3-rated handsets for each air interface it offers, and each digital wireless service provider had to make available in its retail stores all of these handset models for testing by consumers.²¹

¹⁵ See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16783 ¶ 75; 47 C.F.R. § 20.19(b)(3).

¹⁶ For example, any service provider using a TDMA air interface that planned to overbuild (*i.e.*, replace) its network to employ an alternative air interface was given a temporary reprieve from compliance on its TDMA network, provided certain conditions were met. See 47 C.F.R. § 20.19(c)(2)(i)(B).

¹⁷ 47 C.F.R. § 20.19(c)(1)-(2).

¹⁸ 47 C.F.R. § 20.19(c)(2)(i).

¹⁹ 47 C.F.R. § 20.19(c)(3)(i)(B). The four nationwide, terrestrial CMRS carriers, AT&T Services, Inc., Verizon Wireless, Sprint Nextel, and T-Mobile USA, are considered Tier I carriers. See *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Phase II Compliance Deadlines for Non-Nationwide CMRS Carriers, Order to Stay*, 17 FCC Rcd 14841, 14843 ¶ 7 (2002) (*Non-Nationwide Carriers Order*).

²⁰ 47 C.F.R. § 20.19(c).

²¹ 47 C.F.R. § 20.19(d).

De Minimis Exception

- Digital wireless handset manufacturers or digital wireless service providers that offer two or fewer digital wireless handsets in the U.S. are exempt from the requirements of the hearing aid compatibility rules.²²
- Digital wireless service providers that obtain handsets only from manufacturers that offer two or fewer digital wireless handset models in the U.S. likewise are exempt from the hearing aid compatibility requirements.²³
- Digital wireless handset manufacturers or digital wireless service providers that offer three digital wireless handset models must offer at least one compliant handset model.²⁴
- Digital wireless service providers that obtain handsets only from manufacturers that offer three digital wireless handset models in the U.S. are required to offer at least one compliant handset model.²⁵

7. In addition to establishing the deployment requirements above, the Commission also required manufacturers and digital wireless service providers to display the associated M-rating of handsets on the packaging material and to include an explanation of the ANSI C63.19 M-rating system in the owner's manual or as an insert in the packaging material for the handset.²⁶ The Commission further required manufacturers and wireless service providers to report every six months on efforts toward compliance with the hearing aid compatibility requirements for the first three years of implementation (on May 17, 2004, November 17, 2004, May 17, 2005, November 17, 2005, May 17, 2006, and November 17, 2006), and then annually thereafter through the fifth year of implementation (on November 19, 2007 and November 17, 2008).²⁷

2. Technical Standard

8. In the 2003 *Hearing Aid Compatibility Order*, the Commission adopted its rules based upon the 2001 version of the ANSI C63.19 technical standard in effect at that time.²⁸ Subsequently, the ANSI technical standard has been revised on several occasions. In April 2005, OET in conjunction with the Bureau, acting on delegated authority,²⁹ recognized that ANSI had released a draft version of an updated hearing aid compatibility standard, ANSI C63.19-2005, and clarified that applicants for certification

²² 47 C.F.R. § 20.19(e)(1).

²³ *Id.*

²⁴ 47 C.F.R. § 20.19(e)(2).

²⁵ *Id.* In the *Hearing Aid Compatibility Reconsideration Order*, the Commission clarified the *de minimis* exception applies on a per air interface basis, rather than across a manufacturer's or carrier's entire product line. *Hearing Aid Compatibility Reconsideration Order*, 20 FCC Rcd at 11244-45 ¶ 53.

²⁶ 47 C.F.R. § 20.19(f).

²⁷ See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16787 ¶¶ 89-91; see also Wireless Telecommunications Bureau Announces Hearing Aid Compatibility Reporting Dates for Wireless Carriers and Handset Manufacturers, *Public Notice*, 19 FCC Rcd 4097 (WTB 2004).

²⁸ *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16779 ¶ 63.

²⁹ In the *Hearing Aid Compatibility Order*, the Commission delegated to the Wireless Telecommunications Bureau, in coordination with OET, the authority to approve future versions of the hearing aid compatibility technical standard to the extent that the changes to the standard do not raise major compliance issues. See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16779 ¶ 63.

could rely on either the 2001 or draft 2005 version of the ANSI C63.19 standard.³⁰ Subsequently, in the spring of 2006, ANSI adopted a revised version 3.12 of standard C63.19. This revision, among other things, redesignated the U3 and U3T rating nomenclature as “M3” and “T3,” respectively, adopted a revised standard for meeting an M3 rating for wireless devices operating below 960 MHz, and made some changes in GSM testing standards in other frequency bands.³¹

9. On June 6, 2006, the Bureau and OET released a public notice stating that, effective immediately, OET would accept applications for certification of equipment tested and rated under the revised standard ANSI C63.19-2006 for all wireless phone hearing aid compatibility testing and rating, as specified in Section 20.19 of the rules.³² The *2006 ANSI Standard Public Notice* further specified that applicants for certification may rely on, and must identify, only one version of the ANSI C63.19 standard, either 2001, 2005 or 2006.³³ More recently, the ANSI standard was revised in 2007. On June 25, 2007, the ANSI Accredited Standards Committee C63 (EMC) (ANSI ASC C63) filed a petition requesting that the Commission adopt the 2007 revision of the ANSI C63.19 technical standard in place of the 2001, 2005 draft and 2006 versions of the technical standard.³⁴

3. Commission Orders Resolving Waiver Requests

10. On September 8, 2005, the Commission released the *Dual-Band GSM Waiver Order*, which provided a limited waiver of the September 16, 2005 deadline for offering M3-rated handset models to entities that offer dual-band GSM digital wireless handsets operating in both the 850 MHz and 1900 MHz bands.³⁵ Pursuant to its waiver authority, the Commission ruled that it would accept, until August 1, 2006, a dual-band GSM handset’s hearing aid compatibility compliance rating for 1900 MHz operation as the overall compliance rating for the handset with regard to the U3 (*i.e.*, M3) rating.³⁶ In adopting this order, the Commission emphasized its concern that the relief be limited in time.³⁷ In addition, the Commission imposed a number of reporting and consumer outreach conditions on service providers seeking to avail themselves of this temporary waiver relief.³⁸

³⁰ See Public Notice, “OET Clarifies Use of Revised Wireless Phone Hearing Aid Compatibility Standard Measurement Procedures and Rating Nomenclature,” 20 FCC Rcd 8188 (2005).

³¹ See American National Standard Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids, ANSI C63.19-2006, at 1, 52-53, 65-66.

³² Wireless Telecommunications Bureau and Office of Engineering and Technology Clarify Use of Revised Wireless Phone Hearing Aid Compatibility Standard, *Public Notice*, 21 FCC Rcd 6384 (2006) (*2006 ANSI Standard Public Notice*).

³³ *Id.*

³⁴ See Petition of American National Standards Institute Accredited Standards Committee C63 (EMC) - ANSI ASC C63 filed on June 25, 2007 in WT Docket 01-309 (*ANSI ASC C63 Petition*). See also ANSI Comments. ANSI ASC C63 states that further improvements have been made to the technical standard to reflect changes in technology, and efficiencies and improvements in testing procedures, resulting in the 2007 version of the technical standard. *ANSI ASC C63 Petition* at 2. Additionally, ANSI ASC C63 states that a strong consensus was achieved with the 2007 edition of the technical standard as evinced by a one hundred percent (100%) affirmative vote in its final recirculation ballot. As discussed further *infra*, the Hearing Loss Association of America and Gallaudet University Technology Access Program support this petition. See HLAA Comments at 10, HLAA Reply Comments at 7, and TAP Reply Comments at 8.

³⁵ See generally *Dual-Band GSM Waiver Order*, 20 FCC Rcd 15108, 15115 ¶ 17.

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.* at 15117-18 ¶ 23.

11. On September 16, 2005, the Commission granted a limited temporary waiver of the hearing aid compatibility deployment and labeling requirements to T-Mobile USA, Inc. (T-Mobile), a Tier I carrier.³⁹ T-Mobile sought additional time within which to comply with the M3-rated handset deployment requirement and the associated labeling requirements because of the last-minute inability of its vendors to provide requisite handsets. In granting T-Mobile's waiver request, the Commission determined that the limited relief sought by T-Mobile was consistent with the Commission's goal of ensuring the expeditious introduction of hearing aid-compatible digital wireless handsets and would permit T-Mobile to have the necessary collateral marketing materials in place, including informational placards in retail handset displays.⁴⁰

12. In April 2007, the Commission released the *September 2005 Compatibility Requirements Waiver Order* addressing waiver requests filed by 19 Tier II and Tier III carriers seeking relief from the Commission's requirement to offer at least two digital wireless telephone handset models per air interface that are certified as M3-rated by September 16, 2005.⁴¹ In addition, the petitioners generally requested waivers of Section 20.19(f) of the Commission's rules, which specifies the labeling requirements for hearing aid-compatible handsets.⁴² Taking into account its longstanding commitment to ensure that deaf and hard of hearing individuals have full access to, and helpful technical information about, digital wireless services, the Commission granted limited waivers *nunc pro tunc* to several of the petitioners and denied waivers to other petitioners, and dismissed the three remaining petitioners' waiver requests as unnecessary.⁴³ With respect to those waiver requests where limited relief was granted, the Commission acknowledged that the carriers were unable timely to comply with the applicable handset deployment requirement because the requisite hearing aid-compatible handsets were unavailable to them as of September 16, 2005, and that these carriers acted diligently to come into compliance with the deployment and labeling requirements within a short period after the deadline.⁴⁴ The Commission referred to the Enforcement Bureau (EB) those petitioners to which it denied waivers, in whole or in part, and EB has subsequently initiated action against several of these parties.⁴⁵

³⁹ See Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, T-Mobile USA, Inc. Petition for Waiver of Section 20.19(c)(3) of the Commission's Rules, *Memorandum Opinion and Order*, WT Docket No. 01-309, 20 FCC Rcd 15147, 15150 ¶ 7 (2005) (*T-Mobile Waiver Order*). In granting limited relief, the Commission required T-Mobile to make available to consumers one hearing aid-compatible handset model meeting an M3 rating no later than September 16, 2005; two hearing aid-compatible handset models meeting an M3 rating no later than October 16, 2005; and four hearing aid-compatible handset models meeting an M3 rating no later than November 16, 2005. *Id.* at 15148 ¶ 1.

⁴⁰ See *id.* at 15151 ¶¶ 8-10.

⁴¹ Section 68.4 (a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, Petitions for Waiver of Section 20.19 of the Commission's Rules, WT Docket 01-309, *Memorandum Opinion and Order*, 22 FCC Rcd 7171 (2007) (*September 2005 Compatibility Requirements Waiver Order*). See also 47 C.F.R. § 20.19(c)(2)(i). Tier II carriers are non-nationwide wireless radio service providers with more than 500,000 subscribers. Tier III carriers are non-nationwide wireless radio service providers with 500,000 or fewer subscribers. See *Non-Nationwide Carriers Order*, 17 FCC Rcd at 14847 ¶¶ 22-24.

⁴² *September 2005 Compatibility Requirements Waiver Order*, 22 FCC Rcd at 7172 ¶ 1.

⁴³ *Id.* at 7200-03 ¶¶ 72-91.

⁴⁴ The Commission has previously acknowledged that, "[i]n contrast to large carriers, smaller wireless carriers may be disadvantaged when they seek to acquire . . . specialized handsets" because vendors treat the largest carriers, who place the largest orders for equipment, as priority customers. See *Hearing Aid Compatibility Reconsideration Order*, 20 FCC Rcd at 11233 ¶ 22.

⁴⁵ See, e.g., IT&E Overseas, Inc., *Notice of Apparent Liability for Forfeiture*, 22 FCC Rcd 7660 (EB 2007) and Pine Telephone Company, Inc., *Notice of Apparent Liability for Forfeiture*, 22 FCC Rcd 9205 (EB 2007).

4. Pending Waiver Requests

13. There are 12 waiver requests pending from Tier III carriers seeking relief from the Commission's RF interference reduction requirements for digital wireless telephones.⁴⁶ Specifically, each request seeks a partial waiver of Section 20.19(c)(2)(i)(A) of the Commission's rules, which requires non-nationwide wireless service providers to offer, by September 16, 2005, two or more digital handset models per air interface that are rated hearing aid-compatible under defined standards for RF interference reduction.⁴⁷ More particularly, the petitioners seek extension of a limited waiver of that provision granted previously by the Commission in the *Dual-Band GSM Waiver Order*, which provided that, until August 1, 2006, it would accept a GSM dual band handset's hearing aid compatibility rating in the 1900 MHz band as the rating for the handset overall.⁴⁸ Also pending before the Commission are motions from four of the petitioners for leave to withdraw their petitions.⁴⁹

14. Additionally, there are 42 waiver petitions seeking extensions of the deadline for handsets to be compliant with hearing aid compatibility standards for inductive coupling that remain pending before the Commission.⁵⁰ Each of the petitioners requests waiver of the handset deployment requirement set forth in Section 20.19(d) of the Commission's rules, which provides that, by September 18, 2006, all handset manufacturers and all providers of public mobile radio service (other than those falling within a *de minimis* exception) must offer at least two digital wireless telephone handset models per digital air interface offered that are certified at least T3 under the ANSI C63.19 standard.⁵¹

B. Commission Staff Report

15. As noted above, the Commission directed in the *Hearing Aid Compatibility Order* that, "[s]hortly after three years after the effective date of this Order, FCC staff will deliver to the Commission a report" that examines three topics: (1) "the impact of our rules in achieving greater compatibility between hearing aids and digital wireless phones;" (2) "the development of new technologies that could provide greater or more efficient accessibility of wireless telecommunications to hearing aid users;" and (3) "the impact of this Order's compatibility requirements on cochlear implant and middle ear implant users and their ability to use digital wireless phones."⁵² The Commission stated that the report would "form the basis for the Commission to initiate a proceeding to evaluate: (1) whether to increase [or] decrease the 2008 requirement to provide 50 percent of phone models that comply with a U3 rating; (2) whether to adopt [hearing aid compatibility] implementation benchmarks beyond 2008; and (3) whether

⁴⁶ Copies of petitions for waiver are available in WT Docket No. 01-309. We note that, since the filing of their waiver petitions, many of the petitioners have notified the Commission that they have come into compliance with the Commission's hearing aid compatibility requirements for RF interference reduction.

⁴⁷ 47 C.F.R. § 20.19(c)(2)(i)(A).

⁴⁸ See *Dual-Band GSM Waiver Order*, 20 FCC Rcd 15115 ¶ 17.

⁴⁹ Copies of the motions for leave to withdraw are available in WT Docket No. 01-309.

⁵⁰ Copies of petitions for waiver are available in WT Docket No. 01-309. We note that, since the filing of their waiver petitions, many of the petitioners have notified the Commission that they have come into compliance with the Commission's hearing aid compatibility requirements for inductive coupling.

⁵¹ 47 C.F.R. § 20.19(d)(2). HLAA and Telecommunications for the Deaf and Hard of Hearing Inc. jointly have opposed these petitions for waiver, arguing, among other things, they are not in the public interest or, in the alternative, that, if the Commission determines that some of the petitions have merit, it should restrict any relief granted to a limited period of time. See Consolidated Opposition of Telecommunications for the Deaf and Hard of Hearing Inc. and Hearing Loss Association of America to Requests for Waiver of Commission Rule 20.19(d)(2), filed on November 6, 2006 in WT Docket 01-309, and HLAA Reply Comments at 6.

⁵² See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16782-83 ¶ 74.

to otherwise modify the [hearing aid compatibility] requirements.”⁵³ The rules adopted in the *Hearing Aid Compatibility Order* became effective on November 17, 2003.⁵⁴

16. On November 8, 2006, the Bureau released a public notice seeking comment on topics to be addressed in the hearing aid compatibility report to be prepared by Commission staff.⁵⁵ The public notice originally established that comments were due on December 15, 2006, and reply comments were due on January 5, 2007.⁵⁶ On December 5, 2006, the Alliance for Telecommunications Industry Solutions (ATIS), Hearing Loss Association of America, CTIA, Gallaudet University, Research in Motion, Nokia, Samsung Telecommunications America, and T-Mobile filed a motion for extension of time within which to submit comments and reply comments.⁵⁷ On December 12, 2006, the Bureau issued a public notice granting the motion and extending the comment submission deadline to January 12, 2007, and the reply comment submission deadline to January 31, 2007.⁵⁸ We received 20 comments⁵⁹ and 13 reply comments.⁶⁰

17. *Joint Consensus Plan.* On April 23, 2007, representatives from the Alliance for Telecommunications Industry Solutions (ATIS) Incubator Solutions Program 4 - Hearing Aid Compatibility⁶¹ and advocates for consumers with hearing loss met with Commission staff to explain preliminarily a consensus proposal to revise and update Section 20.19 of the Commission’s rules, including a proposed alternative to the Commission’s requirement that manufacturers and wireless service providers must ensure that at least fifty percent (50%) of their handset models meet an M3 or better rating by February 18, 2008.⁶² ATIS states that “through an open and impartial process,” its working group developed a comprehensive plan reflecting the joint input of the wireless industry and consumers with hearing loss (the “Joint Consensus Plan”).⁶³ The participants included many wireless service providers and equipment manufacturers, as well as the Alexander Graham Bell Association for the Deaf and Hard of Hearing (AG Bell), the Hearing Loss Association of America (HLAA), Gallaudet University Technology Access Program (TAP), and the Rehabilitation Engineering Research Center on

⁵³ *Id.*

⁵⁴ See Hearing Aid Compatible Telephones, 68 Fed. Reg. 54173, 54175 ¶ 17 (2003).

⁵⁵ Wireless Telecommunications Bureau Seeks Comments on Topics to be Addressed in Hearing Aid Compatibility Report, *Public Notice*, 21 FCC Rcd 13136 (WTB 2006) (*Staff Report Public Notice*).

⁵⁶ *Id.*

⁵⁷ In the Matter of Section 68.4(a) of the Commission’s Rules Governing Hearing Aid-Compatible Telephones, WT Docket 06-203, *Motion for Extension of Time*, filed on December 5, 2006 (extension motion).

⁵⁸ Wireless Telecommunications Bureau Grants Motion for Extension of Time to File Comments and Reply Comments on Topics to be Addressed in Hearing Aid Compatibility Report, *Public Notice*, 21 FCC Rcd 14399 (WTB 2006).

⁵⁹ We note that some of the 20 comments were joint comments filed by several parties.

⁶⁰ Parties filing comments and reply comments and the abbreviated references by which they are cited in this report are listed in the Appendix.

⁶¹ ATIS Hearing Aid Compatibility Working Group.

⁶² See *Ex Parte Presentation* filed by Thomas Goode, General Counsel, ATIS in WT Docket No. 06-203 (April 24, 2007).

⁶³ ATIS Supplemental Comments filed in WT Docket No. 06-203 (hereinafter referred to as the Joint Consensus Plan) at 3.

Telecommunications Access (RERC). On June 25, 2007, the ATIS Hearing Aid Compatibility Working Group filed Supplemental Comments that present in detail this comprehensive consensus proposal.⁶⁴

18. The Joint Consensus Plan incorporates several inter-related components that are designed to increase the availability of a variety of handset models with advanced features as well as more economical models to hard of hearing consumers, as well as to recognize the technological and economic constraints that sometimes limit production of marketable models that meet compatibility thresholds. These proposals include:

- providing Tier I carriers a numerical alternative to the current requirement to offer 50% of handset models per air interface meeting at least an M3 rating by February 18, 2008;
- increasing the number of T3-rated or better handset models that Tier I carriers must make available;
- changing to 33% the percentage of wireless handset models per air interface rated M3 or better that manufacturers must offer;
- increasing manufacturers' required offerings of handset models meeting at least a T3 rating;
- requiring manufacturers to include hearing aid compatibility in some of their new models each year ("product refresh" requirement) and in handset models with varying form factors;
- requiring Tier I carriers to offer acoustic coupling-compatible handset models from "multiple tiers" of functionality which industry will define;
- implementing a phase-in of the ASC C63.19-2007 technical standard for hearing aid compatibility; and
- requiring that manufacturers and carriers regularly report on the availability of compliant handset models.

The Joint Consensus Plan also requests swift action in light of the approaching February 2008 deadline.⁶⁵ We discuss the Joint Consensus Plan in more detail below.

III. DISCUSSION

A. Availability of Compatible Handsets

1. Impact of the Commission's Rules

19. Background. As discussed earlier, the Commission requires manufacturers and digital wireless service providers to report every six months on efforts toward compliance with the hearing aid compatibility requirements for the first three years of implementation, and then annually thereafter through the fifth year of implementation.⁶⁶ On or before November 17, 2006, manufacturers and wireless service providers filed their most recent compliance reports, detailing, among other things, the hearing aid-compatible handset models that they offered.⁶⁷ Bureau staff reviewed and verified (to the extent possible) the information in the November 2006 compliance reports in order to assess the impact of the Commission's hearing aid compatibility rules.

⁶⁴ Joint Consensus Plan at 1-5.

⁶⁵ *Id.* at 14-15.

⁶⁶ See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16787 ¶¶ 89-91; see also Wireless Telecommunications Bureau Announces Hearing Aid Compatibility Reporting Dates for Wireless Carriers and Handset Manufacturers, *Public Notice*, 19 FCC Rcd 4097 (WTB 2004).

⁶⁷ Copies of manufacturers' and wireless service providers' compliance reports are available in WT Docket No. 01-309.

20. Discussion. Meeting the worthy goal of compatibility between hearing aids and wireless devices in order to satisfy the critical needs of the deaf and hard of hearing community is complicated by several factors, including the technical electromagnetic and magnetic interactions of these two classes of devices, as well as consumer preferences and how those preferences affect acceptance of design choices.⁶⁸ At present, the population of the U.S. is comprised of approximately 300 million people.⁶⁹ Of those numbers, over 213 million individuals are wireless subscribers.⁷⁰ Americans have come to rely increasingly on mobile phones in their work and personal lives. According to HLAA, the number of individuals today in the U.S. with hearing loss is at an all time high of 31 million people -- with that number expected to reach approximately 40 million people at the end of this decade.⁷¹ As a consequence, there is an ever increasing need to afford those with hearing loss greater access to compatible wireless phones with the full complement of features and the benefit of the latest technological advances.

21. We briefly summarize a few of the findings gleaned from information collected in the November 2006 compliance reports before presenting a more detailed discussion of the data. As demonstrated by the data presented below, the Commission's rules have contributed to achieving greater compatibility between digital wireless telephones and hearing aids. According to the manufacturers' November 2006 status reports, the data reveals that 113 of their current handset models, or 52.1% of their available offerings, met at least an M3 rating for RF interference reduction. Similarly, the data shows that 49 out of 103 service providers that filed reports offered five or more handset models meeting this standard, and these providers offer service to, at least, 193.4 million wireless mobile service subscribers. Further, the data for inductive coupling demonstrates that 57 of the manufacturers' handset models, or 26.3%, met at least a T3 rating (and 14.3% met a T4 rating), and 11 service providers offered their subscribers at least five T3-rated or better handset models.

22. At the same time, the data reveals that there is a difference in the availability of hearing aid-compatible handset models by air interface. For example, as of November 2006, 89.8% of the manufacturers' CDMA production models met at least an M3 rating, but only 20.2% of the GSM handset models reached this threshold (with one meeting an M4 rating). Two out of 31 GSM filing carriers that were not subject to the *de minimis* exception offered five handset models with an M3 rating or better, and three with a T3 rating or better, while 18 out of 52 CDMA filing carriers that were not subject to the *de minimis* exception offered five handset models with an M3 rating or better, and three with a T3 rating or better. Information provided by ATIS in the record also supports the greater availability of compatible handset models over the CDMA air interface.⁷²

23. In the following sections, we review the most recent compliance reports filed to date, and summarize the data and our findings below.

a. Compatible Handset Models

24. There are a total of eight handset manufacturers that filed November 2006 compliance reports.⁷³ As of November 2006, all eight of the manufacturers were fully compliant with the

⁶⁸ ATIS Comments at 1.

⁶⁹ HLAA Comments at 19.

⁷⁰ See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, *Eleventh Report*, 21 FCC Rcd 10947, 10950-51 ¶ 5 (2006) (*Eleventh CMRS Competition Report*).

⁷¹ HLAA Comments at 19.

⁷² ATIS Comments at 15-29.

⁷³ The eight manufacturers are: Kyocera, LG Electronics, Motorola, Nokia, Research in Motion, Ltd., Samsung, Sanyo, and Sony Ericsson. We note that additional manufacturers, as well as wireless service providers, may have (continued....)

Commission's hearing aid compatibility requirements. The eight manufacturers offered a total of 217 handset models.

25. *Number of Handset Models Offered per Air Interface:* Of the total of 217 handset models offered by the eight manufacturers, the following summarizes the number of handset models available per air interface.

<i>CDMA:</i>	88 handset models
<i>GSM:</i>	99 handset models
<i>GSM/WCDMA:</i>	5 handset models
<i>iDEN:</i>	25 handset models

26. *Summary of Ratings of Handset Models per Air Interface:* The relevant M-ratings and T-ratings for handset models offered by the eight manufacturers are shown in the table below. As the table below illustrates, of the 217 handset models available, 113 of the handset models were rated M3 or better for RF interference. Additionally, of the 217 handset models available, 57 of the handset models were rated T3 or better for inductive coupling capability.

Handset Manufacturer Filings Only							
Air Interface	Total Handsets Offered by Manufacturers	M3	M4	%M3&M4	T3	T4	%T3&T4
CDMA	88	42	37	89.8%	4	29	37.5%
GSM	99	19	1	20.2%	12	0	12.1%
GSM/WCDMA	5	3	0	60.0%	2	0	40.0%
iDEN	25	9	2	44.0%	8	2	40.0%
Total	217	73	40	52.1%	26	31	26.3%

27. In addition to the 113 compatible handset models reported by the manufacturers that are rated M3 or better, there are 82 other handset models that were identified as meeting compatibility standards for either RF interference or inductive coupling in some of the wireless service providers' November 2006 compliance reports, but were not identified in the manufacturers' reports.⁷⁴ We attribute this discrepancy to the fact that some handset models have been discontinued by the manufacturers but are still sold and carried in inventory by some wireless service providers. Thus, some wireless service providers reported those discontinued handset models in their November 2006 compliance reports. The table below shows the breakdown by air interface with associated hearing aid compatibility ratings of all handset models reported by manufacturers and service providers as meeting compatibility thresholds in their respective compliance reports.⁷⁵

(Continued from previous page) _____

been required to file reports but failed to do so. Staff recommends that EB consider appropriate action against such parties.

⁷⁴ We note that certain other models in addition to those 82 were identified in some service providers' reports as compatible, but we have not been able to verify that they in fact meet compatibility standards based on the Commission's records and follow-up contacts with the service providers and manufacturers.

⁷⁵ This table does not include percentage figures because most service providers did not include information regarding their total number of handsets offered. Hence, we do not have sufficient information to derive a meaningful denominator.

Compatible Handset Models Filed by Manufacturers and Service Providers				
Air Interface	M3	M4	T3	T4
CDMA	94	54	7	37
GSM	29	1	15	0
GSM/WCDMA	3	0	2	0
iDEN	12	2	9	2
Total	138	57	33	39

b. Wireless Service Providers' Offerings

28. *State of Offerings by Wireless Service Provider:* One hundred and three wireless service providers filed compliance reports with the Commission in November 2006. Of these, 74 offered at least two handset models rated M3 or better for RF interference reduction as of November 2006, and 50 offered at least two models that met a T3 or better rating for inductive coupling capability.⁷⁶ Since November 2006, at least 19 additional service providers have filed information with the Commission in the hearing aid compatibility docket (WT 01-309) indicating that they now offer at least two T3 or better handset models, for a total of 69. Moreover, many of these wireless service providers offer a broad choice of hearing aid-compatible handset models, going beyond the minimum requirements of the Commission's rules. For example, as the table below illustrates, a total of 49 wireless service providers offered five or more handset models as of November 2006 that had achieved an M3 or M4 rating for RF interference.

Analysis of Service Providers Offering Compatible Handset Models	M3 & M4 Rating	T3 & T4 Rating
Number of Service Providers Offering Two Compatible Handset Models	16	28
Number of Service Providers Offering Three Compatible Handset Models	2	9
Number of Service Providers Offering Four Compatible Handset Models	7	2
Number of Service Providers Offering Five or More Compatible Handset Models	49	11

29. *State of Offerings per Tier:* Among the 103 wireless service providers that filed November 2006 compliance reports, there are four Tier I carriers,⁷⁷ seven Tier II carriers,⁷⁸ 88 Tier III carriers and four mobile virtual network operators (MVNOs).⁷⁹ The offerings of each of these classes of service providers break down as follows.

Tier I: As of November 2006, the four Tier I carriers offered their subscribers between five and 31 handset models meeting at least an M3 rating, and between three and 14 handset models meeting at least a T3 rating for their GSM, CDMA and iDEN phones.

Tier II: As of November 2006, six filing Tier II carriers offered their subscribers between two and 22 handset models meeting at least an M3 rating, and five carriers offered between two and 12 handset models meeting at least a T3 rating.

⁷⁶ Many of those service providers that did not offer at least two compatible models in each category are exempt from compliance under the *de minimis* exception, and others have pending requests for waiver of the Commission's rules. See ¶¶ 13-14 *supra*. Some service providers, however, appear neither to be exempt from the inductive coupling compatibility requirement nor to have requested waivers. We recommended that EB consider appropriate enforcement action against these service providers.

⁷⁷ Cingular Wireless (now AT&T), Sprint/Nextel, T-Mobile and Verizon Wireless.

⁷⁸ Tier II carriers that filed compliance reports include: Alltel, Centennial Communications, Dobson, Leap Wireless, Rural Cellular, SunCom Wireless, and US Cellular.

⁷⁹ The four MVNOs that filed compliance reports are: Disney Mobile, Hawaiian Telecom Services Co. (HTSC), Qwest, and Zefcom d/b/a Telispire PCS.

Two carriers had waiver requests pending and subsequently informed the Commission that they now offer two handset models meeting at least a T3 rating.

Tier III: As of November 2006, 56 filing Tier III carriers that were not subject to the *de minimis* exception offered their subscribers between two and 20 handset models meeting at least an M3 rating, and 34 of those filing Tier III carriers offered between two and nine handset models meeting at least a T3 rating.

MVNOs: As of November 2006, three out of the four filing MVNOs offered their subscribers two handset models meeting at least an M3 rating, and two handset models meeting at least a T3 rating. The remaining MVNO was exempt from the Commission's hearing aid compatibility requirements.

30. According to the *Eleventh CMRS Competition Report*, the top 25 mobile wireless service providers (by subscribers) had a total of over 202.3 million mobile subscribers as of December 2005.⁸⁰ Of these 25 providers, those that filed compliance reports in November 2006 were serving 199.1 million wireless subscribers.⁸¹ The following table shows that the great majority of these 199.1 million wireless subscribers, or 193.2 million wireless subscribers, had at least five M3-rated or better, and three T3-rated or better, choices of hearing aid-compatible handset models.

Analysis of Wireless Subscribers Served by the Top 25 Service Providers Having At Least Five M-Rated and Three T-Rated Choices of Compatible Handset Models			
	GSM	CDMA & iDEN	Total
Wireless Subscribers Served by the Top 25 Service Providers Having At Least Five M-Rated and Three T-Rated Choices of Compatible Handset Models	75,834,000	117,323,000	193,157,000
Total Wireless Subscribers Served by the Top 25 Service Providers that Filed Compliance Reports in November 2006	79,545,000	119,561,000	199,106,000
Percentage of Wireless Subscribers Served by the Top 25 Service Providers Having At Least Five M-Rated and Three T-Rated Choices of Compatible Handset Models	95.33%	98.13%	97.01%

31. *State of Offerings per Air Interface:* The majority of the wireless service providers operate using either a GSM or CDMA air interface. A few wireless service providers also reported using iDEN, WCDMA, or TDMA air interfaces. A summary of the status of compatible handset model offerings by air interface⁸² follows:

CDMA: As of November 2006, 53 CDMA service providers offered at least two M3-rated or better compatible handset models, and 37 of those offered at least two T3-rated or better compatible handset models. 18 of them offered at least five M3-rated or better compatible handset models, and three T3-rated or better compatible handset models.

GSM: As of November 2006, 18 GSM service providers offered at least two M3-rated or better compatible handset models, and ten of these offered at least two T3-rated or better compatible handset models. Two of them offered at least five M3-rated or better compatible handset models, and three T3-rated or better compatible handset models.

⁸⁰ See *Eleventh CMRS Competition Report*, 21 FCC Rcd 10947, 11039, Table 4 (2006). We note that the *Eleventh CMRS Competition Report* only reports estimated subscriber information for the top 25 mobile wireless service providers.

⁸¹ Wireless service providers covering about 3.2 million subscribers, or approximately 1.6% of the total subscribers, did not file compliance reports. Those wireless service providers that have been identified as not filing a November 2006 compliance report have been referred to EB for further investigation.

⁸² Operators with multiple air interfaces are counted multiple times. For example, if an operator has both GSM and CDMA networks, it is counted twice -- once as a GSM operator and separately as a CDMA operator.

iDEN: As of November 2006, the only two filing iDEN service providers offered at least five M3-rated or better compatible handset models, and three T3-rated or better compatible handset models.

WCDMA: As of November 2006, one filing WCDMA service provider offered three M3-rated or better compatible handset models, and two T3-rated or better compatible handset models.

TDMA: As of November 2006, there were three wireless service providers that were exempt from compliance under the *de minimis* exception.

Other: As of November 2006, there was one wireless service provider using an analog air interface that was not subject to the hearing aid compatibility rules, two wireless service providers using a PAS (personal access system) air interface that were exempt from compliance under the *de minimis* exception, and eight wireless service providers with unknown air interfaces that were also exempt from compliance under the *de minimis* exception.

c. Evaluation of Progress To Date

32. In general, many commenters believe that the Commission's hearing aid compatibility requirements have achieved meaningful success to date.⁸³ However, advocates for the deaf and hard of hearing community express some concerns about the state of compliance on a going forward basis and urge the Commission to adopt even more stringent requirements to further benefit the deaf and hard of hearing community.⁸⁴ From their perspective, ATIS and the wireless industry argue that some aspects of, and early assumptions underlying, the *Hearing Aid Compatibility Order* need to be revisited -- most notably, the technological feasibility of meeting RF interference and inductive coupling rating requirements for handset models that employ a GSM air interface.⁸⁵

33. Recommendation. The Bureau recommends that the Commission vigilantly monitor compliance with its hearing aid compatibility rules, and take appropriate enforcement action against parties that violate the rules. In addition, the Bureau recommends that the Commission continue to encourage the wireless industry to further its efforts towards achieving more complete compatibility between digital wireless telephones and hearing aids, including seeking input from all interested parties on ways to encourage and promote more complete compatibility with hearing aids.

2. Deployment Benchmarks and Related Requirements from 2008 to 2011

34. Background. As discussed above, the Commission's rules impose minimum hearing aid-compatible handset deployment benchmarks and other related requirements on manufacturers and wireless service providers, including a requirement that, by February 18, 2008, at least 50% of all digital wireless handset models offered by manufacturers or wireless service providers per air interface meet an M3 standard.⁸⁶ In the *Hearing Aid Compatibility Order*, the Commission stated that the staff report would "form the basis for the Commission to initiate a proceeding to evaluate: (1) whether to increase [or] decrease the 2008 requirement to provide 50 percent of phone models that comply with a U3 rating;

⁸³ See, e.g., ATIS Comments at 4, Cingular Comments at 5, and HLLA Comments at i.

⁸⁴ See, e.g., HAP Comments at 1, 4, HLLA Comments at 18-20 (stating that the FCC's hearing aid compatibility requirements set a low bar), NRVC Comments at 1-2, David Branfield Comments, and TAP Comments at 5-6 (urging the Commission to provide motivation for industry to achieve 100% hearing aid compatibility).

⁸⁵ See, e.g., ATIS Comments at 15-29 (including the extensively detailed discussion of the technological constraints facing the industry at 17-29), ATIS Reply Comments at 3-6, Sony Ericsson Comments at 2, T-Mobile Reply Comments at 3-5, Cingular Comments at 7-9, and ATT/Cingular Reply Comments at 4-5.

⁸⁶ 47 C.F.R. § 20.19(c).

(2) whether to adopt [hearing aid compatibility] implementation benchmarks beyond 2008; and (3) whether to otherwise modify the [hearing aid compatibility] requirements.”⁸⁷

35. Discussion. In their comments, some consumer groups advocate moving beyond the current criteria for handset compatibility, either by increasing the standard for compatibility from M3/T3 to M4/T4,⁸⁸ or by moving towards an ultimate goal of requiring 100% of wireless phones to be fully compatible with hearing aids.⁸⁹ They further express concern about low rates of compatibility for GSM handset models, and emphasize that the current requirements set a “low bar” that must not be “neglected or abandoned.”⁹⁰ HLAA urges the Commission to increase the requirements to offer handset models that are capable of inductive coupling, as future demand for such handsets will increase in the coming years.⁹¹ In contrast, industry commenters describe a series of technical challenges that they state make reaching or exceeding the upcoming benchmark problematic for GSM handset models.⁹² ATIS points out that handsets using a GSM air interface are more difficult to make compliant than handsets of the same design using a CDMA air interface, because, among other things, GSM signals by nature create more interference, and therefore the formulae used to calculate compliance ratings under the ANSI C63.19 technical standard are different for handset models using a GSM air interface versus those using a CDMA air interface.⁹³

36. ATIS asserts that, in order to meet the M3 rating requirements (much less the M4 rating requirements), certain limiting design choices have to be made for GSM handset models.⁹⁴ According to ATIS, some of these design choices negatively impact handset marketability.⁹⁵ Moreover, TAP notes that the trend towards new capabilities in mobile phones, including brighter, larger displays, can even further complicate compatibility issues.⁹⁶ If the upcoming 50% deployment benchmark is not changed, according to ATIS and the wireless industry, wireless service providers using a GSM air interface will

⁸⁷ See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16782-83 ¶ 74.

⁸⁸ HAP Comments at 1-2, HLAA Comments at 13.

⁸⁹ See, e.g., NVRC Comments at 1, HLAA Comments at 14, and HAP Comments at 4.

⁹⁰ See, e.g., HIA Comments at 2-3 (stating that the Commission should ask whether handset makers are “still committed” to the hearing aid compatibility regime, and why so many small wireless service providers have asked for waivers), HLAA Comments at 18, and TAP Comments at 3.

⁹¹ HLAA Comments at 14. HLAA notes that, in response to a recent survey of its membership, as much as 81% of its membership reported using telecoils in 2005, in contrast to 61% in 1994. *Id.* See also HIA Comments at 3 (stating that the Commission should continue to pursue inductive coupling capability), HLAA Comments at 13 (raising concerns that there are no additional benchmarks in place after the September 18, 2006 requirements for inductive coupling capability), and TAP Comments at 6-7 (stating that telecoil coupling remains the industry standard for wireless non-acoustic coupling to a hearing aid).

⁹² ATIS Comments at 15-29, ATIS Reply Comments at 3. We note that ATIS provides an exceptionally thorough and comprehensive report describing in great detail a variety of technological constraints impacting the wireless industry’s further progress towards compatibility with hearing aids, particularly with respect to GSM.

⁹³ See ATIS Comments at 15-19 (including charts at 15-17 of emissions from GSM and CDMA versions of same handset model); see also RIM Reply Comments at 6-7 and Cingular Comments at 3-4 (Cingular notes that, although it has “worked diligently with its handset manufacturer vendors [sic],” it has had to “overcome significant technology challenges” to achieve the current number of compatible handset models.)

⁹⁴ See, e.g., ATIS Comments at 21-29.

⁹⁵ *Id.* at 21-27.

⁹⁶ TAP Comments at 6.

have to keep large numbers of potentially highly marketable handset models out of the commercial market in favor of generally less desirable but compliant handset models.⁹⁷

37. *The Joint Consensus Plan.* On June 25, 2007, the ATIS Hearing Aid Compatibility Working Group filed supplemental comments that present a comprehensive proposal to modify the deployment benchmarks and other provisions in Section 20.19 of the Commission's rules.⁹⁸ The ATIS Hearing Aid Compatibility Working Group represents that the Joint Consensus Plan reflects the input of not only the wireless industry (wireless service providers and manufacturers) but also representatives from advocacy groups representing consumers with hearing loss, including the Alexander Graham Bell Association for the Deaf and Hard of Hearing, the Hearing Loss Association of America, Gallaudet University Technology Access Program, and the RERC on Telecommunications Access.⁹⁹ In the Joint Consensus Plan, the ATIS Hearing Aid Compatibility Working Group states that the proposals promote increased access to certain types of hearing aid-compatible devices.¹⁰⁰ For example, the ATIS Hearing Aid Compatibility Working Group states the proposals foster availability of inductive coupling-capable devices by imposing additional requirements on both carriers and manufacturers, and promote access to more advanced devices and newer technology for consumers with hearing loss by requiring manufacturers to routinely add new devices to their hearing aid-compatible lineups.¹⁰¹

38. The Joint Consensus Plan recommends that the Commission "adjust[] the minimum number of [hearing aid-compatible] devices for all consumers with hearing loss and impose[] additional requirements on both wireless service providers and manufacturers to make available certain types of [hearing aid-compatible] devices for consumers with more severe hearing loss."¹⁰² The Joint Consensus Plan also recommends a transition to the 2007 version of the ANSI C63.19 standard, and suggests future reporting requirements. Although it does not address recommended benchmarks for Tier II and Tier III carriers,¹⁰³ the Joint Consensus Plan specifically recommends changing the requirements for Tier I carriers as follows:

- reducing the requirement from offering at least 50% of handset models per air interface with M3/M4 compatibility to the lesser of either 50% of handset models offered or, at least, eight compatible handset models per air interface by 2008; nine compatible handset models per air interface by 2009; and ten compatible handset models per air interface by 2010,¹⁰⁴ and
- increasing the requirement for telecoil-compatible handset models from at least two models per air interface to the lesser of 33% of handset models or three models per

⁹⁷ ATIS Comments at 31. *See also* Cingular Comments at 4-5, Dobson Reply Comments at 1-4, IWS Reply Comments at 1-2, RIM Reply Comments at 5-9, Sony Comments at 2-3, and T-Mobile Reply Comments at 3-5. *See also* ATIS Ex Parte Supplemental Comments filed in this docket on February 26, 2007, describing technical challenges faced by wireless device manufacturers and wireless service providers in meeting the Commission's hearing aid compatibility requirements with respect to handsets employing an iDen air interface.

⁹⁸ Joint Consensus Plan (styled as ATIS Supplemental Comments) filed in WT Docket No. 06-203.

⁹⁹ *Id.* at 1-5.

¹⁰⁰ *Id.* at 5-6.

¹⁰¹ *Id.*

¹⁰² *Id.* at 1. The quotation refers to acoustic coupling and inductive coupling requirements respectively; inductive coupling is viewed as used by more profoundly hearing-impaired persons than acoustic coupling. *See, e.g., id.* at 5.

¹⁰³ *See* Attachment C at C-4.

¹⁰⁴ Joint Consensus Plan at 7. Under the Joint Consensus Plan, the deployment deadlines for both manufacturers and Tier I carriers fall on February 18 of each corresponding year.

air interface by 2008; five models per air interface by 2009; seven models per air interface by 2010; and ten models per air interface by 2011.¹⁰⁵

39. Under the Joint Consensus Plan, the requirements for manufacturers would change as well, as follows:

- from offering at least 50% of handset models per air interface with M3/M4 compatibility to 33% of models per air interface (except for manufacturers with *de minimis* portfolios);¹⁰⁶ and
- increasing the requirement for telecoil-compatible handset models from two per air interface to the greater of two handset models per air interface or 20% of models per air interface with T3/T4 capabilities by 2009; 25% of models per air interface with T3/T4 capabilities by 2010; and 33% of models per air interface with T3/T4 capabilities by 2011 for manufacturers who offer more than four models total per air interface.¹⁰⁷

40. The Joint Consensus Plan also recommends the following additional modifications to the Commission's requirements relating to the manufacture and offering of hearing aid-compatible handset models:

- Require manufacturers to include acoustic coupling compatibility in some of their new models each year, enough so that, for manufacturers offering four or more handsets, half of the minimum required number of M3 or better handset models must be current-year models (referred to as the "refresh" rules in the accompanying chart).¹⁰⁸
- Require Tier I carriers to offer acoustic coupling-compatible handset models from "multiple tiers" of functionality, which industry will define.¹⁰⁹
- Retain the *de minimis* exception and clarify that it applies on a per-air-interface basis.¹¹⁰
- Implement a phase-in of the ANSI C63.19-2007 technical standard for hearing aid compatibility testing and certification purposes. In this regard, the Joint Consensus Plan suggests that the Commission allow use of the 2007 technical standard on a permissive basis immediately and make adherence to the 2007 technical standard mandatory by 2010. However, during the interim period, the Joint Consensus Plan provides a limitation that only one new handset model per air interface manufactured during 2009 and rated under the 2006 version of the technical standard may be counted toward a manufacturer's inductive coupling compatibility requirements. The Joint Consensus Plan also recommends that handset models rated under a pre-2007 version of the technical standard before 2010 will be grandfathered as meeting the requirements.¹¹¹

¹⁰⁵ *Id.* at 7.

¹⁰⁶ *Id.* at 8.

¹⁰⁷ *Id.* at 8-9.

¹⁰⁸ *Id.* at 9.

¹⁰⁹ *Id.* at 7.

¹¹⁰ *Id.* at 10.

¹¹¹ *Id.* at 13.

41. The following table of the Joint Consensus Plan summarizes many of the new recommended requirements for Tier I carriers and manufacturers that are not subject to the *de minimis* exception.¹¹²

Comparison of Current HAC Mandate versus Industry-Consumer Consensus Proposal

	HAC ORDER - M REQUIREMENTS		ATIS AISP.4 PROPOSED - M REQUIREMENTS			
	Current	2008 and following	2008	2009	2010	2011
Tier 1 Carriers	5 or 25%	50%	8 or 50%	9 or 50%	10 or 50%	10 or 50%
NON de minimis Manufacturers	2	50%	33%	33%	33%	33%

	HAC ORDER - T REQUIREMENTS		ATIS AISP.4 PROPOSED - T REQUIREMENTS			
	Current	2008 and following	2008	2009	2010	2011
Tier 1 Carriers	2	2	3 or 33%	5 or 33%	7 or 33%	10 or 33%
NON de minimis Manufacturers	2	2	2	20%	25%	33%

	REFRESH REQUIREMENTS	
	HAC ORDER	ATIS AISP.4 PROPOSED
Tier 1 Carriers	None	Support mfrs 1/2 rounded up
Non de minimis Manufacturers	None	1/2 rounded up

42. *Other Wireless Service Providers.* As discussed above, the Joint Consensus Plan makes no recommendations with respect to deployment obligations for Tier II and Tier III carriers. On this issue, Blooston and Dobson note the number of waivers requested by Tier III carriers of the September 2005 RF interference reduction requirement to offer at least two M3-rated handset models, as well as the more recent waiver requests seeking relief from the September 2006 requirement to offer at least two inductive coupling-capable models.¹¹³ Noting that they have no control over technology issues and tend to get new handset models much later and in much smaller numbers than do larger wireless service providers, the rural Tier III carriers represented by Blooston urge that some relief be granted specifically for small, rural wireless service providers that would provide some “additional time beyond the deadlines set for larger carriers” to secure adequate supplies of compatible handset models.¹¹⁴ Similarly, Dobson Communications, a Tier II carrier, notes that Tier II and Tier III carriers “lack the purchasing power to dictate the development of [hearing aid-compatible] handsets by manufacturers,” and argues that the problems that Tier I carriers experience in obtaining sufficient compatible handset models are “magnified for smaller carriers.”¹¹⁵ In this regard, IWS states that “[i]f there are a limited number of [hearing aid-compatible] compliant handsets available, it is unlikely they will be made available to Tier III carriers in a sufficient number to meet the Commission’s deadline.”¹¹⁶ For these reasons, Dobson suggests a

¹¹² See *id.* at Attachment B.

¹¹³ Blooston Reply Comments at 3 and Dobson Reply Comments at 13.

¹¹⁴ Blooston Reply Comments at 3. See also IWS Reply Comments at 2-3 (stating that the 50% requirement will have disproportionate adverse effects on smaller GSM wireless service providers and extremely disadvantage them competitively because it is not economically feasible for small wireless service providers to have available a large inventory selection of handset models).

¹¹⁵ Dobson Reply Comments at 4.

¹¹⁶ IWS Reply Comments at 2.

staggered deadline, so that carriers have six months beyond the manufacturers' deadline "to allow sufficient time for carriers to test, obtain, and stock handsets in their stores."¹¹⁷

43. Recommendation. In light of the extensive negotiations between the wireless industry and advocacy groups for the deaf and hard of hearing culminating in the Joint Consensus Plan, the Bureau recommends that the Commission solicit comment from all interested parties on the proposed modifications to the Commission's future hearing aid compatibility requirements as proposed therein. Additionally, the Bureau recommends that the Commission seek input as to any appropriate modifications to the Commission's future hearing aid compatibility requirements for wireless service providers that are not Tier I carriers, including whether the Commission should stagger deployment benchmarks to allow additional time for such wireless service providers to obtain, test and market new compliant handset models.

44. In connection with this recommendation, we also recommend that the Commission clarify several matters related to the hearing aid compatibility benchmarks. First, as suggested in the Joint Consensus Plan, we recommend that the Commission codify in its rules that the *de minimis* exception applies on a per-air interface basis.¹¹⁸ Second, again consistent with the Joint Consensus Plan, we recommend specifying that, in order to be counted as satisfying the hearing aid compatibility requirements, handsets that have multiple air interfaces must meet the hearing aid compatibility requirements for all air interfaces over which they operate on U.S. frequency bands.¹¹⁹ Finally, we recommend clarifying that devices marketed by a manufacturer as distinct devices generally are counted as different handset models for purposes of the hearing aid compatibility rules. However, handset models that have no distinguishing variations of form, features, or user capabilities, or that only differentiate units sold to a particular service provider, should be counted as a single handset model for purposes of the hearing aid compatibility rules.

B. Consumer Information and In-store Testing

45. Background. Under the Commission's rules, compatible wireless handsets are required to be labeled.¹²⁰ Wireless handsets are required to have the immunity rating clearly displayed on the packaging material of the handset, and an explanation of the ANSI standard immunity rating system is required to be included in the owner's manual or as an insert in the packaging material.¹²¹ In order to ensure that the immunity rating information is conveyed to deaf and hard of hearing consumers, the Commission further requires wireless service providers to make the immunity rating available, by either: displaying it on the handset's box, providing separate literature describing which handset models the provider offers that are compatible, posting information on their Internet site, or any other means the wireless service provider determines is sufficient.¹²² In recognizing that wireless service providers offer their products and services through a variety of channels, including the Internet, kiosks in shopping malls, agents, and stand-alone stores, the Commission affords them flexibility in choosing how to adequately inform deaf and hard of hearing consumers about their choices.¹²³ The Commission noted that it would revisit its decision to provide such flexibility if it received a large volume of complaints concerning the inability of consumers

¹¹⁷ Dobson Communications Reply Comments at 4.

¹¹⁸ See Joint Consensus Plan at 10. As noted above, the Commission has previously clarified that the *de minimis* exception applies per air interface. See *supra* n. 25.

¹¹⁹ *Id.*

¹²⁰ 47 C.F.R. § 20.19(f).

¹²¹ *Id.*

¹²² *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16786 ¶ 87.

¹²³ *Id.*

to find the information its rules require to be conveyed.¹²⁴ Additionally, the Commission encourages wireless service providers to train their personnel and agents so that they can assist consumers who may have questions concerning handset models that are hearing aid-compatible.¹²⁵ Finally, retail outlets owned or operated by wireless service providers are required to make hearing aid-compatible phones available for live, in-store testing by customers.¹²⁶

46. Discussion. The record confirms that the Commission's rules have fostered improvement in the availability of information for deaf and hard of hearing consumers. For example, in addressing the impact of the Commission's rules to date, TAP states that one key impact has been to help hearing aid wearers identify a number of digital wireless handsets that are "less likely than others to result in bothersome interference in their hearing aids."¹²⁷ Further, TAP points out that, prior to the Commission's hearing aid compatibility requirements, consumers had no way to find compatible digital wireless handsets among the growing selection of handset models available from each digital wireless service provider.¹²⁸ Today, in large part due to the Commission's labeling, in-store demonstration, and related requirements, hearing aid users seeking to purchase a wireless phone have a logical starting point for their search, and can try out a number of handset devices in wireless service providers' retail stores before making their selection.¹²⁹

47. Nonetheless, the availability of information regarding hearing aid-compatible handsets still suffers from serious shortcomings. Significantly, there is no single location or website where hearing aid wearers may find comprehensive information about hearing aid-compatible handset models offered by manufacturers and service providers with the corresponding ratings, nor is there a single database in which hearing aid compatibility information for particular handset models is readily accessible. Although OET's equipment authorization database has information about hearing aid compatibility ratings associated with manufacturers' equipment,¹³⁰ this database was not designed in a manner to make hearing aid compatibility information readily accessible either to consumers or to service providers. In particular, the database maintains such information based upon FCC IDs, not handset model numbers,¹³¹ and it is difficult to search for useful information about compliant handset models based solely upon the name of the manufacturer. Moreover, the database may retrieve several records associated with one FCC ID, so the current rating for hearing aid compatibility may not always be clear to a consumer or service provider conducting a routine search of the database -- particularly one not familiar with the equipment certification and application process. Furthermore, because manufacturers are permitted to make some changes to equipment without re-applying for authorization and certification of the equipment,¹³² there may be instances that would be difficult to track where, due to a permissive change for the purpose of

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ 47 C.F.R. § 20.19(c) - (d); *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16780 ¶ 65. *See also Hearing Aid Compatibility Reconsideration Order*, 20 FCC Rcd at 11239 ¶ 39 (affirming the requirements for labeling and in-store consumer testing of digital wireless handsets).

¹²⁷ TAP Comments at 3.

¹²⁸ *Id.*

¹²⁹ *Id.*

¹³⁰ Under the Commission's rules, manufacturers certify compliance with the Commission's hearing aid compatibility requirements as part of the equipment authorization process. *See* 47 C.F.R. § 2.1033(d).

¹³¹ We note that the Commission's Part 2 rules do not require manufacturers to submit information on handset model numbers. *See, e.g.*, 47 C.F.R. § 2.924.

¹³² These changes are known as "permissive changes." For each FCC ID, the database record contains all the permissive changes permitted under Part 2 of the Commission's rules. *See* 47 C.F.R. § 2.1043(b).

equipment certification, a hearing aid compatibility rating has changed for a manufacturer's handset model.

48. Other sources of information regarding hearing aid-compatible handset models are also limited. For example, the Disability Rights Office (DRO) of the Consumer and Government Affairs Bureau (CGB) maintains a website that explains the rules requiring telecommunications equipment manufacturers and service providers to make their products and services accessible to people with disabilities pursuant to 47 U.S.C. Section 255, if readily achievable,¹³³ and posts Section 255 contact information for wireless manufacturers and service providers on that website, which is updated annually.¹³⁴ However, we note that the Commission's rules do not require that the Commission obtain and make publicly available information regarding a corporate contact person for hearing aid compatibility information or the hearing aid compatibility of particular handset models.¹³⁵ CTIA also has established a website that includes general information for hearing aid users who would like to purchase a digital wireless phone, including detailed answers to frequently asked questions.¹³⁶ Although this website does include links to some wireless service providers' accessibility websites, it does not currently extend beyond the four Tier I carriers.¹³⁷ Some individual manufacturers and service providers also post hearing aid compatibility information on their websites, but the information is not consistent or uniform among these websites, and it is therefore of limited value for comparing compatible handset models.¹³⁸ In this regard, we note that the Joint Consensus Plan recommends that manufacturers voluntarily place hearing aid compatibility ratings of all handset models on their websites.¹³⁹

49. On another related matter, some of the information in the compliance reports filed with the Commission may not be as complete or as helpful as possible. For example, TAP raises concerns that the

¹³³ See <<http://www.fcc.gov/cgb/dro/>> (visited July 8, 2007).

¹³⁴ See <http://www.fcc.gov/cgb/dro/section255_manu.html> (visited July 8, 2007) and <http://www.fcc.gov/cgb/dro/service_providers.html> (visited July 8, 2007) respectively.

¹³⁵ Manufacturers subject to Section 255 are required to file with the FCC the name and contact information of their designated agent for receiving complaints. A consumer wishing to file a Section 255 complaint can locate the name and designated agent's contact information from the FCC website. See 2006 Biennial Regulatory Review, *Consumer & Governmental Affairs Bureau Staff Report*, CG Docket No. 06-152, 22 FCC Rcd 2965, 3000, n. 61 (CGB 2007) (2006 CGB Biennial Review Report). We note that the Commission extended its Part 68, Subpart E rules to allow consumers to file informal complaints under those rules if they find that wireless service providers or manufacturers of wireless equipment are not complying with its hearing aid compatibility rules. See *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16789 ¶ 95. In this regard, comments in the 2006 CGB Biennial Review Report proceeding were received from the American Association of People with Disabilities (AAPD), stating that rules covering complaints for hearing aid compatibility were not consumer friendly. AAPD asserted that the requirement that consumers identify the manufacturer (against whom they seek to file a complaint) by contacting the Administrative Council for Terminal Attachment [as required under Section 68.418(b)] is a barrier to consumers filing hearing aid compatibility complaints. AAPD suggested that the hearing aid compatibility process should be more similar to the process for determining the designated agent for filing Section 255 complaints. AAPD suggested that the Commission require the same procedures as those applicable to Section 255 complaints to be followed by manufacturers subject to the Commission's hearing aid compatibility rules and complaint procedures, and to have the Commission publish hearing aid compatibility designated agents' contact information on the DRO website. See AAPD Comments in CG Docket No. 06-152 (filed Sept. 16, 2006).

¹³⁶ See CTIA's access wireless website at: <<http://www.accesswireless.org/>> (visited July 8, 2007). For frequently asked questions and answers, see: <<http://www.accesswireless.org/hearingaid/faq.cfm>> (visited July 8, 2007).

¹³⁷ For links to some wireless service providers' accessibility websites, see: <<http://www.accesswireless.org/accessibility/sites.cfm>> (visited July 8, 2007).

¹³⁸ See HLAA Comments at 9, 11.

¹³⁹ Joint Consensus Plan at 14.

Commission may not be receiving the most adequate or specific information for it to evaluate whether sufficient effort has been made by the wireless industry to achieve technical solutions over the three and one half years since the hearing aid compatibility rules were adopted.¹⁴⁰ Moreover, TAP believes that, for the Commission to fully evaluate the effects of the rule to date, more information is needed from both the wireless industry and hearing aid manufacturers.¹⁴¹ Furthermore, Commission staff encountered difficulties when verifying the ratings for certain handset models identified in compliance reports because many of the compliance reports referenced the handset manufacturer and model number but did not include the associated FCC ID.¹⁴² In this regard, the Joint Consensus Plan includes some recommended measures to promote more efficient reporting. These recommendations include requiring wireless service providers and manufacturers to continue to report regularly to the Commission on the status of their compliance with the new proposed benchmarks.¹⁴³ Specifically, the Joint Consensus Plan recommends that these reports include, among other things: FCC ID numbers of compliant models, information on the features of compliant models, and information on labeling and consumer outreach efforts. Under the Joint Consensus Plan's recommendation, wireless service providers would report in May of each year, and manufacturers in November of each year. The proposed schedule in the Joint Consensus Plan's recommendation provides that Tier I carriers would file their first reports in May 2008, and Tier II and III carriers thereafter in May 2009.

50. The record further indicates that the labeling on wireless handsets, and retailers' in-store practices, have not always provided consumers with complete and accurate information. Several commenters discuss the lack of information available to assist the deaf and hard of hearing consumer and describe how this hampers the consumer's attempts to make an informed choice about which digital wireless handset would best meet their needs.¹⁴⁴ Specifically, the record includes consumer concerns about, or experiences with, poorly or inaccurately labeled phones,¹⁴⁵ poorly designed placards,¹⁴⁶ untrained store personnel,¹⁴⁷ and lack of in-store testing.¹⁴⁸ In particular, commenters who address in-store testing report widely varying experiences. Both consumer groups and individuals report that some stores allow testing, and others do not.¹⁴⁹

¹⁴⁰ TAP Reply Comments at 4.

¹⁴¹ *Id.* at 9.

¹⁴² As discussed earlier, the Commission tracks equipment authorizations and certifications in its equipment authorization database by FCC ID, rather than by model name. Indeed, manufacturers may produce more than one handset model based on a single FCC ID without informing the Commission. Accordingly, in order to check the equipment authorization database records to determine whether a particular handset model meets hearing aid compatibility certification requirements, it is generally necessary to know the FCC ID associated with the handset. To assist the Commission staff in reviewing the compliance reports, several supplements were filed at staff's request, providing the FCC ID associated with the handset models offered.

¹⁴³ Joint Consensus Plan at 11-12.

¹⁴⁴ *See, e.g.*, David G. Hoffman Comments at 2, Dana Simon Comments, HAP Comments at 3-4.

¹⁴⁵ HLAA Comments at 9-10, David G. Hoffman Comments at 2.

¹⁴⁶ HAP Comments at 3, Exhibit B (which includes an example of a placard describing a wireless device that lists the immunity ratings in tiny type in the lower portion of the placard as opposed to including such information as a feature).

¹⁴⁷ David G. Hoffman Comments at 2, HAP Comments at 4, HLAA Comments at 11.

¹⁴⁸ Dana Simon Comments, HLAA Comments at 7-8.

¹⁴⁹ *See, e.g.*, HLAA Comments at 7-8, Joseph Gordon Comments, Dana Simon Comments, and Deanne Deurell Comments. It is unclear to what extent these comments address retail outlets owned or operated by service providers that are subject to the in-store demonstration requirement, as opposed to independent retailers that are not.

51. In addition to the website and reporting recommendations in the Joint Consensus Plan noted above, commenters suggest several possible measures to improve the availability of information to consumers. For example, in order to facilitate the consumer's testing and information-gathering process, HLAA requests that wireless service providers allow deaf and hard of hearing consumers to make specific appointments with retail personnel so that sufficient time is allotted to assist such individuals.¹⁵⁰ HLAA also urges the Commission to remind wireless service providers of their obligation to facilitate in-store testing so that consumers can quickly identify how a phone works for them, and further requests that the Commission enforce the in-store testing requirement for all hearing aid-compatible phones.¹⁵¹ One commenter requests that there be more accountability on carriers to inform potential customers who are interested in buying a wireless phone.¹⁵² Furthermore, as permitted in the recent revision of the ANSI C63.19 standard in 2007, both industry and consumer groups support allowing wireless handsets to be labeled with different RF interference reduction and inductive coupling capability ratings as a measure that could increase the utility of labeling, and provide consumers with more complete information regarding the quality of interoperability between the wireless handset and a hearing aid.¹⁵³

52. Recommendation. The Bureau recommends several measures that the Commission should consider taking to improve the accessibility of hearing aid compatibility information to consumers and service providers. First, we recommend that the Commission seek comment on the reporting recommendations in the Joint Consensus Plan, including the proposed content of reports and the reporting schedule. While these periodic reports would not provide continuous updates and would not in themselves provide readily accessible information to consumers, accurate and informative reports are important to the information process.

53. At the same time, Commission staff should work proactively to improve the transparency of real-time information both to service providers and to consumers. It is important to have a central source from which interested parties easily can either find out the compatibility rating of a particular handset model or obtain a listing of handset models that meet their requirements. To accomplish this, Commission staff should explore measures that might make the equipment authorization database more accessible for this purpose, such as adding a relevant search function. The Commission should also consider seeking comment on whether to require manufacturers to inform staff of the handset models associated with each FCC ID, and to require them to update this information when they introduce new models. Furthermore, the Bureau recommends that the Commission seek comment on whether it should adopt new Part 2 rules on permissive changes such that a filing is required that includes trade names and model numbers. In addition, the Bureau will work with CGB to explore means to include hearing aid compatibility contacts and other information in order to expand the utility of and subject matter on the DRO's existing website. For example, CGB currently maintains a website that provides links to manufacturers' websites for information regarding the cellular telephone specific absorption rates (SAR) of the handset models for RF emissions exposure.¹⁵⁴ Commission staff will consider whether a similar

¹⁵⁰ HLAA Comments at 12.

¹⁵¹ *Id.* at 8.

¹⁵² Mark Foster Comments.

¹⁵³ *See, e.g.*, Cingular Comments at 6, HLAA Comments at 10, ATIS Reply Comments at 6, and TAP Reply Comments at 8.

¹⁵⁴ SAR is the measure of the amount of RF energy absorbed by the body when using a mobile phone. The Commission worked closely with federal health and safety agencies, such as the Food and Drug Administration (FDA), to adopt limits for safe exposure to RF energy. CGB maintains a website that provides links to individual manufacturers' websites with SAR information. *See* <<http://www.fcc.gov/cgb/sar/>> (visited on September 11, 2007).

website is feasible for hearing aid compatibility information, and if so, the Bureau will work closely with CGB to implement it as quickly as possible.

54. In addition to improving the information that is available from the Commission, we also recommend that the Commission seek comment on ways to improve the availability of information directly from manufacturers and service providers. As noted above, the Joint Consensus Plan proposes that manufacturers voluntarily post hearing aid compatibility ratings of all their handset models on their websites. We recommend that the Commission seek comment on this recommendation, including on whether such postings should be mandatory. We note that complete and accurate manufacturer postings are critical to the utility of any CGB website providing links to the manufacturers' sites, as suggested above.

55. Finally, we recommend that the Commission seek comment on other ways to improve the availability and accessibility of consumer information regarding hearing aid-compatible handsets. As discussed below in the section on "Open Platform" Networks, this would include seeking further comment on expanding in-store testing requirements beyond retail outlets owned or operated by service providers.

C. Developments Since the *Hearing Aid Compatibility Order*

56. In its 2003 *Hearing Aid Compatibility Order*, the Commission committed to examine the development of new technologies that could provide greater or more efficient accessibility of wireless communications to hearing aid users.¹⁵⁵ In this section, the Bureau first examines the development of new wireless technologies, as well as modification of existing technologies, that are designed specifically to facilitate superior communication experiences for deaf and hard of hearing users. We then discuss emerging hearing aid compatibility regulatory issues that are raised by technological developments and by other changes in the Commission's rules.

1. Technological Developments Affecting the Hard of Hearing

57. Background. Digital wireless telecommunications provide convenience and efficiency for the hearing population, but for the deaf and hard of hearing, they open a new way of life. Today, modern text and wireless video communication technology fills a void by providing much needed mobility and freedom for the deaf and hard of hearing community.

58. Recent and developing digital wireless technology promises to increase the availability of communication networks to the entire deaf and hard of hearing population. Development of new technologies continues to significantly impact the deaf and hard of hearing community -- affording them access to critical tools which enable them to access and utilize wireless communications to a greater and greater extent. As TAP observes, many hearing aid users regularly supplement their voice communications with existing wireless visual communication technologies, such as wireless e-mail, instant messaging and short messaging.¹⁵⁶

59. In the following sections, the Bureau briefly summarizes existing technology that has been modified or enhanced in order to promote wireless communication by the hard of hearing community, as well as some new and evolving technologies developed expressly for the hard of hearing.

a. Enhancements to Existing Technology

60. *Text Messaging*. Wireless service providers and manufacturers have recognized the unique appeal of text messaging to the deaf and hard of hearing community. Text messaging allows the deaf to

¹⁵⁵ *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16782 ¶ 74.

¹⁵⁶ See TAP Comments at 6-7.

communicate when in transit or otherwise away from a fixed text telephone (TTY) system.¹⁵⁷ Aside from the mobility advantages, text messaging also allows for private communication within the presence of other deaf people. For these reasons, the deaf and hard of hearing have embraced text messaging as an instant and direct form of communication accessible to them and any potential contacts.¹⁵⁸

61. The record demonstrates that service providers recognize the importance of continuing to increase access to wireless telecommunications for the deaf and hard of hearing by enhancing text messaging. T-Mobile, while acknowledging that its feature-rich smart phone is not hearing aid-compatible, notes the popularity of the smart phone among deaf and hard of hearing persons due to its texting functionality.¹⁵⁹ Cingular (now AT&T)¹⁶⁰ states it has developed the Text Accessibility Plan, with input from the deaf and hard of hearing community, which is designed to provide more focused text service offerings that may be useful for persons with hearing loss and speech difficulties.¹⁶¹

62. Other reports confirm the continuing development of advances in text messaging that benefit the deaf and hard of hearing. For instance, a specialty provider offers phones equipped with text-facilitating QWERTY keypads, such as the Blackberry and Danger Sidekick (sold by T-Mobile) preloaded with deaf-friendly instant messaging and relay software.¹⁶² More recently, Text4Deaf.Com, a communications-based website serving the deaf community and those with whom they interact, announced it has launched a website that will enable real-time text messaging with a web interface to wireless phones.¹⁶³ As the service is described, Text4Deaf allows users to send and receive messages to individuals or groups while enabling recipients to respond directly to the originating personal computer (PC), Apple computer (Macintosh or Mac), Personal Digital Assistant (PDA), or mobile phone.¹⁶⁴ This

¹⁵⁷ See Peter Svensson, *Pagers Become Lifeline for the Deaf*, Nov. 21, 2003, <<http://www.cbsnews.com/stories/2003/11/21/tech/main584868.shtml>>. See Anders Rask, *Mobile Phones Enable Deaf Community*, Dec. 16, 2002, <<http://www.ericsson.com/telecomreport/article.asp?aid=49&tid=247&ma=1&msa=3>>. TTY devices provide access to telecommunications relay services which connect the deaf to voice telephone users through an intermediary communications assistant. The communications assistant receives typed messages from the deaf caller's TTY and then verbally relays the message to the voice telephone user designated by the caller and vice versa. See <<http://www.fcc.gov/cgb/consumerfacts/ttywireless.html>> (visited October 2, 2007).

¹⁵⁸ See Transcript of CTIA Accessibility Workshop ("*CTIA Transcript*") held on April 5, 2006 at 24-25, <http://www.accesswireless.org/04052006WorkshopTranscript.txt>. See also TAP Comments at 6-7 (observing that many hearing aid users supplement their voice communications with wireless visual communication technologies, such as wireless e-mail, instant messaging and short messaging.)

¹⁵⁹ See T-Mobile Reply Comments at 2 n.3.

¹⁶⁰ Throughout this report, we refer to this entity as Cingular. We note, however, that after Cingular filed its initial comments in this docket, the Commission approved the application of BellSouth and AT&T to transfer to AT&T control of licenses and authorizations held directly and indirectly by BellSouth, as well as control of Cingular and its various subsidiaries and affiliates. See AT&T Inc. and BellSouth Corporation Application for Transfer of Control, WC Docket No. 06-74, *Memorandum Opinion and Order*, 22 FCC Rcd 5662 (2007) (approving applications, subject to certain conditions, on December 29, 2006). Following AT&T's merger with BellSouth in December 2006, Cingular Wireless is now solely owned by AT&T and no longer uses the Cingular name. <<http://www.wireless.att.com/about/cingular-history.jsp>> (visited September 25, 2007).

¹⁶¹ Cingular Comments at 9-10.

¹⁶² GoAmerica Device Selection, <http://www.goamerica.com/company/index.php> (visited June 26, 2007).

¹⁶³ "Text4Deaf Launches Text Messaging Site for Deaf Community," *The Hearing Review*, July 5, 2007. See also <http://app.text4deaf.com/> (visited July 18, 2007).

¹⁶⁴ *Id.*

existing technology, as enhanced, has transformed wireless communications for the deaf and hard of hearing.

63. *Mobile Internet.* Digital wireless telecommunications expand the deaf and hard of hearing community's access to services and information by enabling mobile Internet connections. Text and relay technology have improved individual communication for the deaf and hard of hearing community but the role of wireless technology reaches beyond personal communication. Mobile web connections allow deaf and hard of hearing customers to access real-time news reports and stay informed about their environments.¹⁶⁵ For example, deaf persons in New York reported that their mobile multimedia access helped them understand and react appropriately during the September 11 attacks.¹⁶⁶ Some fortunate deaf persons have used mobile web connections to e-mail 911 emergency services when they could not access TTY services.¹⁶⁷ Day-to-day life is also improved as deaf and hard-of-hearing persons enjoy conveniences usually reserved for hearing persons, such as ordering pizza for delivery while still in transit.¹⁶⁸ The development and improvement of mobile Internet services and devices will continue to bridge the gap between the deaf and hard of hearing community and mainstream society.

64. *Relay and TTY Services.* Wireless technology has also expanded relay services. Many relay service providers offer video relay service (VRS) and Internet Protocol (IP) relay. Both VRS and IP relay use the Internet instead of telephone networks. IP Relay functions like a TTY-based call except that the Internet functionality allows the deaf or hard of hearing caller to use a web-enabled mobile device instead of a TTY. VRS allows the deaf or hard of hearing caller to communicate in American Sign Language (ASL), in some cases a much faster and more natural form of communication for the deaf and hard of hearing than written English. The deaf and hard of hearing community highly values video communication because text messages, while convenient for simple messages, can restrict the emotional complexity and efficiency of conversations.¹⁶⁹ In contrast to text messages, ASL places a full range of expression at their disposal.¹⁷⁰ Unfortunately, current mobile networks lack the bandwidth required for video of sufficient clarity such that the viewer can perceive the fluid movements of sign language.¹⁷¹ However, as discussed below, researchers are currently developing technologies to incorporate video communication into the wireless world.

65. *Volume Control.* Advances in computer technology are leading to improved sound quality in hearing aids, and hearing aids are becoming more complex as a consequence.¹⁷² Many hearing aids now have an "integrated signal processing" feature.¹⁷³ This feature replaces the former volume control feature in many hearing aids.¹⁷⁴ In contrast to hearing aids, wireless handsets typically do not include volume

¹⁶⁵ See Svensson, *supra* n. 157.

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ See *CTIA Transcript* at 25.

¹⁶⁹ Shefali Anand, *Sign of the Times: Video, Email are Boons to the Deaf*, THE WALL STREET JOURNAL ONLINE, June 9, 2007, http://online.wsj.com/article_email/SB118134342938629622-1MyQjAxMDE3ODIxMTMyNDEzWj.html, see *CTIA Transcript* at 25.

¹⁷⁰ *Id.*

¹⁷¹ Deaf to Sign via Video Handsets, <http://news.bbc.co.uk/2/hi/technology/6366177.stm> ("Deaf to Sign").

¹⁷² Laura Johannes, *The Sleek, Chic, High Tech Hearing Aid*, The Wall Street Journal, August 28, 2007 (*Johannes Wall Street Journal article*).

¹⁷³ *Id.*

¹⁷⁴ *Id.*

control features. Some individuals express concern in the record regarding the lack of volume controls on wireless handsets.¹⁷⁵ HLAA states that one of the hearing aid users' most important concerns regarding wireless devices is the lack of adequate volume control on many handsets.¹⁷⁶ In light of consumer complaints about insufficient volume controls, the Joint Consensus Plan urges all interested parties to specifically look into the question of volume controls on wireless handsets.

66. **Recommendation.** The Bureau recommends that the Commission continue to monitor the enhancement of existing technologies that benefit the deaf or hard of hearing. Additionally, the Bureau recommends that the Commission solicit comment with respect to the issue of volume controls on wireless handsets.

b. New and Developing Technologies

67. *Video Technology.* Some emerging digital wireless technologies presage the beginning of a video telecommunications age for the deaf and hard of hearing community. Two research groups, one American and one European, have researched wireless video technology with an eye towards providing real-time communication for the deaf and hard of hearing. University of Washington and Cornell University professors have developed MobileASL.¹⁷⁷ MobileASL employs video compression technology to enable deaf users to "video sign" despite the bandwidth limitations of current wireless mobile networks.¹⁷⁸ The researchers observed that deaf users require clear resolution of certain body parts, particularly the face, in order to interpret sign language.¹⁷⁹ Transmitting full video of sufficient quality to observe the subtle, but often meaningful, face movements would overburden current mobile networks.¹⁸⁰ MobileASL reduces the amount of data transmitted by looking only for face, hand and arm movements.¹⁸¹ In this manner, it replicates the actual optical practice of people interpreting sign language because they focus intently on the face movements while relying on peripheral vision to observe the less nuanced hand and arm movements.¹⁸² Professor Ladner (one of the developers from the University of Washington) reports that MobileASL can work on networks with 10-20 *kbps* of available bandwidth and he reports that he is currently talking to wireless providers about deploying the technology.¹⁸³

68. European government, academic and commercial entities partnered to form Wireless Information Services for Deaf People on the Move (WISDOM) and apply digital wireless technologies to the specific needs of the deaf and hard of hearing.¹⁸⁴ WISDOM was a European Union-funded program coordinating, over a three year period, research, development and planning of 3G wireless

¹⁷⁵ Antoinette Cippolina Comments and Deanne Deurell Comments.

¹⁷⁶ HLAA Comments at 16-17.

¹⁷⁷ MobileASL: *Making wireless accessible to the deaf community*, 4 *INGENUITY* 2 (Spring 2007), <http://depts.washington.edu/techtran/aboutus/Newsletter/Spring07.pdf> ("MobileASL").

¹⁷⁸ *Id.*

¹⁷⁹ *Id.* See Deaf to Sign, *supra* n. 171.

¹⁸⁰ See MobileASL, *supra* n. 177.

¹⁸¹ *Id.*

¹⁸² See Deaf to Sign, *supra* n. 171.

¹⁸³ *Id.*

¹⁸⁴ See IST PROJECT FACT SHEET – WIRELESS INFORMATION SERVICES FOR PEOPLE ON THE MOVE (WISDOM) http://cordis.europa.eu/fetch?ACTION=D&CALLER=PROJ_IST&RCN=57773. Partners include, among others, Vodafone Limited, Ericsson Espana SA, British Deaf Association, Motion Media Technology Limited and Vaestanvik Resource and Development Centre. *Id.*

telecommunications services for the benefit of the deaf and hard of hearing community.¹⁸⁵ Completed in 2004, the program produced encouraging test results, but current mobile networks are unable to support the initiatives utilizing video sign language.¹⁸⁶ The initiatives are summarized below.

69. WISDOM researchers tested a real-time conversation service with video call capability supplemented by text capability when required for additional clarification.¹⁸⁷ This feature was tested successfully with small computers in Wireless Local Area Networks (WLANs) but not on mobile phone networks.¹⁸⁸ WISDOM also successfully tested a wireless VRS service incorporating a distance sign language interpreter service capable of relaying audio input from small meetings as real-time sign language output for the deaf user.¹⁸⁹ Deafstation.org, a website providing sign language daily news, sports, arts, employment notices, and even translations between the four European sign languages, was also tested successfully.¹⁹⁰ WISDOM researchers also successfully addressed the problem of interworking with fixed network text telephones so that deaf persons can access emergency services from their mobile phones without TTY equipment.¹⁹¹ Most importantly, WISDOM researchers from Germany's Aachen University of Technology conducted successful tests for automatic sign language recognition which would allow deaf users to actually control their mobile handsets with sign language.¹⁹² Automatic sign language recognition faces challenges beyond the bandwidth limitations hindering other video technologies,¹⁹³ but its continued development reflects the integration of the deaf and hard of hearing communities with digital wireless telecommunications.

70. *Captioning Technology.* Digital wireless telecommunications can expand the availability of captioning. Deaf and hard of hearing persons have enjoyed captioning on televisions and in some movie theaters for years.¹⁹⁴ Researchers at the Georgia Tech Research Institute have developed a wearable captioning system that will allow deaf and hard of hearing users to receive information presented audibly to the general public in captioned format over a wireless network.¹⁹⁵ Most public venues such as sports arenas, concert halls or movie theaters already have wireless network systems installed.¹⁹⁶ The captioning

¹⁸⁵ *See id.*

¹⁸⁶ *See id.*

¹⁸⁷ University of Bristol, Faculty of Social Science and Law Centre for Deaf Studies Full Research Report – WISDOM, http://www.bristol.ac.uk/deaf/download/research/full_reports/Wisdom.pdf.

¹⁸⁸ *Id.*

¹⁸⁹ *Id.* at 2.

¹⁹⁰ *Id.* (translating to and from British, Swedish, Spanish and German sign languages).

¹⁹¹ *Id.*

¹⁹² *Id.*, John Sullivan, *Interest Growing in Sign Language as a 3G Interface*, WIRELESS INSIDER, May 28, 2001. *See* ICT Results – Serving the Deaf Communities' Information Needs, <http://istresults.cordis.lu/index.cfm/section/news/Tpl/article/BrowsingType/Short%20Feature/ID/1664> (reporting sign language recognition of 250 signs with a success rate between 70% and 90%).

¹⁹³ *See* Sullivan, *supra* n. 192.

¹⁹⁴ *See, e.g.*, Patrick M. Hoffman Comments (noting his reliance on closed captioning to watch television with his family).

¹⁹⁵ *See* Jane Sanders, *Wearable Captioning System to Make Public Venues Accessible to People with Hearing Problems*, GEORGIA RESEARCH TECH NEWS, April 12, 2005, <http://gtresearchnews.gatech.edu/newsrelease/captioning.htm>.

¹⁹⁶ *Video: High-Tech Captions*, SCIENCE DAILY, July 1, 2005, <http://www.sciencedaily.com/videos/2005-07-06/> (“High-Tech Captions”).

software developed at Georgia Tech can receive captions from any venue provided the captions are transmitted via the standard 802.11b wireless protocol.¹⁹⁷ Any PDA with a recent Microsoft Windows operating system can display captions using the software.¹⁹⁸ The software was licensed in 2005 to Peacock Communications for finalization and deployment.¹⁹⁹

71. *New Technologies Not Yet Available.* The record in this proceeding also includes a few examples of new technologies that have not yet played a significant role in providing access for the deaf and hard of hearing. For example, TAP notes that, although Bluetooth technology has become widely available in cell phones due to reductions in size and improved battery efficiency, Bluetooth is currently available only as an accessory to hearing aids which either have a direct audio input interface or a telecoil, and offerings for such add-ons are only available from two companies.²⁰⁰ According to TAP, Bluetooth technology has not advanced to the degree that would permit it to be implemented as a built-in hearing aid feature.²⁰¹ TAP posits that if Bluetooth or a similar technology can overcome the current size and efficiency problems prohibiting its use within hearing aids, it might likely replace the telecoil in the long term.²⁰² Similarly, smartphone technology has not yet provided the benefits to the deaf and hard of hearing that some predicted. Although TAP recognizes that smartphones will help hearing aid wearers achieve greater and more efficient access to telecommunications, it notes that the electromagnetic energy emitted by the display screens often interferes with the hearing aids, thereby causing difficulty to hearing aid users.²⁰³ TAP notes that consumers with hearing aids are often advised to select a cell phone that allows them to turn off their screens, but it states that, since screens are becoming ever more important in wireless telephone technology, addressing screen displays as a source of interference will become increasingly important in the years ahead.²⁰⁴

72. Recommendation. The Bureau recommends that the Commission continue to monitor the development of new technologies in this area, and seek comment on ways to address the issue of screen displays as a source of interference with hearing aids.

2. Emerging Regulatory Issues

a. Expansion of Services to New Frequency Bands and Air Interfaces

73. As the growing demand for wireless services increases the need for spectrum, and the Commission issues new licenses and increases flexibility for existing licensees, the provision of CMRS will continue to expand to new frequency bands. Moreover, we anticipate that engineers will continue to develop, and companies will bring to market, new air interfaces offering improved or different functionalities to wireless telecommunications users. In light of these developments, the Joint Consensus Plan recommends that the Commission apply its hearing aid compatibility rules to all spectrum bands that are used for the provision of CMRS in the United States, subject to technical standards development. This proposal is consistent with the Commission's recent determination in the *700 MHz Service Report*

¹⁹⁷ Sanders, *supra* n. 195.

¹⁹⁸ *High-Tech Captions*, *supra* n. 196.

¹⁹⁹ *Id.*, see also Sanders, *supra* n. 195.

²⁰⁰ TAP Comments at 6. There are reported to be devices available, such as a Streamer or Phonak's SmartLink, that allow hearing aid users to listen to their Bluetooth cellphones. See *Johannes Wall Street Journal article*, *supra* n. 170.

²⁰¹ TAP Comments at 6.

²⁰² *Id.*

²⁰³ *Id.* at 7.

²⁰⁴ *Id.*

and Order that all digital CMRS providers, including providers of such services in the 700 MHz Band and the Advanced Wireless Services-1 (AWS-1) and Broadband Radio Service/Educational Broadband Radio Service (BRS/EBS) bands, should be subject to hearing aid compatibility requirements under Section 20.19 to the extent they offer real-time, two-way switched voice or data service that is interconnected with the public switched network and utilizes an in-network switching facility that enables the provider to reuse frequencies and accomplish seamless hand-offs of subscriber calls once technical standards are developed.²⁰⁵

74. At the same time, the Commission has recognized that specific hearing aid compatibility requirements cannot apply in the absence of an established technical standard governing a particular frequency band or air interface. In the *700 MHz Service Report and Order*, the Commission strongly encouraged ANSI and various stakeholders to work together towards adoption of technical standards in a timely manner so that hearing aid users will have the same accessibility to interconnected services in new bands as they do in the bands already addressed in Section 20.19(a) of the Commission's rules.²⁰⁶ The Commission further set a timetable for the development of the necessary technical standards for new services and frequency bands that have governing service rules in place, and it amended the rule in Section 20.19 to reflect its determinations.²⁰⁷ In order to avoid this situation arising in the future, the Bureau strongly urges standard-setting bodies to develop hearing aid compatibility standards together with technical operating specifications, as they are developed for new air interfaces and frequency bands.

75. On a related matter, we note that any mobile satellite service ("MSS") that involves the provision of commercial mobile radio service directly to end users is included in the definition of CMRS.²⁰⁸ In extending 911 obligations to certain MSS providers, the Commission found that these MSS providers offer "real-time, two-way, switched voice service that is interconnected with the public switched network."²⁰⁹ We also note that, under the Commission's rules, certain MSS providers, in three frequency bands, may seek authority to integrate an ancillary terrestrial component (ATC) into their networks for the purpose of enhancing their ability to offer high-quality, affordable mobile voice and data services on land, in the air, and over oceans.²¹⁰ The Bureau recommends that the Commission seek

²⁰⁵ *700 MHz Service Report and Order*, 22 FCC Rcd 8064, 8117 ¶ 142. In addition, the Commission concluded that manufacturers of wireless handsets capable of providing such service also should be made subject to the applicable requirements of Section 20.19. *Id.*

²⁰⁶ *Id.* at 8119-21 ¶¶ 148-150.

²⁰⁷ The Commission stated its expectation that appropriate technical standards for the bands listed in Section 27.1(b) will be established within 24 months of the *Federal Register* publication of the *700 MHz Service Report and Order*, and committed that, if this occurs, it will initiate a further proceeding at that time to establish a specific timetable for deployment of hearing aid-compatible handsets based on the adopted standards for services in the relevant bands. *700 MHz Service Report and Order*, 22 FCC Rcd 8119-21 ¶¶ 148-150.

²⁰⁸ 47 C.F.R. § 20.9(a)(10). This rule section also contains an exception for "mobile satellite licensees and other entities that sell or lease space segment capacity, to the extent that it does not provide commercial radio service directly to end users." The exception permits such entities to provide space segment capacity to commercial mobile radio service providers on a non-common carrier basis, if authorized by the Commission.

²⁰⁹ In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Networks and Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements et al., CC Docket No. 94-102 and IB Docket No. 99-67, *Report and Order and Second Further Notice of Proposed Rulemaking*, 18 FCC Rcd 25340, 25347-25360 ¶¶ 20-48, 25385 ¶¶ 111-112 (2003) (adopting, in part, 911 service call center requirements and seeking further comment on how to implement E911 requirements for the MSS).

²¹⁰ Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L Band, and the 1.6/2.4 GHz Band, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 1962 (2003) (permitting flexibility in the delivery of communications by MSS providers that operate in three sets of radio (continued...))

comment on the applicability of hearing aid compatibility requirements to MSS providers that offer CMRS and whether any revisions to the hearing aid compatibility rules are appropriate respecting such providers, in order to promote consistent treatment for all CMRS providers that offer functionally equivalent services. In this regard, the Bureau also recommends that the Commission seek comment on whether it should make a difference if an MSS provider offers such service purely through a satellite-based network or through a combined network that relies on both satellite and ATC facilities.

76. **Recommendation.** The Bureau recommends that the Commission seek comment on measures it could take to encourage standard-setting bodies to develop hearing aid compatibility standards together with technical operating specifications, as they are developed for new air interfaces and frequency bands. The Bureau also recommends that the Commission seek comment on the application of hearing aid compatibility requirements to MSS providers that offer CMRS, including whether it should make a difference if an MSS provider offers service purely through a satellite-based network or through a combined network that relies on both satellite and ATC facilities.

b. Voice over Internet Protocol (VoIP) via Wireless Local Area Networks (WLANs)

77. **Background.** A new wave of wireless products supports the use of WLANs to access a wide range of services provided over a broadband Internet access connection.²¹¹ The most prevalent WLAN technology is equipment manufactured in accordance with the IEEE 802.11 family of standards, commonly known as “Wi-Fi.”²¹² Wi-Fi technology allows users to connect a Wi-Fi enabled device to broadband Internet access services using radio frequencies set aside for use by Part 15 unlicensed devices. The proliferation of Internet-telephony services and broadband data services makes Wi-Fi enabled devices attractive communications options for consumers.

78. VoIP, as implied by the name, allows a user to make voice calls using Internet Protocol. VoIP converts the user’s voice from the user’s equipment into a digital signal which can travel over the Internet or privately managed data networks. If a broadband connection is available, the user needs only a computer equipped with software and a microphone, a traditional phone paired with an adapter or a specialized phone that can provide VoIP service.²¹³ We note that VoIP is an application which can be provided over wired or wireless connections. In the wireless context, VoIP can be provided over various frequency bands using any air interface.

79. Wireless handset manufacturers are increasingly using Wi-Fi to expand consumer access to VoIP services. Manufacturers such as UTStarcom, Belkin, Linksys and Panasonic all offer wireless handsets that feature Wi-Fi voice capability.²¹⁴ However, many of the handsets that are available today

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frequency bands: the 2 GHz MSS band (the 1990-2025 MHz uplink and the 2165-2200 MHz downlink), the L-band (general designation for frequencies from 1 to 2 GHz) and the Big LEO bands (referring to the 1.6/2.4 GHz bands).

²¹¹ In the Matter of Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks, WT Docket No. 07-53, *Declaratory Ruling*, 22 FCC Rcd 5901, 5907-08 ¶ 15 (2007) (“Wireless Broadband Internet Access Service Declaratory Ruling”).

²¹² Wi-Fi (Wireless Fidelity) is a wireless technology based on the IEEE 802.11 standards.

²¹³ See <<http://www.fcc.gov/voip/>> (visited August 9, 2007). To date, the Commission has not classified VoIP as a telecommunications service or an information service, and the discussion in this section is not intended to address the classification of VoIP services. See In the Matter of IP-Enabled Services, WC Docket No. 04-36, *Notice of Proposed Rulemaking*, 19 FCC Rcd 4863, 4893-94 ¶ 43-44 (2004).

²¹⁴ Vonage, <http://www.vonage.com/device.php?type=F1000&refer_id=WEBPR0706010001W1> (visited August 9, 2007), Skype, <http://us.accessories.skype.com/DRHM/servlet/ControllerServlet?Action=DisplayCategoryProductListPage&SiteID=skype&Locale=en_US&Env=BASE&parentCategoryID=4141800&categoryID=7032700> (visited August 9, 2007).

cannot continue calls beyond the short range of the Wi-Fi frequency. Newly released dual-mode Wi-Fi handsets can fill this void. Samsung's t409 and Nokia's 6086 handset models offer dual-mode operability on T-Mobile's GSM and Wi-Fi networks. These phones have both GSM and Wi-Fi radios and can seamlessly switch between the GSM and Wi-Fi networks without interrupting the user's call.

80. Handset manufacturers are also taking advantage of Wi-Fi's speedy data transmissions. For example, both T-Mobile and Sprint offer handsets with voice and Wi-Fi data service capability.²¹⁵ T-Mobile's Dash and Wing handsets are both Wi-Fi-enabled for data.²¹⁶ Both phones operate on the GPRS/EDGE network and Wi-Fi.²¹⁷ In July 2007, Sprint introduced the Mogul device by High Tech Computer Corp., which offers access to both EV-DO and Wi-Fi networks.²¹⁸ Apple's iPhone also operates on dual frequencies for data transmissions.²¹⁹ Apple's iPhone automatically switches from AT&T's EDGE network to certain known Wi-Fi networks when it finds them, and pops up a list of new Wi-Fi networks it encounters as the user moves.²²⁰ Research in Motion will offer dual-mode operability in August with the release of the BlackBerry 8820.²²¹ The handset will operate on AT&T's GSM/GPRS/EDGE network.²²²

81. Discussion. With the introduction of wireless VoIP applications over non-traditional networks, including handset models with dual-mode voice operability such as those operating on T-Mobile's GSM and Wi-Fi networks, issues begin to arise regarding the appropriate scope and application of hearing aid compatibility requirements. Under the Commission's current rules, hearing aid compatibility obligations only apply to services that are classified as CMRS and that "offer real-time, two-way switched voice or data service that is interconnected with the public switched network and utilize[] an in-network switching facility that enables the provider to reuse frequencies and accomplish seamless hand-offs of subscriber calls."²²³ Furthermore, as discussed above, specific hearing aid compatibility requirements apply only to frequency bands and air interfaces for which governing technical standards have been promulgated.²²⁴ We note that hearing aid compatibility technical standards are not yet available for technologies such as Wi-Fi and WiMax that are currently used to provide

²¹⁵ See, e.g., Sprint Nextel, *Unlimited WiFi HotSpot Plan* <<http://nextelonline.nextel.com>> (visited August 9, 2007).

²¹⁶ A new line of service is required for both new and existing customers, the phones must be activated with a monthly plan, and a two-year service agreement is required. See T-Mobile USA, *T-Mobile Dash*TM <<http://www.t-mobile.com>> (visited August 9, 2007); T-Mobile USA, *T-Mobile Wing*TM <<http://www.t-mobile.com>> (visited August 9, 2007); T-Mobile USA, *Services* <<http://www.t-mobile.com>> (visited August 9, 2007).

²¹⁷ T-Mobile USA, *T-Mobile Dash*TM <<http://www.t-mobile.com>> (visited August 9, 2007); T-Mobile USA, *T-Mobile Wing*TM <<http://www.t-mobile.com>> (visited August 9, 2007).

²¹⁸ *Sprint Customers Will Get More Done With The New Mogul*TM By HTC, Press Release, Sprint Nextel, June 18, 2007. Customers must enter into a two-year service agreement, with eligible monthly plans starting at \$39.99. See Sprint Nextel, *Mogul*TM by HTC <<http://nextelonline.nextel.com>> (visited August 9, 2007); Sprint Nextel, *Sprint Power Pack Plans* <<http://nextelonline.nextel.com>> (visited August 9, 2007). See also *Sprint Nextel Announces 4G Broadband Wireless Initiative with Intel, Motorola and Samsung*, available at <http://www2.sprint.com/mr/news_dtl.do?id=12960> (visited September 21, 2007).

²¹⁹ See <<http://www.apple.com/iphone/questionsandanswers.htm>> (visited August 10, 2007).

²²⁰ *Id.*

²²¹ See Matt Hamblen, *RIM Announces Dual-Mode BlackBerry 8820*, CIO, July 19, 2007; see also Melissa J. Perenson, *Money-Saving, Dual-Mode Mobile Phones do Voice Over Wi-Fi*, CIO, July 26, 2007.

²²² See Perenson, *Money-Saving, Dual-Mode Mobile Phones do Voice Over Wi-Fi*, CIO, July 26, 2007.

²²³ 47 C.F.R. § 20.19(a).

²²⁴ *Id.* See also *700 MHz Service Report and Order*, 22 FCC Rcd 8119-20 ¶¶ 148-150.

VoIP.²²⁵ In addition, by statute telephones used with public mobile services and private radio services are exempt from the general requirement that all newly manufactured telephones meet hearing aid compatibility standards, unless that exemption is lifted by the Commission.²²⁶

82. Handset models that use WLAN technology only to provide data services may also raise potential policy questions for hearing aid compatibility, as the data feature may be particularly attractive to deaf and hard of hearing consumers who may also need hearing aid compatibility for the handset model's voice operation.²²⁷ In the record, HLAA notes that Apple's iPhone has been rolled out, in part, on AT&T's EDGE network but is not yet hearing aid-compatible, and that Apple is not involved in any discussions regarding hearing aid compatibility.²²⁸ Further, HLAA also raises concerns that "manufacturers of handsets used with VoIP services are [not] even aware of the need to make their handsets compatible with hearing aids."²²⁹

83. In the *Wireless Broadband Internet Access Service Declaratory Ruling*,²³⁰ the Commission reiterated its commitment to effectuate the accessibility policy embodied in section 255 of the Communications Act and stated that it would continue to monitor the development of wireless broadband Internet access service and its effects on the policy goals of section 255. Moreover, although section 255 expressly applies to telecommunications services and not information services, the Commission noted in the *Wireless Broadband Internet Access Service Declaratory Ruling* that it has used its ancillary jurisdiction under Title I to extend accessibility obligations to certain information services in the past, including the wireline broadband Internet access service.²³¹

²²⁵ Worldwide Interoperability for Microwave Access (WiMAX) is a broadband wireless access technology based on the IEEE 802.16 standards that is intended to improve the compatibility and interoperability of broadband wireless access equipment. See Newton's Telecom Dictionary, 23rd Edition, at 1013.

²²⁶ 47 U.S.C. § 610(b)(2). "Public mobile service" is defined to include certain services covered under Part 22 of our rules. 47 U.S.C. § 610(b)(4)(B); 47 C.F.R. § 68.3.

²²⁷ Moreover, even if voice operation over the WLAN is not an inherent part of the equipment or service, users may be able to add applications that would permit such use.

²²⁸ ATIS Reply Comments at 6 and HLAA Reply Comments at 5. See also HAP Comments at 3. We note that there does not appear to be any current requirement that the iPhone be compatible under Section 20.19 of the Commission's rules, as Apple would appear to come under the *de minimis* exception and AT&T meets its compatible handset model deployment benchmarks using other models. See 47 C.F.R. § 20.19(e).

²²⁹ HLAA Reply Comments at 5.

²³⁰ *Wireless Broadband Internet Access Service Declaratory Ruling*, 22 FCC Rcd at 5921-22, ¶¶ 58-59.

²³¹ *Id.* The Commission imposed accessibility obligations on voicemail and interactive menu services. See Implementation of Sections 255 and 251(a) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996, Access to Telecommunications Service, Telecommunications Equipment and Customer Premises Equipment by Persons with Disabilities, WT Docket No. 96-198, *Report and Order and Further Notice of Inquiry*, 16 FCC Rcd 6417, 6455 ¶ 93 (1999) (*Section 255 Order*). The Commission declined at that time, however, to extend accessibility obligations to other information services, such as email, electronic information services, and web pages, that did not appear to have the potential to render telecommunications services inaccessible to persons with disabilities. *Id.* at 6461 ¶ 107. The Commission adopted a *Further Notice of Inquiry* at the same time to obtain additional information about Internet telephony and certain computer-based equipment that replicates the current telecommunications functionality. See also *Wireline Broadband Internet Access Services Order*, 20 FCC Rcd at 14919 ¶ 121-124 (where the Commission uses its ancillary jurisdiction under Title I to extend accessibility obligations to the wireline broadband Internet access service.) The Commission has extended disability access requirements to providers of interconnected VoIP services. The Commission has also extended telecommunications relay services requirements to providers of interconnected VoIP services. See IP-Enabled Services, Implementation of Sections 255 and 251(a)(2); Access to Telecommunications Service, Telecommunications Equipment, and (continued...)

84. Recommendation. In light of the Commission's commitment to ensure accessibility by persons with disabilities, including those persons with hearing loss, the Bureau recommends that the Commission solicit comment as to the hearing aid compatibility policy issues that arise due to the emergence of VoIP applications provided over wireless networks and associated handset models, including the dual-mode handset models described above. These issues include, among others, whether measures may be appropriate to ensure that manufacturers and service providers are committing the necessary efforts and capital to make such devices hearing aid-compatible at the earliest opportunity. More specifically, they include questions of whether both interconnected and non-interconnected VoIP services and equipment should be subject to hearing aid compatibility requirements, to the extent the Commission's rules do not currently cover these services and to the extent such services fall within the Commission's legal authority. Other issues may revolve specifically around the treatment of dual-mode handset models and services, particularly where hearing aid compatibility technical standards have been developed for one mode and not another.²³²

85. The Bureau also recommends that the Commission seek comment as to whether any new hearing aid compatibility rules are appropriate to address handsets that combine CMRS voice operation with data services provided over Wi-Fi networks or other WLANs. We note that the Joint Consensus Plan includes proposals to adopt product refresh and tiering rules that are intended to ensure consumers who use hearing aids will have access to wireless handsets with a range of functionalities.²³³ The Bureau recommends that the Commission seek comment as to whether those proposed rules appropriately advance hearing aid compatibility in handsets that include data services provided over Wi-Fi or other emerging technologies, or whether additional measures are needed.

c. "Open Platform" Networks

86. Background. Under the Commission's current rules, manufacturers are required to meet the Commission's hearing aid compatibility standards by offering a certain number or percentage of hearing aid-compatible handset models to service providers.²³⁴ In addition, service providers similarly are obligated to offer a certain number or percentage of hearing aid-compatible handset models to consumers.²³⁵ Service providers are also expected to make information available to consumers regarding the immunity ratings of handsets,²³⁶ and are required to make hearing aid-compatible phones available for testing in their owned or operated retail outlets.²³⁷ These rules were designed for the current paradigm under which most customers purchase service and equipment as a package from their service provider, with the service provider having procured the equipment from an equipment manufacturer.

87. In the *700 MHz Service Second Report and Order*, the Commission required that licensees of the Upper 700 MHz Band C Block provide an "open platform" for devices and applications, *i.e.*, allow consumers, device manufacturers, application developers, and others to use the devices and applications of their choosing in C Block networks, subject to certain reasonable network management conditions that

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Customer Premises Equipment by Persons with Disabilities, WC Docket No. 04-36, WT Docket No. 96-198, CG Docket No. 03-123, *Report and Order*, 22 FCC Rcd 11275 (2007).

²³² In this regard, we note that the Joint Consensus Plan includes a proposal that phones with multiple air interfaces must satisfy the ANSI C63.19 technical standard with respect to all air interfaces for U.S. frequency bands. Joint Consensus Plan at 10.

²³³ *Id.* at 7-10.

²³⁴ See 47 C.F.R. § 20.19(c)(1), (d)(1).

²³⁵ See 47 C.F.R. § 20.19(c)(2), (c)(3), (d)(2).

²³⁶ 47 C.F.R. § 20.19(f).

²³⁷ See, *e.g.*, 47 C.F.R. § 20.19(c)(2)(i), (c)(3)(i)(B), and (d).

allow the licensee to protect the network from harm.²³⁸ In considering hearing aid compatibility issues in the context of open platforms, the Commission observed that, once a technical standard is in place and specific hearing aid compatibility obligations are extended to the 700 MHz Band, handset manufacturers will have independent requirements to offer a certain number of hearing aid-compatible handsets.²³⁹ The Commission further noted that it believed the open platform requirements themselves will help ensure that customers may use available hearing aid-compatible handsets regardless of whether they are offered by a wireless service provider or directly by an equipment manufacturer, subject only to the reasonable restrictions described above.²⁴⁰ Nevertheless, the Commission directed the staff to consider in this report whether any additional hearing aid compatibility requirements should be imposed as a result of the open platform requirements adopted in the order.²⁴¹

88. Discussion. Currently, Section 20.19 of the Commission's rules imposes hearing aid compatibility obligations only on manufacturers and providers of the services within its scope, including resellers and MVNOs. In particular, the rules impose the brunt of the obligations for providing information to, and interacting with, consumers on service providers. With the growth of open platform networks, however, service providers may no longer play a major role in providing handset equipment to subscribers, and the roles of other players in addition to traditional equipment manufacturers and service providers may become increasingly significant. For example, it is possible that a C Block licensee in the 700 MHz Band will not offer any handsets at all, preferring instead to rely solely on the provision of handsets to its customers by manufacturers directly or through other entities that are not connected with the licensee.

89. Under this new paradigm, the existing rules may no longer be as effective in ensuring that both hearing aid-compatible handsets and the information necessary to identify and purchase them are available to hard of hearing consumers. For example, if manufacturers are required to make handsets available only to service providers, and only service providers have obligations to consumers, it is unclear whether consumers who obtain their handsets from sources other than their service provider will have sufficient access to hearing aid-compatible models. Similarly, it may become increasingly necessary to involve manufacturers and other parties that provide handsets to consumers in the dissemination of hearing aid compatibility information. In particular, in-store testing requirements currently applicable only to service provider-owned and operated outlets may become less meaningful as more consumers obtain their handsets from other sources. For example, a consumer that purchases a handset from a manufacturer via the Internet may not have the opportunity to test the handset prior to placing the order.

90. Recommendation. Because the landscape is changing and open platform requirements may result in many more consumers obtaining handsets directly from sources other than service providers, including directly from manufacturers, the Commission should consider whether modifications to its rules are necessary to address hearing aid compatibility requirements in this context. These modifications may include imposing additional or modified deployment and information requirements on manufacturers as well as other parties that may be supplying handsets to consumers. In particular, we recommend that the Commission seek renewed comment on whether in-store testing requirements should be extended beyond service provider-owned and operated retail outlets in the context of open platform networks.

²³⁸ In the Matter of Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, *Second Report and Order*, 22 FCC Rcd 15289, 15365 ¶ 206 (2007) (*700 MHz Service Second Report and Order*).

²³⁹ *700 MHz Service Second Report and Order*, 22 FCC Rcd at 15373 ¶ 228.

²⁴⁰ *Id.*

²⁴¹ *Id.*

D. Impact on Cochlear Implant and Middle Ear Implant Users

91. Background. In the *Hearing Aid Compatibility Order*, the Commission committed to examine in this staff report “the impact of this Order’s compatibility requirements on cochlear implant and middle ear implant users and their ability to use digital wireless phones.”²⁴² The Commission described the technology behind cochlear implants,²⁴³ and noted at that time that consumers who use cochlear implants indicated they have had difficulty finding wireless phones they could use without suffering from annoying and sometimes painful interference, and without resorting to expensive and cumbersome external attachments.²⁴⁴ In adopting the hearing aid compatibility requirements, the Commission stated, “to the extent the modification of the exemption from the [Hearing Aid Compatibility] Act for wireless phones facilitates usage by hearing aid users, we expect that individuals with cochlear implants will likewise benefit.”²⁴⁵ In the *Staff Report Public Notice*, the Bureau sought comment on topics to be addressed in the hearing aid compatibility report, including the impact of the hearing aid compatibility requirements on cochlear implant and middle ear implant users, and their ability to use digital wireless phones.²⁴⁶

92. Discussion. The record includes only a few commenters who addressed the subject of cochlear implants.²⁴⁷ TAP notes that “[i]n terms of interference from wireless devices, we are unaware of disproportionate problems among [cochlear implant] users compared to [hearing aid] users in [wireless device] use. Even so, there may be unknown issues related to cochlear implants that RF emissions from [wireless devices] may affect. For example, it is generally unknown how signal processing strategies might impact the perception of interference.”²⁴⁸ Similarly, Cingular expresses a lack of information regarding disparate experiences for cochlear implant users, stating it is aware that the number of cochlear and middle ear implant users is comparatively small but growing, and there is some anecdotal evidence in consumer group and hearing industry trade publications regarding their use in wireless service.²⁴⁹ Cingular states that, since it does not have any concrete data on cochlear and middle ear implant users’ experiences, it will defer to those experts for now.²⁵⁰ Cingular is willing to participate in testing activities to help the industry and consumer groups better understand and improve these users’ wireless

²⁴² *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16782-83 ¶ 74.

²⁴³ As discussed in the order, cochlear implants bypass the external and middle ears by using electrical stimulation of electrodes implanted in the cochlea to reintroduce the signals carried by auditory nerve fibers to the brain. With a cochlear implant, a microphone in a headpiece worn at the ear is connected via a thin cable to a processor that is worn on the belt, carried in a pocket or, in some models, worn at ear level. The processor translates the signal from the microphone into digital signals that are sent to a transmitter (in some models, the transmitter and microphone are in the same piece). The transmitter, which is held by a magnet on the side of the head behind the ear, sends the coded signals via radio waves through the skin to the cochlear implant. The signals are directed to auditory nerve fibers using an array of electrodes implanted in the deaf patient’s cochlea where they elicit patterns of nerve activity that the brain interprets as sound. Some cochlear implants are now being manufactured with built-in telecoils, which could enable a user to hear more clearly when using a hearing aid-compatible telephone, wearing a neck loop, or in the vicinity of an audio loop. See Center On Disabilities Technology And Persons With Disabilities, “Conference 2003 Conference Proceedings” <<http://www.csun.edu/cod/conf/2003/proceedings/133.htm>> (visited June 26, 2007).

²⁴⁴ *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16766 ¶ 30.

²⁴⁵ *Id.* at 16766 ¶ 29.

²⁴⁶ *Staff Report Public Notice*, 21 FCC Rcd 13136 (WTB 2006).

²⁴⁷ TAP Comments at 8-9.

²⁴⁸ *Id.*

²⁴⁹ Cingular Comments at 10.

²⁵⁰ *Id.*

experience.²⁵¹ One individual using a cochlear implant states that she found that some of the phones she was able to use with her hearing aid were not compatible with her processor,²⁵² whereas another commenter using a cochlear implant believes she could hear better on a cell phone than most people with hearing aids.²⁵³ Furthermore, the Bureau found anecdotal evidence of people with cochlear implants who have had success using wireless devices.²⁵⁴

93. Research continues on cochlear implants, with advances in microtechnology promising greater results from the implantation of greater numbers of smaller electrodes and new means of implantation.²⁵⁵ Not surprisingly, however, the Bureau has discovered that the interface between wireless handsets and cochlear implants does not appear to be the focus of the vast majority of the cochlear implant research conducted to date. In fact, of over ninety papers on issues related to cochlear implants published by the engineering society Institute of Electrical and Electronics Engineers (IEEE) from 2005 to the present, only one addressed cochlear implant use in conjunction with wireless phones.²⁵⁶

94. Recommendation. The Bureau recommends that the Commission continue to monitor developments relating to the interaction of wireless phones with cochlear and middle ear implants.

E. Labeling of Hearing Aids with Immunity Rating

95. Background. In the *Hearing Aid Compatibility Order*, the Commission noted that the ANSI C63.19 standard specifies ratings for digital wireless phones, U1 through U4, based on their RF emission levels, with U1 being the highest emissions and U4 the lowest emissions.²⁵⁷ The Commission further noted that the ANSI C63.19 standard also specifies ratings for hearing aids from U1 to U4 based on their immunity to interference, with U1 being the least immune and U4 the most immune.²⁵⁸ At that time, the Commission acknowledged that HIA had expressed concern regarding the labeling of hearing aids, particularly since they are highly customized for each person's physiology and individual hearing loss, and it is difficult to predict whether a particular hearing aid will provide the same level of immunity for every user.²⁵⁹ Additionally, HIA expressed concerns regarding what claims hearing aid manufacturers can make on product packaging with respect to compatibility with digital wireless phones.²⁶⁰ With respect to HIA's concerns about labeling on product packaging, the Commission noted that there were no

²⁵¹ *Id.*

²⁵² Linda Day Comments at 1.

²⁵³ Dana Simon Comments.

²⁵⁴ See, e.g., "Confessions of a Cochlear Implantee: Cell Phones and Cochlear Implants" (post dated May 1, 2007, <<http://bionigirl.blogspot.com>>, visited June 25, 2007).

²⁵⁵ See, e.g., "New type of cochlear implant to improve hearing?" February 9, 2006, <www.engadget.com/2006/02/09/new-type-of-cochlear-implant-to-improve-hearing/> (visited June 25, 2007).

²⁵⁶ Marti J. Sorri et al, "Solutions to Electromagnetic Interference Problems Between Cochlear Implants and GSM Phones," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, v.14 no.1 (March 2006).

²⁵⁷ *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16770 ¶ 40.

²⁵⁸ In determining the extent to which a particular digital wireless phone will interfere with a particular hearing aid, the immunity rating of the hearing aid is added to the emissions rating of the wireless phone. A sum of 4 would indicate that the wireless phone is usable; a sum of 5 would indicate that the wireless phone would provide normal use; and a sum of 6 or greater would indicate that the wireless phone would provide excellent performance with that hearing aid. *Hearing Aid Compatibility Order*, 18 FCC Rcd at 16770 ¶ 40.

²⁵⁹ *Id.* at 16777 ¶ 57.

²⁶⁰ *Id.*

Food and Drug Administration (FDA) enforcement issues that would preclude labeling of hearing aids.²⁶¹ Consequently, the Commission encouraged hearing aid manufacturers to test and label their hearing aid models with their immunity level in accordance with ANSI C63.19 in order to facilitate the matching of digital wireless handsets with hearing aids, and suggested that such labeling should be on models of hearing aids before they are customized, either by the manufacturer or audiologist, for the user's individual hearing loss and physiology.²⁶²

96. Discussion. On July 12, 2007, HIA announced in a letter to the FDA that its members would voluntarily include in their product user manuals some information about compatibility with mobile phones, and stated that the information that the industry will include with hearing aids will stress that the hearing aid compatibility ratings are "based upon the best information available but cannot guarantee that all users will be satisfied."²⁶³ HIA's and its members' decision to provide some information about compatibility with hearing aids should assist in addressing many of the concerns raised in the record by hard of hearing consumers and their advocacy groups.

97. This letter represents a significant change on behalf of HIA and its members who are not currently labeling hearing aid models with their immunity level in accordance with ANSI C63.19.²⁶⁴ In the past, HIA and its members hesitated to provide such compatibility or labeling information because hearing aids are individually adjusted for each user rather than uniformly mass produced; they are provided to users by highly trained professional dispensers; and they are subject to a set of pervasive FDA regulations.²⁶⁵ HIA and its members consistently maintained that they were committed to providing the maximum possible amount of information to professional hearing aid dispensers to enable them to help a hearing aid user select a workable combination of hearing aid and wireless handset, but they were reluctant to label the hearing aids.²⁶⁶

98. Voluntary provision of compatibility information will address many of the concerns raised in the record. For example, TAP expresses concerns that the lack of labels on hearing aids creates "a situation where hearing aid wearers cannot fully assess, independently, the predicted compatibility between the two devices; they must try to consult a hearing health professional (who may not have access to information about immunity either) for a non-medical problem."²⁶⁷ HAP provides anecdotal evidence

²⁶¹ *Id.* at 16777 n. 171.

²⁶² *Id.* at 16786 ¶ 88.

²⁶³ See letter dated July 12, 2007, from Carole M. Rogin, Executive Director, Hearing Industries Association to Linda S. Kahan, Esquire, Deputy Director, Center for Devices and Radiological Health, Department of Health and Human Services, Food and Drug Administration in WT Docket No. 06-203. According to the letter, the information that companies will include in their user manuals will state that "the immunity of this hearing aid is at least M2/T2." *Id.*

²⁶⁴ AG Bell Reply Comments at 1, ATT/Cingular Reply Comments at 5-6, Cingular Comments at 9, HAP Comments at 3-4, HLAA Reply Comment at 2, RIM Comments at 9-10, TAP Comments at 3-4 (stating that, although the Commission urged the hearing aid industry to test and label hearing aids, it has not happened to date), and TAP Reply Comments at 7-8.

²⁶⁵ HIA Reply Comments at 3.

²⁶⁶ *Id.*

²⁶⁷ *Id.* See also ATT/Cingular Reply Comments at 6. Further, HLAA states that, although hearing aid manufacturers estimate that approximately 80% of newer hearing aids have an immunity of M2 or better, because hearing aids are still not labeled, consumers have no way of knowing that more wireless telephones than those with an immunity rating of M3 or M4 may be compatible with their hearing aids. HLAA Reply Comments at 2. See also Cingular Comments at 9. In this regard, we note that ATIS acknowledges that hearing aid manufacturers have been generally successful in improving the RF immunity of hearing aids. ATIS Comments at 31. See also HIA Comments at 4, n.6 (stating that virtually all hearing aids perform consistently with an M2 or M3 rating).

that a world-renowned audiologist was not even aware that there are immunity ratings for hearing aids, and further states that the manufacturers' specifications used by audiologists to select hearing aids do not list immunity ratings for hearing aids.²⁶⁸ With respect to the hearing aid industry's nonparticipation in labeling, Cingular states it has been particularly difficult to quantify the extent to which the M3/M4 rating significantly improves a hearing aid user's experience without knowledge of the immunity ratings (or even testing information) for hearing aids, and further states that the wireless industry has had to be over inclusive in testing and designing wireless devices in order to account for all hearing aid products -- regardless of whether a hearing aid has sufficient immunity to be intended for use with wireless devices or not.²⁶⁹ Indeed, as ATIS states, one of the fundamental assumptions of the Commission in adopting its hearing aid compatibility rules was that consumers would be better informed of the compatibility of wireless phones and hearing aids, but the absence of public information on radio frequency immunity of hearing aids greatly diminishes the ability of the public to make an informed purchasing decision.²⁷⁰

99. Recommendation. In light of HIA's recent announcement about voluntary provision of compatibility information with hearing aids, the Bureau recommends that the Commission monitor hearing aid labeling and related issues, including the extent to which the hearing aid industry's voluntary measures are effective.

F. Further Review of Commission's Rules

100. The Joint Consensus Plan recommends that the Commission conduct a further review of the hearing aid compatibility rules in 2010 in order to ensure that there is continued progress towards achieving complete compatibility between digital wireless handsets and hearing aids.

101. Recommendation. The Bureau recommends that the Commission commit to undertaking such a review in the future, and seek comment on whether 2010 or some other time is the appropriate period for undertaking this review.

IV. CONCLUSION & SUMMARY OF RECOMMENDATIONS

102. In conclusion, the Bureau finds that the wireless industry has made tremendous and significant progress in achieving the Commission's current requirements for hearing aid compatibility. Notably, the Commission's rules have led to a substantial increase in the number and availability of hearing aid-compatible digital wireless telephones. Based on information submitted in the most recent compliance reports, the Bureau estimates that 193.2 million wireless subscribers have at least five M3-rated or better, and three T3-rated or better choices of hearing aid-compatible handset models.

103. With regard to suggestions for measures to facilitate further implementation of the Commission's hearing aid compatibility requirements, the Bureau makes the following recommendations:

Availability of Compatible Handsets

- The Commission should vigilantly monitor compliance with its hearing aid compatibility rules and take appropriate enforcement action against parties that violate the rules.
- The Commission should continue to encourage the wireless industry to further its efforts towards achieving more complete compatibility between digital wireless telephones and hearing aids, including seeking input from all interested parties on ways to encourage and promote more complete compatibility with hearing aids.

²⁶⁸ HAP Comments at 4.

²⁶⁹ Cingular Comments at 9 and ATT/Cingular Reply Comments at 6.

²⁷⁰ ATIS Comments at 12, 30.

- The Commission should solicit comment from all interested parties on the proposed modifications to the Commission's future hearing aid compatibility requirements as proposed in the Joint Consensus Plan.
- The Commission should seek input as to any appropriate modifications to the Commission's future hearing aid compatibility requirements for wireless service providers that are not Tier I carriers, including whether the Commission should stagger deployment benchmarks to allow additional time for such wireless service providers to obtain, test and market new compliant handset models.
- The Commission should codify in its rules that the *de minimis* exception applies on a per-air interface basis as suggested in the Joint Consensus Plan.
- The Commission should specify that, in order to be counted as satisfying the hearing aid compatibility requirements, handsets that have multiple air interfaces must meet the hearing aid compatibility requirements for all air interfaces over which they operate on U.S. frequency bands as suggested in the Joint Consensus Plan.
- The Commission should clarify that devices marketed by a manufacturer as distinct devices generally are counted as different handset models for purposes of the hearing aid compatibility rules, but that handset models that have no distinguishing variations of form, features, or user capabilities, or that only differentiate units sold to a particular service provider, should be counted as a single handset model for purposes of the hearing aid compatibility rules.

Consumer Information and In-store Testing

- The Commission should seek comment on the reporting recommendations in the Joint Consensus Plan, including the proposed content of reports and the reporting schedule.
- The Commission should direct staff to explore measures that might make the equipment authorization database more accessible for consumers and service providers to determine the hearing aid compatibility of handset models, such as adding a relevant search function, and should also seek comment on whether to require manufacturers to inform staff of the handset models associated with each FCC ID. Further, the Commission should seek comment on whether it should adopt new Part 2 rules on permissive changes such that a filing is required that includes trade names and model numbers.
- The Commission should also seek comment on ways to improve the availability of information to consumers directly from manufacturers and service providers, including the Joint Consensus Plan's proposal that manufacturers voluntarily post hearing aid compatibility ratings of all their handset models on their websites.
- The Commission should seek comment on other ways to improve the availability and accessibility of consumer information regarding hearing aid-compatible handsets.

Technological Developments Affecting the Hard of Hearing

- The Commission should continue to monitor the enhancement of existing technologies that benefit the deaf or hard of hearing, and should solicit comment with respect to the issue of volume controls on wireless handsets.
- The Commission should also continue to monitor the development of new technologies that may benefit the deaf or hard of hearing, and seek comment on ways to address the issue of screen displays as a source of interference with hearing aids.

Emerging Regulatory Issues

- The Commission should seek comment on measures it could take to encourage standard-setting bodies to develop hearing aid compatibility standards together with technical operating specifications, as they are developed for new air interfaces and frequency bands.
- The Commission should also seek comment on the application of hearing aid compatibility requirements to MSS providers that offer CMRS, including whether it should make a difference if an MSS provider offers service purely through a satellite-based network or through a combined network that relies on both satellite and ATC facilities.
- The Commission should solicit comment as to whether any new hearing aid compatibility rules are appropriate to address handsets that combine CMRS voice operation with data services provided over Wi-Fi networks or other WLANs.
- The Commission should consider whether modifications to its rules are necessary to address hearing aid compatibility requirements in the context of the emergence of open platform networks, including whether in-store testing requirements should be extended beyond service provider-owned and operated retail outlets in the context of open platform networks.

Other Matters

- The Commission should continue to monitor developments relating to the interaction of wireless phones with cochlear and middle ear implants.
- The Commission should monitor hearing aid labeling and related issues, including the extent to which the hearing aid industry's voluntary measures are effective.
- The Commission should commit to undertake a future review of the hearing aid compatibility rules, as recommended in the Joint Consensus Plan, and seek comment on whether 2010 is an appropriate time frame.

V. PROCEDURAL MATTERS

A. Accessible Formats

104. To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at (202) 418-0530 (voice) or (202) 418-0432 (TTY).

B. Contact Persons

105. For further information concerning this report, please contact Christina Clearwater, Spectrum Competition and Policy Division at 202-418-1893.

VI. ORDERING CLAUSES

106. This Report is issued under delegated authority pursuant to Sections 0.131 and 331 of the Commission's Rules, 47 C.F.R. § 0.131, 0.331, and pursuant to Sections 1, 4(i), 7, 255 and 710 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 151, 154(i), 157, 255, and 610.

107. It is ORDERED that under delegated authority pursuant to Sections 0.131 and 331 of the Commission's Rules, 47 C.F.R § 0.131, 0.331, and pursuant to 47 C.F.R Section .331 and Sections 1, 4(i), 7, 255 and 710 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 151, 154(i), 157, 255, and 610, the proceeding in the WT Docket 06-203 IS TERMINATED.

WIRELESS TELECOMMUNICATIONS BUREAU

Fred B. Campbell, Jr.
Chief

APPENDIX – PARTIES FILING COMMENTS**Comments**

Alliance for Telecommunications Industry Solutions on behalf of the ATIS Incubator Solutions
Program #4 – Hearing Aid Compatibility (collectively ATIS)
American National Standards Institute Accredited Standards Committee (ANSI)
David Branfield
Cingular Wireless LLC (Cingular)
Antoinette Cipollina
Linda Day
Deanne L. Deurell
Carrie Foster
Mark Foster
Joseph Gordon
The Hearing Access Program (HAP)
The Hearing Industries Association (HIA)
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. (collectively HLAA)
Patrick N. Hinman
David G. Hoffman
Northern Virginia Resource Center for Deaf and Hard of Hearing Persons (NVRC)
Gary Palmer
Dana Simon
Sony Ericsson Mobile Communications (USA), Inc. (Sony)
Technology Access Program, Gallaudet University (TAP)

Reply Comments

AT&T Mobility LLC, f/k/a Cingular Wireless LLC (ATT/Cingular)
Alexander Graham Bell Association for the Deaf and Hard of Hearing (AG Bell)
Alliance for Telecommunications Industry Solutions (“ATIS”)
Blooston Rural Carriers (Blooston)
CTIA, The Wireless Association (CTIA)
Dobson Communications Corporation (Dobson)
Technology Access Program, Gallaudet University (TAP)
Hearing Industries Association (HIA)
Hearing Loss Association of America (HLAA)
Iowa Wireless Services (IWS)
Research In Motion Limited (RIM)
T-Mobile USA, Inc.
Technology Access Program, Gallaudet University (TAP)