

**Telecommunications
Industry
Association
Presentation:**



**MANUFACTURERS & SUPPLIERS
OF GLOBAL NETWORKS**

**Developing
Standards for
Accessibility**

November 6, 2013



TIA Government Affairs

Brian Scarpelli

Sr. Manager, Government Affairs

+1-703-907-7714

bscarpelli@tiaonline.org

<http://www.tiaonline.org/policy/accessibility>

Agenda

- Introductions
- TR-41's New Name and Increased Focus on Accessibility
- TR-41 and FCC Collaboration
- Brief Review of TR-41 Accessibility Related Standards
 - TIA-504
 - ANSI/TIA-1083-A
 - ANSI/TIA-4965
 - ANSI/TIA-4953
- Questions and Discussion
- Adjournment



About the Telecommunications Industry Association (TIA)

- Represents over 500 information and communication technology (ICT) companies
- Activities Include:
 - Technology and standards development
 - Policy and advocacy leadership
 - Networking
 - Business opportunity development
 - Access to cutting edge market intelligence
 - Sustainability practices
 - U.S. and international Advocacy and Lobbying
 - Industry Trade Events
 - ...and much more
- American National Standards (ANSI) accredited standards development organization with 11 engineering committees and 12 international advisory groups

TIA's Accessibility Mission

- Encourage collaboration among stakeholders
 - Development of voluntary, consensus-based standards
 - Increase the accessibility of technology for those with disabilities
 - Encourage innovation
 - Harness technology to open up new communications opportunities
- Proactive consultation with the disability community
 - Understand the needs related to ICT products
 - Encourage accessibility solutions into member companies' product development processes
- Work with government regulatory agencies
 - Develop technical standards for use in government rules when needed
 - Encourage the use of voluntary, consensus-based, industry standards to address accessibility needs



TIA TR-41

PERFORMANCE AND ACCESSIBILITY FOR COMMUNICATIONS PRODUCTS

Steve Whitesell

President, Whitesell Consulting LLC

TIA TR-41 Chair

+1-732-751-1079 (voice)

swhitesell@ieee.org



TIA TR-41

PERFORMANCE AND ACCESSIBILITY FOR COMMUNICATIONS PRODUCTS

- TR-41's New Name
- Develop and maintain standards:
 - Covering voluntary requirements for communications products' performance
 - Addressing newly identified performance issues
 - For reference in FCC regulations
- Strong focus on equipment used for voice services, integrated voice and data services, and Internet protocol (IP) applications
- Intent to increase focus on standards related to communications products' accessibility



TIA TR-41.3.14 “Accessibility Working Group”

- Standards for telephone devices, including handsets, headsets, and speakerphones
- Performance of features used by persons with hearing impairments and other disabilities
- Participants from across the industry including accessibility consumer interests (such as Gallaudet University)



Summary of Current TR-41 Related Accessibility Standards

- TIA-504 (EIA RS-504)
 - Adopted as the FCC 68.316 rules
- ANSI/TIA-1083-A
 - In response to complaints of cordless telephones “buzzing” for some hearing aid tele-coils (voluntary standard)
- ANSI/TIA-4965
 - In response to outdated references in FCC 68.317
- ANSI/TIA-4953
 - In response to amplified telephone industry request for a standard for measurement and performance of “high gain amplified telephones” (voluntary standard)



TR-41 Working With The FCC

Example: ANSI/TIA-631

- FCC received complaints of “voices, radio stations, and noise” heard on telephone handsets (early 1990s)
 - The FCC requested technical assistance from TIA TR-41
- TR-41 found the issue was poor telephone design for “Radio Frequency Immunity”
 - Well known design criteria in the AT&T/WE days
 - Can be a major problem for telephone users
- TR-41 developed **ANSI/TIA-631** “*Radio Frequency Immunity Requirements*” (voluntary standard)
- FCC has reported the complaints have decreased dramatically and that TIA-631 as a voluntary standard is a great success (paraphrased from Catherine Deaton from the FCC Los Angeles field office)



TR-41 Working With The FCC

Other Examples

- TIA standards and FCC Part-68 rules
 - Used as the text for FCC rules (TIA-504)
 - Referenced in FCC rules (TIA-470 and TIA-579)
 - Address changes needed based on consumer or telephone equipment industry needs (TIA-4965)
- In response to consumer complaints
 - Raise awareness in the telephone equipment industry
 - Voluntary standards (TIA-631 and TIA-1083)
- In response to accessibility groups needs
 - Provide guidance to the telephone equipment industry
 - Voluntary standards (TIA-4953)

FCC Part-68 Rules for “Hearing Aid Compatibility”

- The FCC associates the phrase “hearing aid compatibility” with both magnetic (t-coil) and acoustic (volume control) requirements
- CFR FCC 68.316
“Hearing aid compatibility:
Technical requirements”
- CFR FCC 68.317
“Hearing aid compatibility volume control:
technical standards”



What is Telephone Hearing Aid Compatibility?

- All telephones manufactured or imported for use in the U.S. are required to be hearing aid compatible (HAC) since 1988.
- “HAC” means providing a magnetic field that complies with the FCC's adopted technical standard (TIA-504).
- Improved performance for hearing aid users
 - The telephone’s magnetic field is used by hearing aids equipped with a telecoil.
 - Use of a hearing aid’s tele-coil reduces background noise heard by the hearing aid user.



CFR FCC 68.316

“Hearing aid compatibility: Technical requirements”

- “A telephone handset is hearing aid compatible for the purposes of this section if it complies with the following standard, published by the Telecommunications Industry Association, copyright 1983, and reproduced by permission of the Telecommunications Industry Association:

ELECTRONIC INDUSTRIES ASSOCIATION
RECOMMENDED STANDARD RS-504 MAGNETIC
FIELD INTENSITY CRITERIA FOR TELEPHONE
COMPATIBILITY WITH HEARING AIDS”

Telephone Volume Control

- Volume control requirements address the acoustic output from the telephone handset coupled to the microphone of a hearing aid, or directly to the ear
 - HAC magnetic coupling ⇔ telecoil (T) mode
 - HAC volume control ⇔ microphone (M) mode or use without hearing aid



CFR FCC 68.317

“Hearing aid compatibility volume control: technical standards”

- References outdated TIA standards for:
 - Measurement methods
 - Establishing the “normal unamplified level”
- ANSI/EIA-470-A-1987 (Analog Telephones)
- ANSI/EIA/TIA-579-1991 (Digital Telephones)

HAC Related Issues

- Consumer complaints of hearing aid tele-coil “buzzing” from cordless telephones
 - Addressed by ANSI/TIA-1083 (voluntary standard)
- Telephone design performance often compromised to comply with FCC 68.317 rules (“HAC Volume Control”)
 - Addressed by ANSI/TIA-4965 which is proposed to be the new reference in the CFR FCC 68.317 rules
 - Current rules encourage manufacturers to trade-off better performance for “meeting the rules”

TIA-504

- TIA-504 HAC Performance Categories
 - 4.2 Axial Field Intensity
 - 4.3 Radial Field Intensity
 - 4.4 Induced Voltage Frequency Response
- OK for standard analog corded telephones
- Technology advancements not addressed
 - Digital telephones
 - Different testing methods
 - Cordless telephones
 - Potential for magnetic noise



ANSI/TIA-1083-A

Handset Magnetic Measurement Procedures and Performance Requirements

Tony Jasionowski

Panasonic – North America

Senior Group Manager, Accessibility

201-348-7777 (voice)

Tony.Jasionowski@us.panasonic.com

<http://www.panasonic.com/about/accessibility/>



ANSI/TIA-1083-A

Handset Magnetic Measurement Procedures and Performance Requirements

- Why is ANSI/TIA-1083 needed?
- How should / could ANSI/TIA-1083 affect FCC Part-68 rules?
- What does ANSI/TIA-1083 mean to the telephone public?



Enhanced HAC Magnetic Coupling Requirements

- The FCC's HAC magnetic coupling requirements
 - FCC 47 CFR 68.316 (is the same as TIA-504)
 - Only addresses the desired signal related to speech and does not consider possible impact of magnetically coupled noise
- ANSI/TIA-1083 (March 2007)
 - Voluntary standard developed by TIA TR-41.3
 - Addresses complaints of “buzz” noise interference often caused by cordless telephones
- ANSI/TIA-1083-A (November 2010)
 - Voluntary standard revised by TIA TR-41.3
 - Added requirements for telephones with digital network interfaces, such as VoIP telephones

ANSI/TIA-1083 and FCC Regulations

- ANSI/TIA-1083-A is not directly included as part of the FCC rules (voluntary standard)
- FCC complaints for hearing aid tele-coil buzzing due to cordless telephones have decreased dramatically since ANSI/TIA-1083 was published
- FCC took an active role in getting telephone equipment manufacturer “buy-in” to compliance with ANSI/TIA-1083 early in the development of the standard
- New regulations are not needed due to the success of the ANSI/TIA-1083 voluntary standard

How ANSI/TIA-1083 Affects The Telephone Using Public

- When purchasing a new wireline telephone look for the following logo to ensure HAC magnetic compatibility





ANSI/TIA-4965

Receive Volume Control Requirements for Digital and Analog Wireline Handset Terminals

- Why is ANSI/TIA-4965 needed?
- Why should the FCC update the CFR FCC 68.317 rules to reference TIA-4965 ?
- How will adopting TIA-4965 improve telephones for consumers?



Wireline Telephones Volume Control Requirements NOW

- Currently, the FCC CFR. 68.317 rules reference older TIA standards:
 - Minimum 12 dB gain relative to “normal unamplified level”
 - Automatic reset if gain exceeds 18 dB
 - Gain is specified as change in Receive Objective Loudness Rating (ROLR) level and refers to two outdated TIA standards.
 - Normal unamplified level must also meet ROLR requirements specified in these two outdated standards.
 - ROLR and associated testing requirements have been replaced by newer TIA standards with an improved method of measuring volume control which is applicable to newer telephone handset designs

Conversational Gain

- A new, more rational and intuitive way to measure volume control
- The reference:
Two people talking face-to-face, 1 meter apart
 - Conversational Gain = How loud a voice is compared to a typical face-to-face conversation
- 0dB conversational gain means the speech heard from the telephone is the same level as would be heard if speaking face-to-face about 1 meter apart



Conversational Gain Reference Level

- Face-to-face conversation at a distance of 1 meter produces an average level of 64 dBSPL at each ear.
- The level needs to be increased by 6 dB to sound equally loud when listening with only one ear.
- The 0 dB Conversational Gain reference is:
 - 64 dBSPL for two-ear listening (i.e., speakerphone)
 - 70 dBSPL for one-ear listening (i.e., handset)

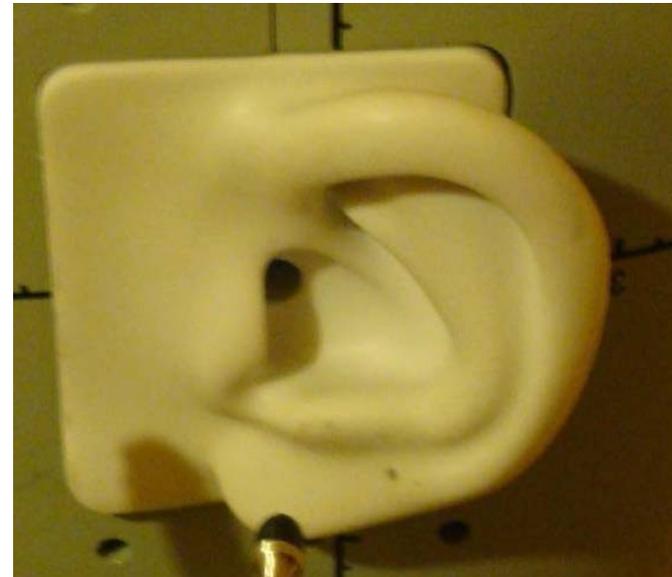
How is Conversational Gain Measured?

- Using commercially available testing equipment

Head And Torso Simulator (HATS)



ITU P.57 Type-3.3 Ear Simulator



The Transition from ROLR to Conversational Gain

- A standard unamplified telephone (the Western Electric 500-type telephone and equivalent models by other manufacturers) provides about 6 dB of Conversational Gain even though it has no volume control.
- The current FCC ROLR-based requirement for at least 12 dB of gain above the normal unamplified level thus becomes a minimum of 18 dB of Conversational Gain.
- The requirement to automatically reset if the ROLR-based gain exceeds 18 dB becomes 24 dB of Conversational Gain.

How Conversational Gain Affects Consumers

- Uses a more relevant reference
 - 20dB gain means hearing speech 20dB louder than if speaking face-to-face
- A better way to compare consumer products
 - Permits a valid comparison to the sound levels produced by different devices
- Telephone equipment volume control claims easier to verify
 - Brings fairness to the marketplace for equipment manufacturers
- Telephone equipment designs do not need to be “compromised” just to meet the old and outdated rule



TIA's Conversational Gain Proposal to the FCC

- ANSI/TIA-4965, Receive Volume Control Requirements for Digital and Analog Wireline Terminals, was developed by TIA TR-41.3 and published publicly on October 24, 2012.
- October 25, 2012: TIA filed a Petition for Rulemaking with the FCC requesting that it update outdated references to TIA standards (see <http://bit.ly/10ah86B>).
 - Would effectively shift wireline telephone volume control from ROLR to Conversational Gain
- In mid-March 2013, the FCC gave TIA's Petition a formal rulemaking number (CG Docket No. 13-46).



TIA's Conversational Gain Proposal to the FCC

- Public Notice on TIA's Petition released on July 19, 2013.
- Comments were due August 19, 2013 and reply comments were due September 9, 2013.
- The record shows support from two stakeholder groups impacted by TIA's request and the hearing aid industry, and notably contains no opposition to TIA's request of the Commission.
- Held ex parte meeting with representatives from FCC Disability Rights Office on October 25, 2013.
- Awaiting FCC action.



Performance Standard for Amplified Telephones (ANSI/TIA-4953)

James Bress

President, AST Technology Labs

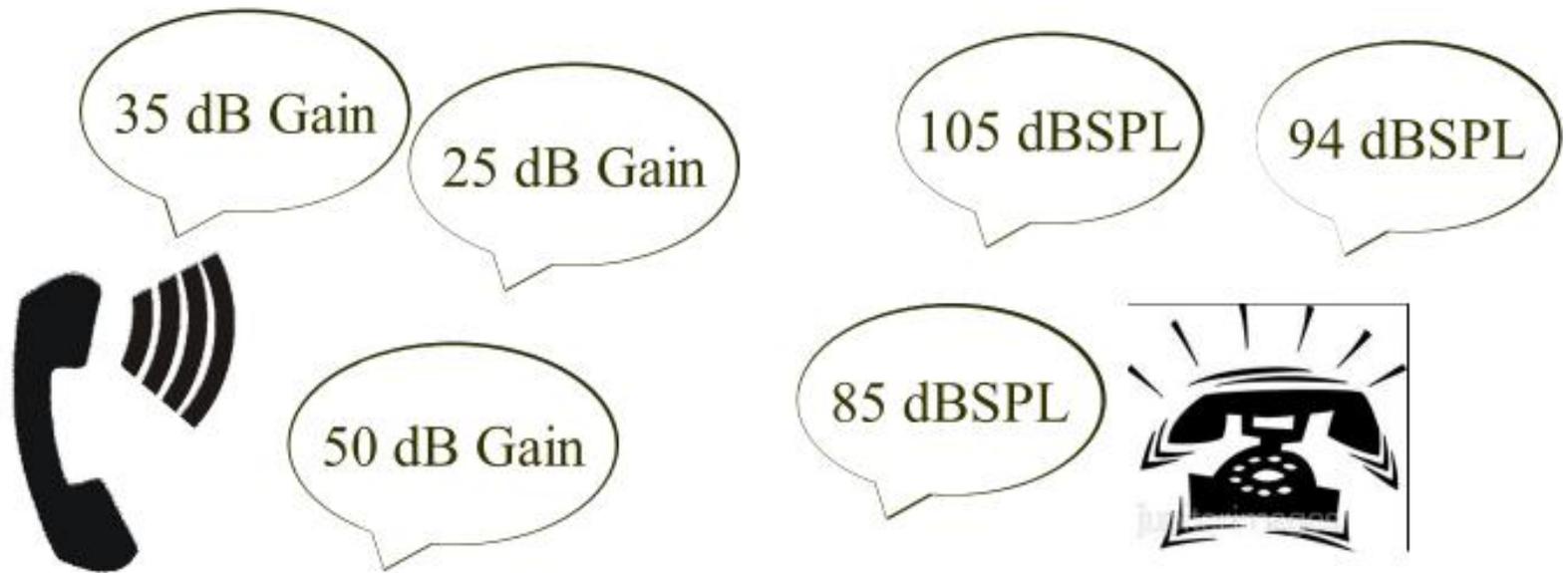
Chair, TIA TR-41.3

+1-321-254-8118 x100 (voice)

jrbress@asttechlabs.com

www.asttechlabs.com

What was the problem?





Who Asked for TIA-4953?

- TEDPA
(Telecommunications Equipment Distribution Programs Assoc.)
 - State programs that buy and distribute equipment to people with disabilities
 - Collectively the largest purchasers of high-gain amplified telephones in the US
- Amplified telephone manufacturers
 - Managing claims of “gain” from competitors
 - Bring sanity to telephone RFP requirements
- Amplified telephone consumers
 - Need to know if an amplified telephone will meet the needs of their hearing loss level
 - Need to know if an amplified telephone will work well when used with a hearing aid

Who Needs an Amplified Telephone?

- People with varying degrees of hearing loss
 - Mild
 - Moderate
 - Severe
- People with hearing aids
 - Telephone to hearing aid coupling issues (microphone mode)
 - Magnetic signal performance for t-coil use (HAC) (TIA-4953 requires telephones to meet TIA-1083)

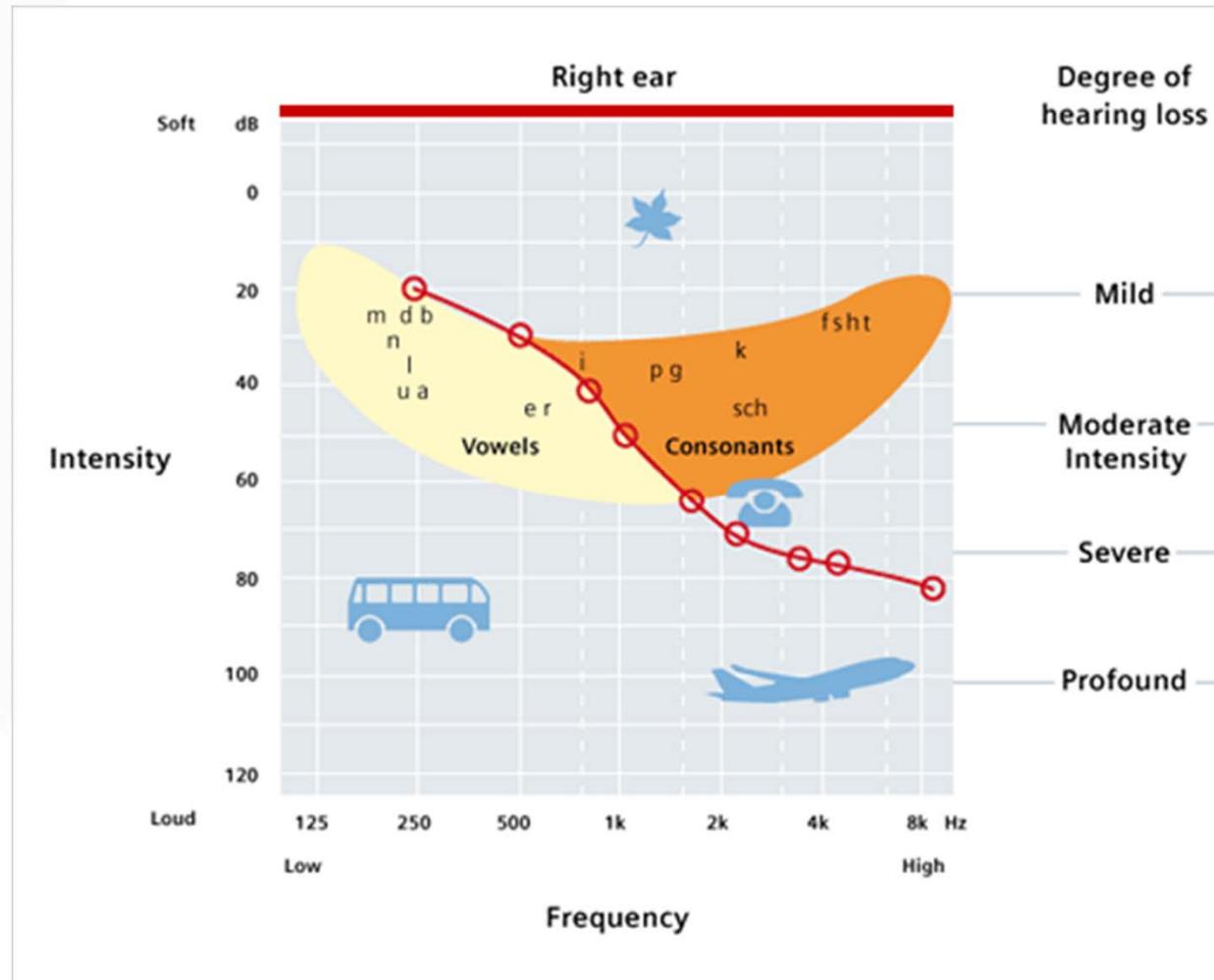


ANSI/TIA-4953

Amplified Telephone Measurement Procedures and Performance Requirements

- Developed by TIA TR-41.3
 - Published in May 2012
 - Adopted by ANSI in August of 2012
- TIA-4953 Requirements Summary
 - Conversational Gain
 - Tone Control
 - Acoustic ringer level and tone
 - Acoustic and magnetic performance for hearing-aid users
 - Noise, distortion, stability (no howling), transmit levels

Why is Tone Control Important?



TIA-4953 Summary

	Hearing Loss Category	Hearing Loss (HL) Range	Tone Control Type	Tone Control	Conversational Gain	Ringer Gain
 <p>Amplified For MILD Hearing Loss</p> <p>TIA-4953</p>	Mild	20 dB to 40 dB	Flat Slope	0 dB	16 dB	11 dB
			Slight Slope	9 dB		
			Steep Slope	14 dB		
 <p>Amplified For MODERATE Hearing Loss</p> <p>TIA-4953</p>	Moderate	40 dB to 70 dB	Flat Slope	0 dB	31 dB	21 dB
			Slight Slope	9 dB		
			Steep Slope	25 dB		
 <p>Amplified For SEVERE Hearing Loss</p> <p>TIA-4953</p>	Severe	70 dB to 90 dB	Flat Slope	0 dB	41 dB	25 dB
			Slight Slope	9 dB		
			Steep Slope	21 dB		

- **Other: (Distortion, noise, transmit, stability)**
- **Unamplified Mode Acoustics Performance Requirements**
- **Acoustic Hearing Aid Compatibility Performance Requirements**
- **Magnetic Hearing Aid Compatibility Performance (TIA-1083-A)**

How ANSI/TIA-4953 Affects Consumers

- When purchasing an amplified telephone, consumers will be able to use the following to make the most informed decision

Amplified For MILD Hearing Loss	Amplified For MODERATE Hearing Loss	Amplified For SEVERE Hearing Loss
		
TIA-4953	TIA-4953	TIA-4953



TR41's Current Activities Related to Accessibility Standards

- Current projects open:
 - Revise ANSI/TIA-1083A:
 - Include wideband digital (VoIP)
 - Use real speech test signals
- Possible new projects to revise current TIA TR-41 standards to address specific issues:
 - Revise ANSI/TIA-1083-A to inform of the need to meet the requirements included in FCC 68.316?
 - Revise TIA-4953 (high-gain amplified telephones with tone control):
 - Include digital telephones (VoIP)
 - Speakerphones
 - Mobile handsets?



Where Do We Go From Here?

- FCC, DRO, Access Board participation in TIA TR-41's development of voluntary standards for accessibility?
- Identify FCC accessibility rules for which TIA TR-41 could develop voluntary standards?
- Input and participation from industry accessibility groups?



Questions?



Thank you!