



IEEE Standard for Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets

Amendment 1

IEEE Communications Society

Sponsored by the
Transmission, Access and Optical Systems Committee

IEEE
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IEEE Communications Society**

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Abstract: This document amends IEEE Std 269-2002.

Keywords: analog telephones, digital telephones, electroacoustic measurements on telephones, handsets, headsets, telephony, voice transmission performance

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Introduction

This introduction is not part of IEEE Std 269a-2007, IEEE Standard for Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets—Amendment 1.

This document amends requirements in IEEE Std 269-2002. The IEEE will maintain this standard current with the state of the technology.

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IEEE Standard for Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets

Amendment 1

NOTE—The editing instructions contained in this amendment define how to merge the material contained therein into the existing base standard to form the comprehensive standard.

The editing instructions are shown in ***bold italic***. Four editing instructions are used: change, delete, insert, and replace. ***Change*** is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using ~~striketrough~~ (to remove old material) and underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editorial notes will not be carried over into future editions because the changes will be incorporated into the base standard.

3. Definitions

Change the following item:

3.38 reference receive volume control setting: The setting of one or more receive volume control setting controls of a telephone system that results in the receive loudness rating (RLR) closest to the specified target value. (Other words are often used to describe this concept, such as “nominal.”)

4. Abbreviations, acronyms, and symbols

4.1 Abbreviations and acronyms

Insert the following alphabetically:

ANTHD	amplitude normalized total harmonic distortion
DRTP	derived recommended test position
ERUP	estimated real use position
RTP	recommended test position
STP	standard test position

5. Test equipment and setup

5.1 Ear simulators

Delete the last sentence:

~~For example, flexible sealing material, such as putty, shall not be used.~~

5.1.1 Selection

Change the first paragraph as shown:

~~An~~ The preferred ear simulator with a flexible pinna is the Type 33. It shall be used for all measurements and devices, unless the applicable performance specification requires or allows an alternative. See Annex B. The Type 3.3 ear simulator is recommended for all devices. The Type 3.4 ear simulator is recommended for all devices except supraconcha and supra aural headsets. If an alternative is used, the requirements of Annex B shall be met.

Delete the second, third, and fourth paragraphs:

~~The ear simulators shall comply with the specifications given in ITU T Recommendation P.57 2002.~~

~~Type 3.3 and Type 3.4 ear simulators both simulate the acoustical and mechanical characteristics of real ears. They are likely to give results comparable to the typical listening experience of real persons for the widest possible variety of handsets or headsets and applications, including nontraditional designer handsets and headsets. Both types simulate typical leakage and how it changes with position and/or applied force. There are, however, some differences between the two types, as well as the positioning devices available for use with them. For more information, see Annex A.~~

~~(Type 3.3 was formerly called the soft HATS pinna. It has a hardness of 55, ± 10 degrees Shore OO, as measured according to ASTM D2240 2002. It is an anatomically shaped pinna which is structurally identical to the pinna formerly described as Type 3.3 in ITU T Recommendation P.57 2002.)~~

Change the last paragraph as shown:

The Type 3.3 ear simulators shall comply with the specifications given in ITU-T Recommendation P.57-2002. The Type 3.3 shall have a hardness of 35 ± 6 degrees Shore-OO, as measured according to ASTM 2240. (ITU-T Recommendation P.57-2002 originally specified a hardness of 55 ± 10 degrees Shore-OO for Type 3.3.)

5.1.2 Measurements made on the Type 3.3 ear simulator compared to real ears

Change the text as shown:

Type 3.3 ~~and Type 3.4~~ ear simulators ~~both~~ simulates the acoustical and mechanical characteristics of ~~real ears the median human ear. They are~~ It is likely to give results comparable to the typical listening experience of real persons for the widest possible variety of headsets, handsets and similar devices. However, the correlation between measurements on ear simulators and on real ears is better for some ~~headset types devices~~ than others. ~~For headsets that are in close proximity to, or in the ear canal, the correlation is not as good as for most other types.~~

The correlation for headsets that are in close proximity to, or in the ear canal, is not as good as for most other types. For insert headsets, ~~both the Type 3.3 and Type 3.4 ear simulators are likely to~~ ear simulator may provide a greater seal than on many human subjects, resulting in an overestimation of output at low frequencies. Nonetheless, ~~both ear simulators are~~ the Type 3.3 ear simulator is recommended for this application.

5.1.3 Translation from DRP to ERP

Change the first sentence of the first paragraph as shown:

Type 3.3 ~~and Type 3.4 ear simulators both measure~~ ear simulator measures at the eardrum reference point (DRP).

5.3 Test fixtures

5.3.2 Handset positioning

Delete the following paragraphs:

~~The handset receiver shall be nominally placed in the HATS position as specified by Annex D or Annex E of ITU-T Recommendation P.64-1999. To do this, the ear-cap reference point (ECRP) shall lie on the axis of motion of the positioning device. This axis is defined by a line that passes through the ERP of the left and right ears. The ECRP may be inside of or outside of ERP depending on the applied force and the shape of the receiver. For the purposes of this standard, the ECRP is the intersection of the external ear-cap reference plane with a normal axis through the effective acoustic center of the sound outlet ports. Generally, the acoustic center of the sound outlet ports is at the center of their distribution.~~

For many handsets, the ear cap reference plane is parallel to the reference plane of the positioning device. For some handsets, the above positioning may not apply, and the position that best represents intended use shall be utilized. The receiver shall contact the pinna with a force of 6N (newtons). This is the default force for all measurements.

In general, it is desirable that receive frequency response should not change too much as application force changes. For this reason, the device should also be tested at 2N and 10N, which represent minimum and maximum forces likely to be used by real persons on a long term basis. These results are for information, but do not have to be included in the test report.

(One could experience a force of approximately 10N by placing a weight of 1 kg on top of a lightweight receiver placed on his or her pinna, with the ear cap reference plane horizontal.) A manufacturer may specify a recommended test position (RTP) on either the Type 3.3 or Type 3.4 ear simulator. The RTP may specify position with respect to ERP, a specific force, or other aspects of the test position intended to simulate actual use. The force applied shall not exceed the range of 2–10 N.

If the phone is tested at the RTP, the definition of the RTP, including evidence of its authorization by the device manufacturer, shall be included in the test report. If the RTP is used, the device should also be tested at 2N, 6 N, and 10N on the same ear simulator. These results are for information, but do not have to be included in the test report. For maximum acoustic output measurements, the device shall be tested at either 6N or the RTP, and also at 13 N. The final result shall be an “upper envelope” curve consisting of the maximum output of each measurement at each frequency. See Figure 1 and Figure 2.

Renumber Figure 1 and Figure 2 as Figure 2 and Figure 3, respectively, and move to 5.3.2.1:

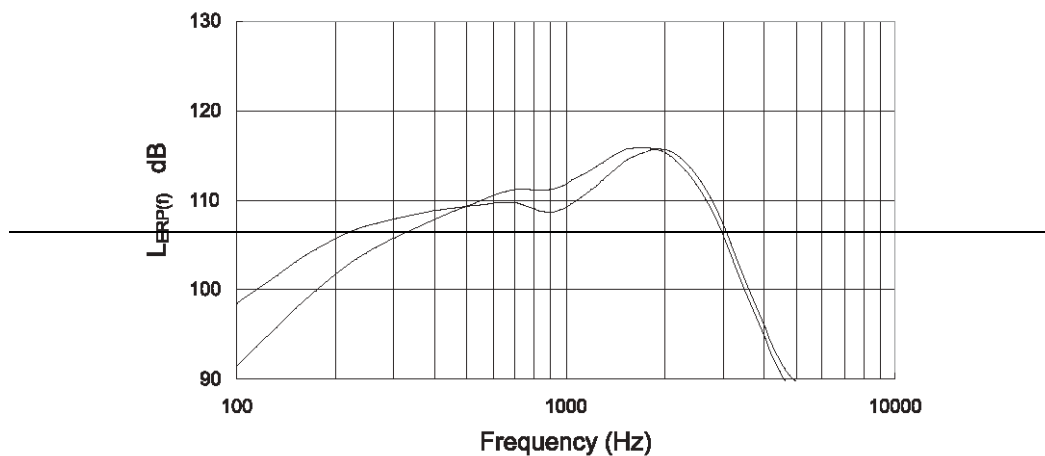


Figure 1—Maximum acoustic output, $LERP(f)$, two measurements on one handset

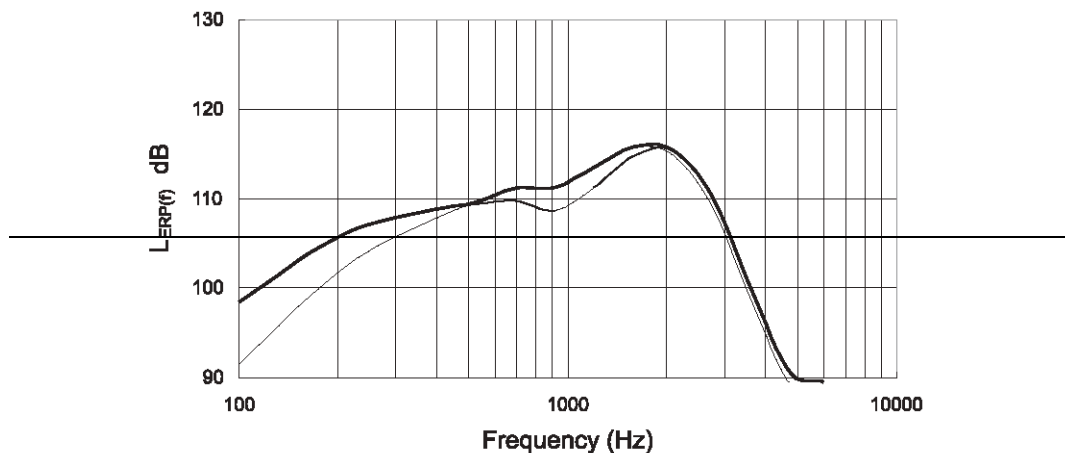


Figure 2—Maximum acoustic output, $LERP(f)$. Upper envelope (heavy line) and two individual measurements on one handset (light lines)

Delete the following paragraphs:

~~Except for maximum acoustic output, the same positioning shall be used for all measurements of any particular device. The positioning method shall be clearly stated in the test report.~~

~~Handsets with carbon microphones require conditioning procedures before positioning for measurement. See Annex D.~~

Insert the following paragraphs and new Figure 1:

The two alternatives for handset positioning are the standard test position (STP) and the manufacturer's recommended test position (RTP). STP is defined in 5.3.2.1 and RTP is defined in 5.3.2.2. STP shall be used unless an RTP is defined by the manufacturer.

Figure 1 shows coordinates as defined in ITU-T P.64, Annex E.

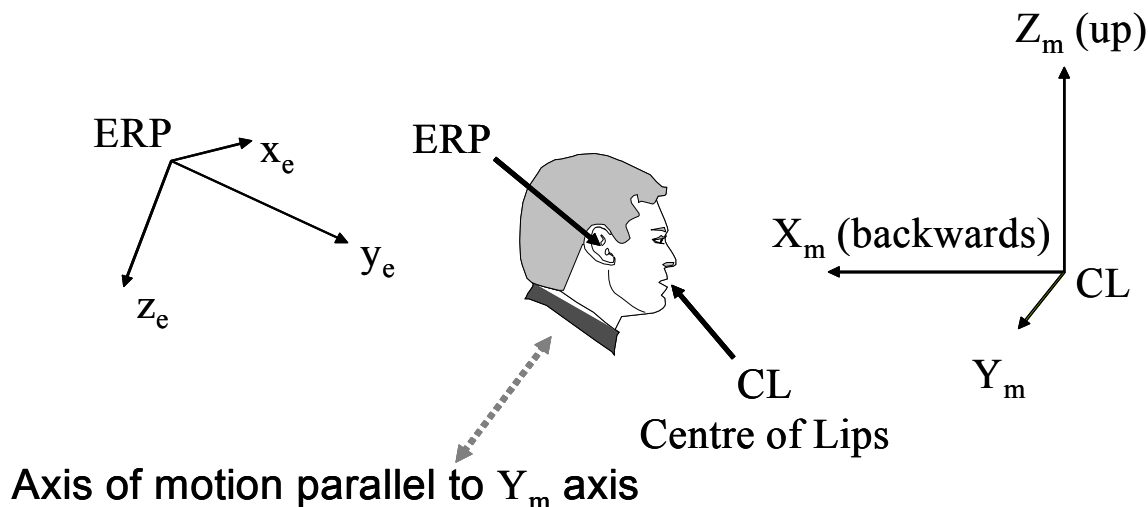


Figure 1—Coordinates as defined in ITU-T P.64-1999, Annex E

Insert 5.3.2.1 as follows:

5.3.2.1 Standard test position (STP)

For STP, the handset receiver must be nominally placed in the HATS position as specified by Annex D or Annex E of ITU-T Recommendation P.64-1999. To do this, the ear-cap reference point (ECRP) must lie on the axis of motion of the positioning device. This axis is defined by a line that passes through the ERP of the left and right ears. It is parallel to the Y_m axis (see ITU-T P.64-1999, Annex E). The ECRP may be inside of or outside of ERP depending on the applied force and the shape of the receiver.

Unless otherwise specified by the manufacturer, the ECRP is the intersection of the external ear-cap reference plane (ECRP Plane) with a normal axis (x_e axis as defined by ITU-T P.64-1999, Annex E) through the effective acoustic center of the sound outlet ports. Generally, the acoustic center of the sound outlet ports is at the center of their distribution. For many handsets, the ECRP plane is parallel to the reference plane of the positioning device.

In general, it is desirable to know how the receive frequency response and loudness rating change as application force changes. For this reason, the device shall be tested at a high leak position and a low leak position, which represent loosely coupled and firmly coupled conditions.

For the Type 3.3 ear simulator, the high leak position is an application force of 10 N and the low leak position is an application force of 18 N. All tests shall be performed at the high leak position. The tests in Table 1 shall also be performed at the low leak position.