

<b>STN</b>	<b>Elektroakustické zariadenia</b> <b>Slúchadlá na hlavu a slúchadlá do uší tvoriace</b> <b>súčasť osobných hudobných prehrávačov</b> <b>Metodika merania maximálnej hladiny</b> <b>akustického tlaku</b> <b>Časť 3: Metóda merania riadenia dávky zvuku</b>	<b>STN</b> <b>EN 50332-3</b>  36 8307
------------	---	--

Sound system equipment: headphones and earphones associated with personal music players - maximum sound pressure level measurement methodology - Part 3: measurement method for sound dose management

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/17

Obsahuje: EN 50332-3:2017

**124909**

---

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2017  
Podľa zákona č. 264/1999 Z. z. o technických požiadavkách na výrobky a o posudzovaní zhody a o zmene a doplnení niektorých zákonov v znení neskorších predpisov sa slovenská technická norma a časti slovenskej technickej normy môžu rozmnožovať alebo rozširovať len so súhlasom slovenského národného normalizačného orgánu.

ICS 17.140.50; 33.160.50

English Version

**Sound system equipment: headphones and earphones  
associated with personal music players - maximum sound  
pressure level measurement methodology - Part 3:  
measurement method for sound dose management**

Équipements de diffusion sonore: casques et écouteurs  
associés avec un lecteur de musique individuel - Méthode  
de mesure de niveau maximal de pression acoustique -  
Partie 3: Méthode de mesure pour la gestion de la dose de  
bruit

Elektroakustische Geräte: Kopfhörer und Ohrhörer in  
Verbindung mit tragbaren Audiogeräten - Verfahren zur  
Messung des maximalen Schalldruckpegels - Teil 3:  
Messmethode für Schalldosis Management

This European Standard was approved by CENELEC on 2017-01-02. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>3</b>
<b>Introduction</b> .....	<b>4</b>
<b>1 Scope</b> .....	<b>5</b>
<b>2 Normative references</b> .....	<b>5</b>
<b>3 Terms and definitions</b> .....	<b>5</b>
<b>4 Limits and calibration</b> .....	<b>5</b>
<b>4.1 General</b> .....	<b>5</b>
<b>4.2 Headset Type variations</b> .....	<b>6</b>
<b>4.3 Headset Fit-variation</b> .....	<b>6</b>
<b>5 Testing</b> .....	<b>6</b>
<b>5.1 General</b> .....	<b>6</b>
<b>5.2 Test of PMP with headphones/plugs included</b> .....	<b>6</b>
<b>5.3 Test of PMP with headphones/plugs not included</b> .....	<b>7</b>
<b>Annex A (Informative) Example of how the basic protections could be achieved</b> .....	<b>9</b>
<b>Annex B (Informative) Background information</b> .....	<b>10</b>
<b>B.1 Motivation</b> .....	<b>10</b>
<b>B.2 Loudness Normalization and EBU R128</b> .....	<b>11</b>
<b>B.3 Explanation of <i>MEL</i></b> .....	<b>11</b>
<b>B.4 Explanation of <i>CSD</i></b> .....	<b>11</b>
<b>B.5 Sound of non-PMP origin</b> .....	<b>12</b>
<b>Bibliography</b> .....	<b>13</b>

## European foreword

This document (EN 50332-3:2017) has been prepared by CLC/TC/108X “*Safety of electronic equipment within the fields of Audio/Video, Information Technology and Communication Technology*”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-01-02
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-01-02

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

**EN 50332-3:2017 (E)****Introduction**

Ideally, sound exposure assessment should be done with a normalized dosimeter located close to the head (ears) of the user during the whole time of the exposure. However, in the context of leisure activities, and for evident practical and economical reasons, this ideal methodology cannot be applied. For a user of a Personal Music Player (PMP), a dosimeter would even have to sit inside the ear canal, close to the tympanic membrane, with exposure data transformed to diffuse field equivalent. The aim of this European Standard is to define an alternative and more applicable methodology for estimating sound exposure from PMPs.

A PMP should inform the user about potentially harmful sound exposure, long-term as well as short-term. This is accomplished by including a rolling calculation of sound dose, *CSD*, and an estimation of momentary sound exposure level, *MEL*. In case *CSD* or *MEL* exceeds defined thresholds, the user is warned and/or PMP gain is lowered. All protections should remain in place when listening to any kind of typical PMP source (music, broadcast, game etc.), but not when, for instance, having a phone call. Annex A shows a block diagram of how a complete protection system might be realized.

By adding actual PMP dose estimation to EN 50332-1 and EN 50332-2, rather than assuming the average energy of programs and tracks, warnings become more relevant to the user. Relevance and trustworthiness is essential for one of the standard's objectives: its educational value.

If estimation relies only on feed-forward principles, some uncertainty in the prediction of *in vivo* dose will persist, for instance how earplugs or headphones are mounted, spread between transducers, spectral properties of transducers, broken transducers etc. Some uncertainties can be effectively dealt with when known combinations of PMPs and headphones are employed, while it may add to the uncertainty when components are acquired separately.

Regardless that earphones, earbuds or headphones for use with PMPs may not exceed defined limits with regard to sensitivity, it is acknowledged that extra uncertainty in the exposure estimation with arbitrary combinations of PMPs and transducers will persist. However, with this part 3, actual electrical measurement of source audio as part of dose estimation, a major contributor to warning errors in general, is eliminated.

## 1 Scope

This European Standard specifies sound dose measurement, and the alerts associated, to reduce the risk of listeners developing hearing impairment when using a Personal Music Player (PMP). The standard does not cover exposure from other sources than PMPs.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50332-1:2013, *Sound system equipment: Headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 1: General method for "one package equipment"*

EN 50332-2:2013, *Sound system equipment: Headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 2: Matching of sets with headphones if either or both are offered separately, or are offered as one package equipment but with standardised connectors between the two allowing to combine components of different manufacturers or different design*

EN 62368-1, *Audio/video, information and communication technology equipment - Part 1: Safety requirements (IEC 62368-1:2014)*

HD 483.1 S2, *Sound system equipment - Part 1: General*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**