SLOVENSKI STANDARD
SIST ETS 300 381 E1:2003

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Telefonija za sluġno prizadete ljudi ï Telefonske sluġalke, induktivno sklopljene s sluġnimi pripomoļ ki

Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids

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ICS:

11.180.15	Pripomoļ ki za gluhe osebe in osebe z okvaro sluha	Aids for deaf and hearing impaired people
33.050.10	Telefonska oprema	Telephone equipment

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Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Terminal Equipment (TE) Technical Committee, in co-operation with the Human Factors (HF) Technical Committee, of the European Telecommunications Standards Institute (ETSI).

Several administrations and operating agencies have expressed the opinion that it would be acceptable if this ETS were to be made mandatory for public telephones and wherever telephones are installed on the basis of safety, e.g. in lifts. It would not be expected to be mandatory in all countries for all telephone terminals. However, if such a facility is made available, it should conform to the requirements of this ETS, and labels and literature advertising the facility should not be related to a particular product unless it does in fact so comply.

Annexes A and E of this ETS are normative while annexes B to D and annexes F and G are informative.

Proposed transposition dates	
Date of latest announcement of this ETS (doa):	31st March 1995
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30th September 1995
Date of withdrawal of any conflicting National Standard (dow):	30th September 1995

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1 Scope

This ETS applies to all telephones having supra-aural earphones (see ITU-T Recommendation P.57 [4]) that can be connected to the Public Switched Telephone Network (PSTN) or Integrated Services Digital Network (ISDN), which are intended for direct application to the ear (e.g. traditional handsets, operators' headsets) and which provide, at the earphone, a magnetic field for coupling to hearing aids. It specifies the level linearity and frequency dependence of the magnetic field strength produced by the handset and characteristics for the calibrated probe coil.

Handsfree or loudspeaking devices are outside the scope of this ETS.

2 Normative references

This ETS incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ITU-T Recommendation P.37 (1993): "Coupling hearing aids to telephone sets".

[2] ITU-T Recommendation P.64 (1993): "Determination of sensitivity/frequency characteristics of local telephone systems".

[3] CCITT Handbook on Telephonometry, ITU, Geneva (1992).

[4] ITU-T Recommendation P.57 (1993): "Artificial ears".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

level of magnetic field strength: The maximum value of the magnetic field strength is given in subclause 5.1 and is measured in accordance with subclause 7.1. The units are Amperes per metre (A/m).

permissible range: The range into which the measured level of the magnetic field strength needs to fall to comply with this ETS.

plane of measurement: A plane parallel to the earcap plane at a distance of 10 mm.

preferred range: The range of magnetic field strength likely to be required for satisfactory performance by hearing aids designed primarily for coupling to magnetic loops often installed in auditoria.

sound pressure level: Acoustic sound pressure level is expressed in decibels relative to 1 Pascal (or dBPa).

3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

ISDN	Integrated Services Digital Network
LRGP	Loudness Rating Guard-ring Position
PSTN	Public Switched Telephone Network
TE	Terminal Equipment

4 Introduction

4.1 General

It is recognised that there is a sizeable proportion of telephone users that have difficulty in conversing over a telephone connection due to hearing loss. To alleviate these difficulties special means have been provided in many national systems to enable hearing impaired users to couple their hearing aids inductively to the telephone receiver, and a number of national/international specifications define characteristics for this form of coupling. This ETS addresses the requirements for successful inductive coupling of hearing aids to telephone sets.

Furthermore, it is also recognised that many hearing impaired users are able to have satisfactory telephone conversations while coupling their hearing aids acoustically to the telephone receiver, or even using the telephone handset without a hearing aid. This latter situation is possible due to the fact that, under good conditions, a telephone connection can be louder than a face-to-face conversation over a 1 metre air path by up to 30 dB.

The inclusion of inductive coupling does not reduce or replace existing technical standards that apply to a handset. Inductive coupling can be combined with other additional functionality, such as amplification or extra earpieces, provided specifically for people with special needs.

Provision of additional amplification in the mouth-to-ear path can greatly increase the proportion of telephone conversations involving hearing impaired users that are rated as "good". A separate ETSI Standard is planned to cover this form of coupling and it is also addressed by ITU-T Recommendation P.37 [1]. Certain national standards also exist to enable direct electrical connection of hearing aids to telephone apparatus. It is hoped that this form of coupling will be covered in a future ETSI standard.

4.2 Background

Magnetic induction systems incorporated in telephone handsets generate an alternating magnetic field with special characteristics which make the field detectable by hearing aids equipped with induction pick-up coils.

Reception of an audio-frequency signal via an induction pick-up coil can often allow an acceptable signal-to-noise ratio to be achieved in cases where the acoustical reception would otherwise be degraded by background noise.

The magnetic field strength, which enables induction pick up coils in hearing aids to function effectively, shall be high enough to produce an acceptable signal to noise ratio but not so high as to cause overloading of the hearing aid.

The value of the magnetic field strength given in this ETS has been chosen so that these requirements are met as far as possible.

Measurement methods used in this ETS are in accordance with those given in ITU-T Recommendations P.37 [1] and P.64 [2] plus the CCITT Handbook on Telephonometry [3].

NOTE: Care should be taken when designing hearing aids to include sufficient immunity to radio frequency interference to avoid disturbances arising from the detection of radio signals emitted by cordless and mobile telephones.

5 Requirements

The following requirements in respect of magnetic field strength as a function of frequency shall be met at all settings of the volume control, if provided. These requirements concern the sensitivity at 1 000 Hz, the frequency response and the linearity at 1 000 Hz as a function of the earphone sound pressure level measured with an artificial ear conforming to ITU-T Recommendation P.57 [4], Type 1.

NOTE: In respect of low acoustic impedance earphones, when the artificial ear according to ITU-T Recommendation P.57 [4], Type 3.2 is validated then the level definition will need to be reviewed.

5.1 Magnetic field strength level

The level of the magnetic field strength at 1 000 Hz when measured in accordance with subclause 7.2 shall be:

Permissible range: - 17 dB to - 30 dB relative to 1 A/m,

Preferred range: - 17 dB to - 25 dB relative to 1 A/m,

for an electrical drive to the telephone that gives a sound pressure level of - 14 dBPa at the artificial ear.

NOTE: Hearing aids with magnetic pick-up coils primarily intended for coupling to magnetic loops in auditoria in accordance with IEC Publication 118-4, are likely to require a field strength in the preferred range for effective performance.

5.2 Linearity of the magnetic field strength

The linearity of the magnetic field strength as a function of sound pressure level shall deviate by less than ± 1 dB when measured in accordance with subclause 7.3.

For an increase of sound pressure level of 20 dB the field strength shall increase by 20 dB ± 1 dB.

5.3 Frequency characteristics

The frequency characteristic of the magnetic field strength shall lie within the template given in table 1 and as shown in figure 1, when measured in accordance with subclause 7.4.