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Supersedes EN 50401:2006

English Version

Product standard to demonstrate the compliance of base station  
equipment with radiofrequency electromagnetic field exposure  
limits (110 MHz - 100 GHz), when put into service

Norme de produit pour démontrer la conformité des  
équipements de station de base aux limites d'exposition  
aux champs électromagnétiques radiofréquences, (110  
MHz - 100 GHz), lors de leur mise en service

Produktnorm zum Nachweis der Übereinstimmung von  
Einrichtungen für Basisstationen bei ihrer Inbetriebnahme  
mit Grenzwerten für die Exposition von Personen  
gegenüber hochfrequenten elektromagnetischen Feldern  
(110 MHz bis 100 GHz)

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

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Ref. No. EN 50401:2017 E

Contents	Page
<b>European foreword</b> .....	<b>3</b>
<b>1 Scope</b> .....	<b>4</b>
<b>2 Normative references</b> .....	<b>4</b>
<b>3 Terms and definitions</b> .....	<b>4</b>
<b>4 Exposure conditions</b> .....	<b>6</b>
<b>5 Normative limits</b> .....	<b>6</b>
<b>6 Evaluation of compliance</b> .....	<b>6</b>
<b>6.1 General public exposure</b> .....	<b>6</b>
<b>6.2 Workers exposure</b> .....	<b>6</b>
<b>7 Assessment uncertainty</b> .....	<b>6</b>
<b>8 Documentation</b> .....	<b>7</b>
<b>9 Assessment of compliance</b> .....	<b>7</b>
<b>Annex ZZ (informative) Relationship between this European standard and the essential requirements of Directive 2014/53/EU [2014 OJ L153] aimed to be covered</b> .....	<b>8</b>
<b>Bibliography</b> .....	<b>9</b>



## European foreword

This document (EN 50401:2017) has been prepared by CLC/TC 106X “Electromagnetic fields in the human environment”.

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) 2018-07-24
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-07-24

This document supersedes EN 50401:2006.

EN 50401:2017 includes the following significant technical changes with respect to EN 50401:2006:

- 1) the standard requires that the assessment has to take into account all reasonably foreseeable operating conditions (Clause 4);
- 2) the standard covers equipment intended for use only by workers as well as equipment intended for use by the general public and different limits are given for each case (Clause 5).

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.



## 1 Scope

This product standard is related to human exposure to radiofrequency electromagnetic fields transmitted by base station equipment in the frequency range 110 MHz to 100 GHz.

The object is to assess the compliance of such equipment with the general public basic restrictions (directly or indirectly via compliance with reference levels) and the workers' exposure limits values (directly or indirectly via compliance with action levels), when it is put into service in its operational environment.

## 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 62232:2017, *Determination of RF field strength, power density and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure (IEC 62232:2017)*

Council Recommendation 1999/519/EC of 12 July 1999 *on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (Official Journal L 199, 30.6.1999, p. 59-70)*

Directive 2013/35/EU of the European Parliament and of the Council of 26 June 2013 *on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) (20th individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) and repealing Directive 2004/40/EC (Official Journal L 179, 29.6.2013, p. 1–21)*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **action levels**

levels which are provided for practical exposure assessment purposes and which are derived from exposure limit values

Note 1 to entry: Respect of the action level will ensure respect of the relevant exposure limit value. If the action level is exceeded, it does not necessarily follow that the exposure limit value will be exceeded.

### 3.2

#### **ambient fields**

background electromagnetic fields in the frequency range from at least 100 kHz to 300 GHz other than the emissions from the EUT in the frequency range 110 MHz to 100 GHz

### 3.3

#### **antenna**

device that serves as a transducer between a guided wave (e.g. coaxial cable) and a free space wave, or vice versa, and that can be used either to emit or to receive a radio signal

Note 1 to entry: In the present standard, if not mentioned, the term antenna is used only for emitting antenna(s).

### 3.4

#### **average emitted power**

time-averaged rate of energy transfer defined by:

$$P_{aep} = \frac{1}{t_2 - t_1} \int_{t_1}^{t_2} P(t) dt$$

