BSI Standards Publication

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

bsi.

National foreword

This British Standard is the UK implementation of EN 50401:2017.
It supersedes BS EN 50401:2006+A1:2011, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/106, Human exposure to low frequency and high frequency electromagnetic radiation.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Date	Text affected

EUROPEAN STANDARD **EN 50401**

EUROPÄISCHE NORM October 2017

ICS 17.220.20; 33.070.01 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)

This European Standard was approved by CENELEC on 2017-07-24. 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

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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:

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