

Draft **ETSI EN 301 908-1** V4.1.1 (2009-04)

Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Base Stations (BS), Repeaters and User Equipment (UE) for
IMT-2000 Third-Generation cellular networks;
Part 1: Harmonized EN for IMT-2000,
introduction and common requirements,
covering the essential requirements
of article 3.2 of the R&TTE Directive**

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Reference

REN/ERM-TFES-004-1

Keywords

3G, 3GPP, 3GPP2, cdma2000, cellular, digital,
IMT-2000, mobile, radio, regulation, UMTS,
WCDMA

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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Foreword

This Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [i.1] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC [i.2] of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity ("the R&TTE Directive").

Technical specifications relevant to Directive 1999/5/EC [i.2] are given in annex A.

The present document is part 1 of a multi-part deliverable covering the Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks, as identified below:

- Part 1: "Harmonized EN for IMT-2000, introduction and common requirements, covering the essential requirements of article 3.2 of the R&TTE Directive";**
- Part 2: "Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD and E-UTRA FDD) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 3: "Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD and E-UTRA FDD) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 4: "Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) and Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 5: "Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) and Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 6: "Harmonized EN for IMT-2000, CDMA TDD (UTRA TDD and E-UTRA TDD) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 7: "Harmonized EN for IMT-2000, CDMA TDD (UTRA TDD and E-UTRA TDD) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 8: "Harmonized EN for IMT-2000, TDMA Single-Carrier (UWC 136) (UE) covering essential requirements of article 3.2 of the R&TTE Directive";
- Part 9: "Harmonized EN for IMT-2000, TDMA Single-Carrier (UWC 136) (BS) covering essential requirements of article 3.2 of the R&TTE Directive";

- Part 10: "Harmonized EN for IMT-2000, FDMA/TDMA (DECT) covering essential requirements of article 3.2 of the R&TTE Directive";
- Part 11: "Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD and E-UTRA FDD) (Repeaters) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 12: "Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) (Repeaters) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 13: "Harmonized EN for IMT-2000, Evolved Universal Terrestrial Radio Access (E-UTRA) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 14: "Harmonized EN for IMT-2000, Evolved Universal Terrestrial Radio Access (E-UTRA) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 15: "Harmonized EN for IMT-2000, Evolved Universal Terrestrial Radio Access (E-UTRA) (FDD Repeaters) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 16: "Harmonized EN for IMT-2000, Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";
- Part 17: "Harmonized EN for IMT-2000, Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive [i.2]. The modular structure is shown in EG 201 399 [i.3].

1 Scope

The present document applies to the following radio equipment types:

- User equipment, repeaters and base stations for IMT-2000, except for IMT-2000 FDMA/TDMA (DECT) and IMT-2000 OFDMA TDD WMAN, falling within the scope of one of the following parts of EN 301 908, and ancillary equipment which is intended to be used together with it.

NOTE 1: EN 301 908-10 [5] contains requirements for radiated spurious emissions and control and monitoring functions applicable to IMT-2000 FDMA/TDMA (DECT) equipment.

The present document includes technical requirements which are common to equipment falling within the scope of several of the following parts.

NOTE 2: The following parts of EN 301 908, which are listed in the foreword of the present document, specify technical requirements in respect of a particular class of IMT-2000 equipment.

NOTE 3: ITU-R Recommendation M.1457-7 [1] defines the characteristics of the members of the IMT-2000 family by means of references to technical specifications developed by Standards Development organizations. The present document applies to equipment designed to meet any version of the terrestrial specifications referenced in ITU-R Recommendation M.1457-7 [1].

The present document is intended to cover the provisions of Directive 1999/5/EC [i.2] (R&TTE Directive), article 3.2, which states that "... radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference."

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of article 3 of the R&TTE Directive [i.2] may apply to equipment within the scope of the present document.

NOTE 4: A list of such ENs is included on the web site <http://www.newapproach.org>.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
 - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ITU-R Recommendation M.1457-7 (2007): "Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)".
- [2] ETSI TR 100 028 (all parts) (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
- [3] ITU-R Recommendation SM.329-10 (2003): "Unwanted emissions in the spurious domain".
- [4] ITU-R Recommendation SM.1539-1 (2002): "Variation of the boundary between the out-of-band and spurious domains required for the application of Recommendations ITU-R SM.1541 and ITU-R SM.329".
- [5] ETSI EN 301 908-10 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 10: Harmonized EN for IMT-2000, FDMA/TDMA (DECT) covering essential requirements of article 3.2 of the R&TTE Directive".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.
- [i.2] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).
- [i.3] ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".
- [i.4] ETSI TR 102 215 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Recommended approach, and possible limits for measurement uncertainty for the measurement of radiated electromagnetic fields above 1 GHz".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [i.2] and the following apply:

ancillary equipment: equipment (apparatus), used in connection with a User Equipment (UE), Repeater or Base Station (BS) is considered as an ancillary equipment (apparatus) if:

- the equipment is intended for use in conjunction with a user equipment UE, repeater or BS to provide additional operational and/or control features to the radio equipment, (e.g. to extend control to another position or location); and
- the equipment cannot be used on a stand alone basis to provide user functions independently of a UE, BS or combination of BS and repeater; and

- the UE, BS or combination of BS and repeater to which it is connected, is capable of providing some intended operation, such as transmitting and/or receiving without the ancillary equipment (i.e. it is not a sub-unit of the main equipment essential to the main equipment basic functions).

applicable part: part of the multi-part deliverable, of which the present document is the first part, for which the scope of that document includes the equipment to be tested

channel bandwidth: RF bandwidth supporting a single UTRA/E-UTRA RF carrier with the transmission bandwidth configured in the uplink or downlink of a cell

NOTE: The channel bandwidth is measured in MHz and is used as a reference for transmitter and receiver RF requirements.

enclosure port: physical boundary of the apparatus through which electromagnetic fields may radiate or impinge

NOTE: In the case of integral antenna equipment, this port is inseparable from the antenna port.

environmental profile: range of environmental conditions under which equipment within the scope of the present document is required to comply with the provisions of the present document

idle mode: state of User Equipment (UE) when switched on but with no Radio Resource Control (RRC) connection

IMT-2000: third generation mobile systems which are scheduled to start service around the year 2000 subject to market considerations

NOTE: ITU-R Recommendation M.1457-7 [1] identifies the detailed specifications for the IMT-2000 radio interfaces.

port: particular interface, of the specified equipment (apparatus), with the electromagnetic environment

NOTE: For example, any connection point on an equipment intended for connection of cables to or from that equipment is considered as a port (see figure 3.1.1).

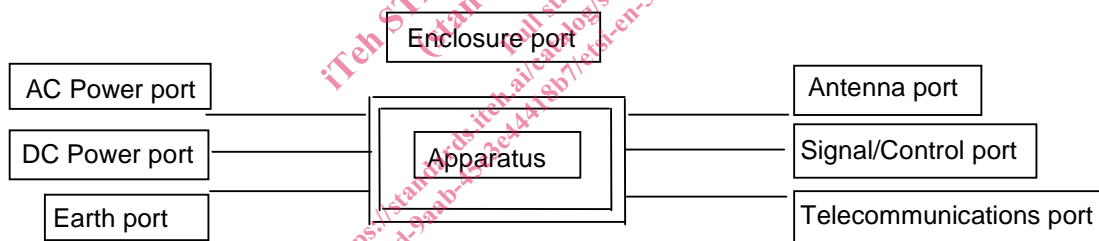


Figure 3.1.1: Examples of ports

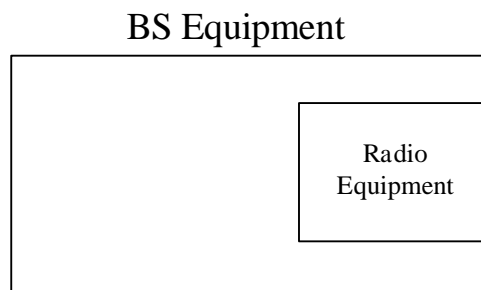


Figure 3.1.2: BS with single enclosure solution

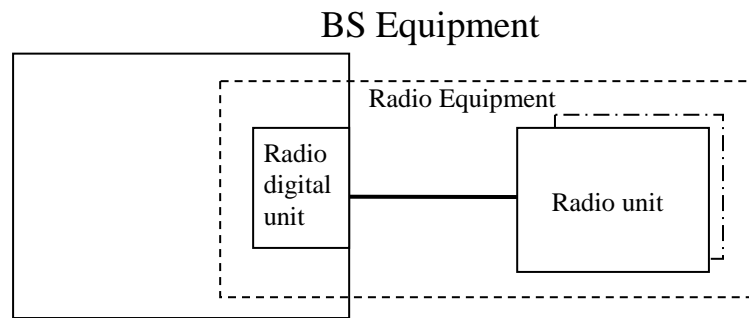


Figure 3.1.3: BS with multiple enclosure solution

radio communications equipment: telecommunications equipment which includes one or more transmitters and/or receivers and/or parts thereof for use in a fixed, mobile or portable application

NOTE: It can be operated with ancillary equipment but if so, is not dependent on it for basic functionality.

Radio equipment: equipment which contains Radio digital unit and Radio unit

radio digital unit: equipment which contains base band and functionality for controlling Radio unit

radio unit: equipment which contains transmitter and receiver

signal and control port: port which carries information or control signals, excluding antenna ports

telecommunication port: port which is intended to be connected to telecommunication networks (e.g. public switched telecommunication networks, integrated services digital networks), local-area networks (e.g. Ethernet, token ring) and similar networks

traffic mode: state of User Equipment (UE) when switched on and with Radio Resource Control (RRC) connection established

3.2 Symbols

For the purposes of the present document, the following symbols apply:

BW_{Channel} Channel bandwidth

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BS	Base Station
CDMA	Code Division Multiple Access
CW	Continuous Wave
e.i.r.p.	equivalent isotropically radiated power
EMC	ElectroMagnetic Compatibility
e.r.p.	effective radiated power
EUT	Equipment Under Test
E-UTRA	Evolved Universal Terrestrial Radio Access
FDD	Frequency Division Duplex
IMT-2000	International Mobile Telecommunications 2000
R&TTE	Radio Telecommunications and Terminal Equipment
RF	Radio Frequency
RIT	Radio Interface Technology
RMS	Root Mean Square
RRC	Radio Resource Control

TDD	Time Division Duplex
UE	User Equipment
UMB	Ultra Mobile Broadband

4 Technical requirements specifications

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, as defined in the applicable part. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the operational environmental profile.

4.2 Conformance requirements

The requirements in the present document are based on the assumption that the operating band is shared between systems of the IMT-2000 family or systems having compatible characteristics.

4.2.1 Introduction

To meet the essential requirement under article 3.2 of Directive 1999/5/EC [i.2] (R&TTE Directive) for IMT-2000 equipment three common essential parameters have been identified. Tables 4.2.1.1 and 4.2.1.2 provide cross-references, for UE, repeater and BS respectively, between these essential parameters and the corresponding technical requirements for equipment within the scope of the present document.

Table 4.2.1.1: Cross references for User Equipment (UE)

Essential parameter	Corresponding technical requirements
Radiated emissions	4.2.2 Radiated emissions (UE)
Control and monitoring functions	4.2.4 Control and monitoring functions (UE)

Table 4.2.1.2: Cross references for Base Stations (BS), and repeaters

Essential parameter	Corresponding technical requirements
Radiated emissions	4.2.3 Radiated emissions (BS and repeater)

NOTE: Receiver sensitivity, use of correct timing and use of correct code are covered in clauses B.1 and B.2 respectively.

4.2.2 Radiated emissions (UE)

4.2.2.1 Definition

This test assesses the ability of radio communications equipment and ancillary equipment to limit unwanted emissions from the enclosure port.

This test is applicable to radio communications equipment and ancillary equipment.

This test shall be performed on the radio communications equipment and/or a representative configuration of the ancillary equipment.

4.2.2.2 Limits

The frequency boundary and reference bandwidths for the detailed transitions of the limits between the requirements for out of band emissions and spurious emissions are based on ITU-R Recommendations SM.329-10 [3] and SM.1539-1 [4].