SLOVENSKI STANDARD
SIST EN 301 908-5 V2.2.1:2004

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Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) - Bazne postaje (BS) in uporabniška oprema (UE) za celični omrežja tretje generacije IMT-2000 - 5. del: Harmonizirani EN za IMT-2000, CDMA Multi-Carrier (CDMA2000) (BS), ki zajema bistvene zahteve člena 3.2 direktive R&TTE

Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 5: Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) (BS and Repeaters) covering essential requirements of article 3.2 of the R&TTE Directive

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Candidate 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 5: Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) (BS and Repeaters) covering essential requirements of article 3.2 of the R&TTE Directive

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Foreword

This Candidate Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (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 [1] 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").

The present document is part 5 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 essential requirements of article 3.2 of the R&TTE Directive";

Part 2: "Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD) (UE) covering essential requirements of article 3.2 of the R&TTE Directive";

Part 3: "Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD) (BS) covering essential requirements of article 3.2 of the R&TTE Directive";

Part 4: "Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) (UE) covering essential requirements of article 3.2 of the R&TTE Directive";

Part 5: "Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) (BS and Repeaters) covering essential requirements of article 3.2 of the R&TTE Directive";

Part 6: "Harmonized EN for IMT-2000, CDMA TDD (UTRA TDD) (UE) covering essential requirements of article 3.2 of the R&TTE Directive";

Part 7: "Harmonized EN for IMT-2000, CDMA TDD (UTRA TDD) (BS) covering 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) (Repeaters) covering essential requirements of article 3.2 of the R&TTE Directive".

Technical specifications relevant to Directive 1999/5/EC [1] are given in annex A.

National transposition dates	
Date of adoption of this EN:	3 October 2003
Date of latest announcement of this EN (doa):	31 January 2004
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 July 2004
Date of withdrawal of any conflicting National Standard (dow):	31 January 2006

Introduction

The present document is part of a set of standards designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

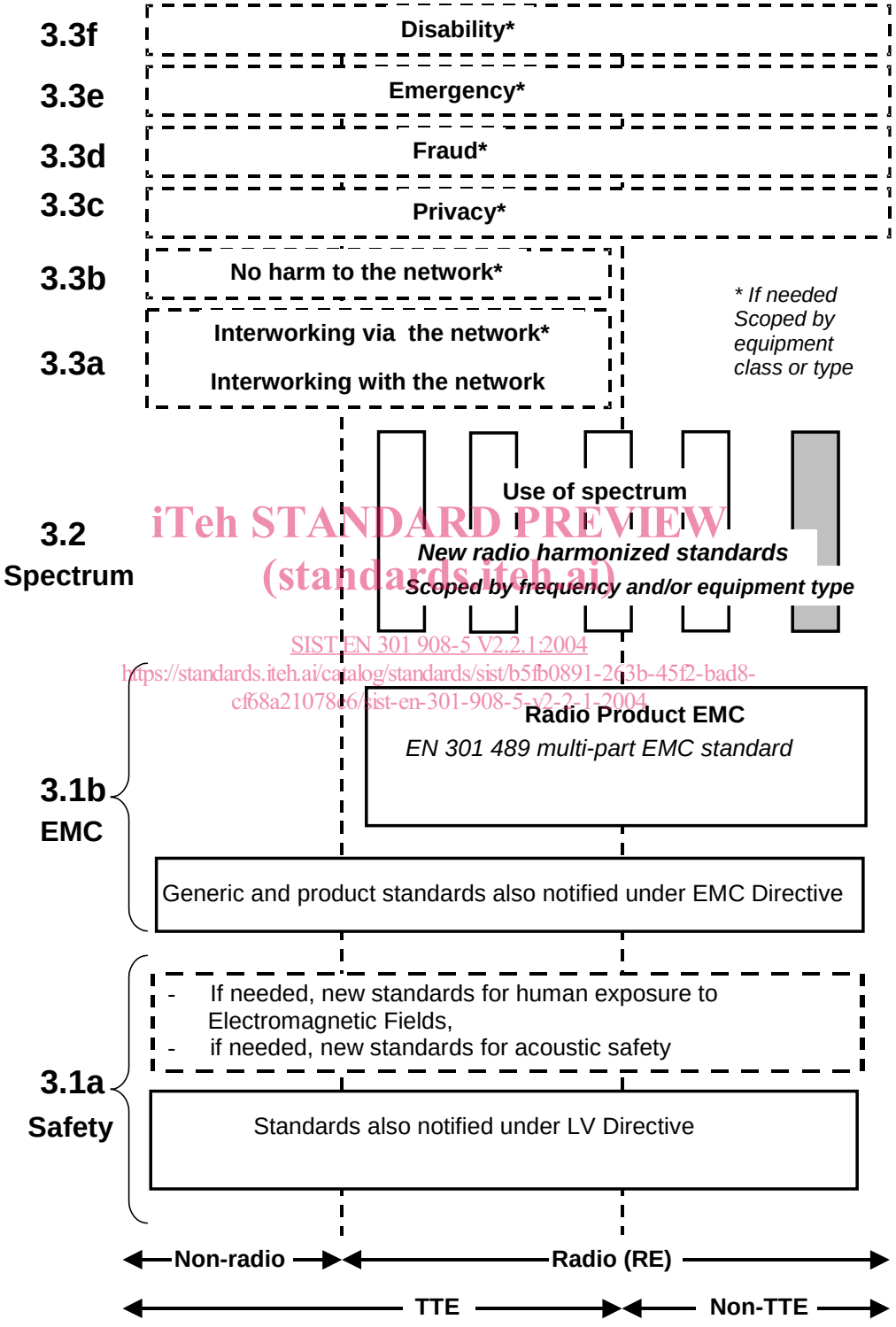

Figure 1: Modular structure for the various standards used under the R&TTE Directive

The left hand edge of the figure 1 shows the different clauses of article 3 of the R&TTE Directive [1].

For article 3.3 various horizontal boxes are shown. Dotted lines indicate that at the time of publication of the present document essential requirements in these areas have to be adopted by the Commission. If such essential requirements are adopted, and as far and as long as they are applicable, they will justify individual standards whose scope is likely to be specified by function or interface type.

The vertical boxes show the standards under article 3.2 for the use of the radio spectrum by radio equipment. The scopes of these standards are specified either by frequency (normally in the case where frequency bands are harmonized) or by radio equipment type.

For article 3.1b, figure 1 shows EN 301 489 [10], the multi-part product EMC standard for radio used under the EMC Directive [2].

For article 3.1a, figure 1 shows the existing safety standards currently used under the LV Directive [3] and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.

The bottom of figure 1 shows the relationship of the standards to radio equipment and telecommunications terminal equipment. A particular equipment may be radio equipment, telecommunications terminal equipment or both. A radio spectrum standard will apply if it is radio equipment. An article 3.3 standard will apply as well only if the relevant essential requirement under the R&TTE Directive [1] is adopted by the Commission and if the equipment in question is covered by the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the R&TTE Directive [1] may be covered in a set of standards.

The modularity principle has been taken because:

- It minimizes the number of standards needed. Because equipment may, in fact, have multiple interfaces and functions it is not practicable to produce a single standard for each possible combination of functions that may occur in an equipment.
- It provides scope for standards to be added:
  - under article 3.2, when new frequency bands are agreed; or
  - under article 3.3, should the Commission take the necessary decisions without requiring alteration of standards that are already published.
- It clarifies, simplifies and promotes the usage of Harmonized Standards as the relevant means of conformity assessment.

The product specifications upon which this present multi-part deliverable is based differ in presentation, and this is reflected in the present document.

1 Scope

The present document applies to the following radio equipment types:

- Base stations and repeaters for IMT-2000 CDMA multi-carrier (cdma2000).

These radio equipment types are capable of operating in all or any part of the frequency bands given in table 1.

Table 1: CDMA multi-carrier base station service frequency bands

Direction of transmission	CDMA multi-carrier base station service frequency bands
Transmit	2 110 MHz to 2 170 MHz
Receive	1 920 MHz to 1 980 MHz

Base stations and repeaters for IMT-2000 CDMA multi-carrier (cdma2000) may support:

1) operation in cdma2000 spread spectrum systems as defined in TIA/EIA/IS-2000.2-B [5], referred to herein as operation in Type 1 cdma2000 systems; or

2) operation in cdma2000 High Rate Packet Data Systems as defined in TIA/EIA/IS-856-1 [11], referred to herein in Type 2 cdma2000 systems.

The present document is intended to cover the provisions of Directive 1999/5/EC [1] (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 [1] will apply to equipment within the scope of the present document.

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

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- 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.
- For a non-specific reference, the latest version applies.

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

[1] 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).

[2] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).

[3] Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LV Directive).

[4] ANSI/TIA-97-E (February 2003): "Recommended Minimum Performance Standard for cdma2000 Spread Spectrum Base Stations".

[5] TIA/EIA/IS-2000.2-B (May 2002): "Physical Layer Standard for cdma2000 Spread Spectrum Systems - Release B".

[6] ANSI/TIA-98-E (February 2003): "Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations".

[7] ANSI/TIA/EIA-126-D-2001 (May 2001): "Mobile Station Loopback Service Options Standard".

[8] TIA/EIA/IS-870 (April 2001): "Test Data Service Option (TDSO) for cdma2000 Spread Spectrum Systems".

[9] TIA/EIA/IS-871 (April 2001): "Markov Service Option (MSO) for cdma2000 Spread Spectrum Systems".

[10] ETSI EN 301 489 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services".

[11] TIA/EIA/IS-856-1 (January 2002): "cdma2000 High Rate Packet Data Air Interface Specification - Addendum 1".

[12] TIA-864 (February 2002): "Recommended Minimum Performance Standards for cdma2000 High Rate Packet Data Access Network Equipment".

[13] TIA/EIA/IS-890 (July 2001): "Test Application Specification (TAS) for High Rate Packet Data Air Interface".

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 [1] and the following apply:

1X: mode of operation of a base station or access network using spreading rate 1

1XDO: mode of operation of a base station or access network using spreading rate 1 in data optimized systems

3X: mode of operation of a base station using spreading rate 3

access attempt: sequence of one or more access probe sequences on the access channel or enhanced access channel containing the same message

NOTE: See also access probe, access probe sequence, and enhanced access probe.

access channel: reverse CDMA channel used by mobile stations for communicating to the base station

NOTE: The access channel is used for short signalling message exchanges, such as call originations, responses to pages, and registrations. The access channel is a slotted random access channel.

access channel preamble: preamble of an access probe consisting of a sequence of all-zero frames that is sent at the 4 800 bit/s rate

access network: network equipment providing data connectivity between a packet switched data network (typically the Internet) and the access terminals in Type 2 cdma2000 systems

NOTE: Connectivity is typically provided at the link layer (PPP). As used in the present document it is synonymous with base station except that HRPD access network always use spreading rate 1.

access probe: one access channel transmission consisting of a preamble and a message

NOTE: The transmission is an integer number of frames in length, and transmits one access channel message. See also access probe sequence and access attempt.

access probe sequence: sequence of one or more access probes on the access channel or enhanced access channel

NOTE: The same access channel or enhanced access channel message is transmitted in every access probe of an access attempt. See also access probe, enhanced access probe, and access attempt.

access terminal: device providing data connectivity to a user in Type 2 cdma2000 systems

NOTE: An access terminal may be connected to a computing device such as a laptop personal computer or may be self-contained data device such as a personal digital assistant or may be a mobile station. Also referred to as HRPD access terminal using spreading rate 1 or UE operating in a Type 2 cdma2000 system.

active frame: frame that contains data and, therefore, is enabled in terms of traffic power

additional preamble: preamble sent after the last fractional preamble on the reverse pilot channel, prior to transmitting on the enhanced access channel or on the reverse common control channel

adjacent channel leakage ratio: ratio of the on-channel transmit power to the power measured in one of the adjacent channels

bad frame: frame classified with insufficient frame quality or for radio configuration 19 600 bit/s primary traffic only, with bit errors

NOTE: See also good frame.

band class: set of frequency channels and a numbering scheme for these channels

NOTE: Band classes are defined in ANSI/TIA-97-E [4], clause 3.1, and ANSI/TIA-98-E [6], clause 3.1.

band class 6: set of frequencies

NOTE: Frequencies identified in table 1 of the present document.

base station: fixed station used for communicating with mobile stations

NOTE 1: Base stations for IMT-2000 CDMA multi-carrier (cdma2000) may support, operation in cdma2000 spread spectrum systems as defined in TIA/EIA/IS-2000.2-B [5], referred to herein as operation in Type 1 cdma2000 system, or operation in cdma2000 High Rate Packet Data Systems as defined in TIA/EIA/IS-856-1 [11], referred to herein as operation in Type 2 cdma2000 systems.

NOTE 2: Depending upon the context, the term base station may refer to a cell, a repeater, a sector within a cell, an MSC, and access network or other part of the wireless system. See also MSC.

basic access mode: mode used on the enhanced access channel where a mobile station transmits an enhanced access channel preamble and enhanced access data in a method similar to that used on the access channel

broadcast control channel: code channel in a forward CDMA channel used for transmission of control information from a base station to a mobile station

candidate frequency: frequency for which the base station specifies a search set, when searching on other frequencies while performing mobile-assisted handoffs

CDMA channel: set of channels transmitted from the base station and the mobile stations on a given frequency

CDMA channel number: 11-bit number corresponding to the centre of the CDMA frequency assignment

CDMA frequency assignment: 1,23 MHz segment of spectrum

NOTE: For band class 0, the channel is centred on one of the 30 kHz channels.
For band classes 1, 4, 6, 7, 8, 9, and 10, the channel is centred on one of the 50 kHz channels.
For band classes 2, 3, 11 and 12, the channel is centred on one of the 25 kHz channels.
For band class 5, the channel is centred on one of the 20 kHz or 25 kHz channels.

CDMA preferred set: set of CDMA channel numbers in a CDMA system corresponding to frequency assignments that a mobile station will normally search to acquire a CDMA pilot channel

code channel: subchannel of a forward CDMA channel or reverse CDMA channel. Each subchannel uses an orthogonal Walsh function or quasi-orthogonal function

Code Division Multiple Access (CDMA): technique for spread-spectrum multiple-access digital communications that creates channels through the use of unique code sequences

code symbol: output of an error-correcting encoder. Information bits are input to the encoder and code symbols are output from the encoder

NOTE: See convolutional code and turbo code.

common assignment channel: forward common channel used by the base station to acknowledge a mobile station accessing the enhanced access channel, and in the case of reservation access mode, to transmit the address of a reverse common control channel and associated common power control subchannel

common power control channel: forward common channel which transmits power control bits (i.e. common power control subchannels) to multiple mobile stations

NOTE: The common power control channel is used by mobile stations operating in the power controlled access mode, reservation access mode, or designated access mode.

common power control subchannel: subchannel on the common power control channel used by the base station to control the power of a mobile station when operating in the power controlled access mode on the enhanced access channel or when operating in the reservation access mode or the designated access mode on the reverse common control channel

continuous transmission: mode of operation in which discontinuous transmission is not permitted

convolutional code: type of error-correcting code

NOTE: A code symbol can be considered as the convolution of the input data sequence with the impulse response of a generator function.

cyclic redundancy code: class of linear error detecting codes which generate parity check bits by finding the remainder of a polynomial division

NOTE: See also frame quality indicator.

discontinuous transmission: mode of operation in which a base station or a mobile station switches its transmitter or a particular code channel on and off autonomously

NOTE: For the case of DTx operation on the forward dedicated control channel, the forward power control subchannel is still transmitted.

down-link: signal path where base station or repeater transmits and the mobile receives

NOTE: Also referred to as the forward link.

effective radiated power: product of the power supplied to the antenna and the antenna gain in a direction relative to a half-wave dipole

enhanced access channel: reverse channel used by the mobile for communicating to the base station

NOTE: The enhanced access channel operates in the basic access mode, power controlled access mode, and reservation access mode. It is used for transmission of short messages, such as signalling, MAC messages, response to pages, and call originations. It can also be used to transmit moderate-sized data packets.

enhanced access channel preamble: non-data-bearing portion of the enhanced access probe sent by the mobile station to assist the base station in initial acquisition and channel estimation

enhanced access data: data transmitted while in the basic access mode or power controlled access mode on the enhanced access channel or while in the reservation mode on a reverse common control channel

enhanced access header: frame containing access origination information transmitted immediately after the enhanced access channel preamble while in the power controlled access mode or reservation access mode

enhanced access probe: one enhanced access channel transmission consisting of an enhanced access channel preamble, optionally an enhanced access header, and optionally enhanced access data