SLOVENSKI STANDARD
SIST EN 301 489-25 V2.2.1:2004

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Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) - Standard elektromagnetne združljivosti (EMC) za radijsko opremo in storitve - 25. del: Posebni pogoji za opremo mobilnih postaj in pomožno opremo pri standardu IMT-2000 s CDMA (kodno porazdeljenim sodostopom) in več nosilnimi frekvencami (“Multi-Carrier”)

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 25: Specific conditions for IMT-2000 CDMA Multi-carrier Mobile Stations and ancillary equipment

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Candidate Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 25: Specific conditions for IMT-2000 CDMA Multi-carrier Mobile Stations and ancillary equipment

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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 Candidate 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 ETSI standards One-step Approval Procedure.

The present document has been produced by ETSI in response to a mandate from the European Commission issued under the Council Directive 98/34/EC [4] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulation.

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 Council Directive on the approximation of the laws of the Member States relating to ElectroMagnetic Compatibility ("the EMC Directive") (89/336/EEC [3] as amended) and Directive 1999/5/EC [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").

The present document is part 25 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

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):	36 months after doa

1 Scope

The present document, together with EN 301 489-1 [1], covers the assessment of "3rd Generation" digital cellular (IMT-2000 CDMA Multi-carrier) mobile and portable (UE) radio terminal equipment and associated ancillary equipment in respect of ElectroMagnetic Compatibility (EMC).

Technical specifications related to the antenna port of radio equipment and emission from the enclosure port of radio equipment are not included in the present document. Such technical specifications are found in the relevant product standards for the effective use of the radio spectrum.

The present document specifies the applicable test conditions, performance assessment and performance criteria of "3rd Generation" digital cellular (IMT-2000 CDMA Multi-carrier) mobile and portable (UE) radio terminal equipment and associated ancillary equipment.

Examples of digital cellular mobile and portable radio equipment covered by the present document are given in annex A.

In case of differences (for instance concerning special conditions, definitions, abbreviations) between the present document and EN 301 489-1 [1], the provisions of the present document take precedence.

Base Station equipment (BS) operating within network infrastructure is outside the scope of the present document. However, the present document does cover mobile and portable equipment that is intended to be operated in a fixed location while connected to the AC mains (see clause 5.5).

The environment classification and the emission and immunity requirements used in the present document are as stated in EN 301 489-1 [1], except for any special conditions included in the present document.

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] ETSI EN 301 489-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".

[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).

[3] 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).

[4] 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.

[5] 3GPP2 C.S0011-A (2000): "Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations".

[6] 3GPP2 C.S0013-A (2000): "3GPP2 C.S0013-A, Loopback Service Options (LSO) for cdma2000 Spread Spectrum Systems".

[7] ETSI ETR 027 (1991): "Radio Equipment and Systems (RES); Methods of measurement for private mobile radio equipment".

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

[9] ITU-T Recommendation P.76: "Determination of loudness ratings; fundamental principles", annex A.

[10] ITU-R Recommendation SM.329-9: "Spurious Emissions".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 489-1 [1] and the following apply:

data application ancillary: ancillary equipment which provides send and/or receive data access to IMT-2000 services via the UE

forward CDMA Channel: CDMA channel from a base station to mobile stations

NOTE: The Forward CDMA Channel contains one or more code channels that are transmitted on a CDMA frequency assignment using a particular pilot PN offset.

Frame Error Rate (FER): Frame Error Rate of the forward traffic channel

NOTE: The value of frame error rate may be estimated by using service options 2, 9, 32, 54, or 55 (see clause 1.3 in 3GPP2 C.S0011-A [5]).

idle mode: state of Mobile Station (MS) when switched on, but with no transmission

International Mobile Telecommunications-2000 (IMT-2000): third generation mobile systems which provide access, by means of one or more radio links, to a wide range of telecommunications services supported by the fixed telecommunication networks (e.g. PSTN, ISDN, or IP), and to other services which are specific to mobile users

Mobile Station (MS): user equipment (UE) entity capable of accessing a set of IMT-2000 services via one or more radio interfaces

NOTE: This entity may be stationary or in motion within the IMT-2000 radio service area while accessing the IMT-2000 services, and may simultaneously serve one or more users.

Necessary Bandwidth: As defined in ITU-R Recommendation SM.329-9 [10].

traffic mode: state of Mobile Equipment (MS) when switched on and with a call established, using the radio configuration supported by the mobile station

NOTE: See clause 1.3 in 3GPP2 C.S0011-A [5].

3.2 Abbreviations

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

BS	Base Station
CDMA	Code Division Multiple Access
DC	Direct Current
EMC	ElectroMagnetic Compatiblity
FER	Frame Error Rate
FL	Forward Link from the BS to MS
IMT-2000	International Mobile Telecommunications
MRP	Mouth Reference Point (artificial head)

MS	Mobile Station
PN	Pseudo-random Number
RC	Radio Configuration
RL	Reverse Link from MS to BS
SPL	Sound Pressure Level
UE	User Equipment

4 Test conditions

For the purpose of the present document, the test conditions of EN 301 489-1 [1], clause 4, shall apply as appropriate. Further product related test conditions for digital cellular mobile and portable radio equipment are specified in the present document.

4.1 General

For emission and immunity tests, the test modulation, test arrangements, etc. as specified in the present document, clauses 4.1 to 4.5 shall apply.

Whenever the Equipment under test (EUT) is provided with a detachable antenna, the EUT shall be tested with the antenna fitted in a manner typical of normal intended use, unless specified otherwise.

4.2 Arrangements for test signals

The provisions of EN 301 489-1 [1], clause 4.2 shall apply with the following modifications.

The wanted RF signal nominal frequency shall be selected by setting the CDMA channel to an appropriate number.

A communication link shall be set up with a suitable base station simulator (hereafter called "the test system") according to the Radio Configuration (RC) supported by the mobile station (3GPP2 C.S0011-A [5] using full data rate only. The test system shall be located outside of the test environment.

Where possible the test of the transmitter section and receiver section of the EUT may be carried out simultaneously to reduce test time.

Immunity tests on mobile and portable radio equipment (MS) shall be performed in two modes of operation:

- with a communication link established (traffic mode); and
- in idle mode.

When the EUT is required to be in the traffic mode, a call is set up using Loopback Service Option (see 3GPP2 C.S0013-A [6]) according to the radio configuration supported by the mobile station (see clause 1.3 in 3GPP2 C.S0011-A [5]), and the following conditions shall be met:

- the EUT shall be commanded to operate at maximum transmit power;
- the "variable Data Rate Transmission" shall be disabled;
- the MS shall be set for maximum data transmission rate.

When the EUT is required to be in the idle mode, then the following conditions shall be met:

- enable the receiver for CDMA-only mode;
- the test system shall simulate a Base Station with the Paging Channel or the Quick Paging Channel or Forward Common Control Channel/Broadcast Control Channel on one carrier. The MS shall be synchronized and be able to respond to paging messages. The MS shall not initiate a call (mobile station originated call), re-registration, or message transmission.

Adequate measures shall be taken to avoid the effect of the immunity test RF signal on the measuring equipment.

4.2.1 Arrangements for test signals at the input of transmitters

The provisions of EN 301 489-1 [1], clause 4.2.1 shall apply.

4.2.2 Arrangements for test signals at the output of transmitters

The provisions of EN 301 489-1 [1], clause 4.2.2 shall apply with the following modifications.

Where the equipment incorporates an external 50 Ω RF antenna connector that is normally connected via a coaxial cable, then the wanted signal to establish a communication link shall be delivered from that connector by a coaxial cable.

Where the equipment incorporates an external 50 Ω RF antenna connector, but this port is not normally connected via a coaxial cable, and where the equipment does not incorporate an external 50 Ω RF connector (integral antenna equipment), then the wanted signal, to establish a communication link, shall be delivered from the equipment to an antenna located within the test environment.

4.2.3 Arrangements for test signals at the input of receivers

The provisions of EN 301 489-1 [1], clause 4.2.3 shall apply with the following modifications.

Where the equipment incorporates an external 50 Ω RF antenna connector that is normally connected via a coaxial cable, then the wanted signal to establish a communication link shall be delivered to that connector by a coaxial cable.

Where the equipment incorporates an external 50 Ω RF antenna connector, but this port is not normally connected via a coaxial cable, and where the equipment does not incorporate an external 50 Ω RF connector (integral antenna equipment), then the wanted signal, to establish a communication link, shall be presented to the equipment from an antenna located within the test environment.

For immunity testing the wanted RF signal level at the input of the EUT shall be at least 40 dB above the reference sensitivity level to provide a stable communication link.

For emission testing the wanted RF signal level at the input of the measuring receiver shall be no more than 15 dB above the reference sensitivity level, to ensure that it operates within its dynamic range.

The reference sensitivity level is defined in 3GPP2 C.S0011-A [5].

The input signal levels used during the tests shall be recorded in the test report.

4.2.4 Arrangements for test signals at the output of receivers

The provisions of EN 301 489-1 [1], clause 4.2.4 shall apply with the following modification.

The specific arrangement for test signals at the output of receivers are found in annex B for receivers operating with analogue speech output (voice), and in annex C for receivers operating with non-speech output (data).

4.3 Exclusion bands

4.3.1 Transmitter exclusion band

The transmitter frequency bands including in band emissions and out of band emissions are covered by the RF spectral mask specification and need no further consideration.

For the purpose of EMC specifications the transmitter exclusion band shall be the carrier centre frequency ± (2,5x Necessary Bandwidth).