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Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) -Standard elektromagnetne združljivosti (EMC) za radijsko opremo in storitve - 23. del: Posebni pogoji za radijsko, ponavljalniško (repetitorsko) in pomožno opremo baznih postaj (BS) po standardu IMT-2000 s CDMA (kodno porazdeljenim sodostopom) in neposredno modulacijo po razpršenem spektru ("Direct Spread") (UTRA - prizemni dostop do UMTS)

Electromagnetic compatibility and Radio spectrum Matters (ERM) - ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Part 23: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA) Base Station (BS) radio, repeater and ancillary equipment

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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).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [3] (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 Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility ("the EMC Directive") (89/336/EEC 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 23 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1]. <u>SIST EN 301 489-23 V1.3.12008</u>

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1 Scope

The present document, together with EN 301 489-1 [1], covers the assessment of "3rd generation" digital cellular (IMT-2000 CDMA Direct Spread) (UTRA) base station equipment, repeaters and associated ancillary equipment in respect of ElectroMagnetic Compatibility (EMC).

Technical specifications related to the antenna port and emissions from the enclosure port of radio equipment (base station (BS), and repeaters) 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 Direct Spread) (UTRA) base station radio equipment and associated ancillary equipment.

Examples of base station 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.

The environmental 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. (standards.iteh.ai)

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific. SIST EN 301 489-23 V1.3.1:2008
- https://standards.iteh.ai/catalog/standards/sist/a424ce90-57bf-410d-a4c1-For a specific reference, subsequent revisions do not apply_{23-v1-3-1-2008}
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- While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee NOTE: their long term validity.
- ETSI EN 301 489-1 (V1.6.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); [1] 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] 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. [4] ETSI TS 125 141 (V7.5.0): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (FDD)". [5] ETSI TS 125 142 (V7.3.0): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (TDD)". ETSI TS 125 101 (V7.5.0): "Universal Mobile Telecommunications System (UMTS); User [6] Equipment (UE) radio transmission and reception (FDD)".

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[7] ETSI TS 125 102 (V7.4.0): "Universal Mobile Telecommunications System (UMTS); User Equipment (UE) radio transmission and reception (TDD)".
[8] ETSI TS 125 143 (V7.2.0): "Universal Mobile Telecommunications System (UMTS); UTRA repeater conformance testing".

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:

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

signal and control port: port which carries information or control signals, except from antenna and telecommunication ports

3.2 Abbreviations

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

BLER	Block Error Ratio CTANDADD DDFV/FW
BS	Base Station
CRC	Cyclic Redundancy Check ndards itch ai)
EMC	ElectroMagnetic Compatibility
EUT	Equipment Under Test
FDD	Frequency Division Duplex EN 301 489-23 V1.3.1:2008
IMT-2000	International Mobile Telecommunications/2000/24ce90-57bf-410d-a4c1-
Iub	Interface between RINC and BS ist-en-301-489-23-v1-3-1-2008
RF	Radio Frequency
RNC	Radio Network Controller
TDD	Time Division Duplex
UARFCN	UTRA Absolute Radio Frequency Channel Number
UTRA	Universal Terrestrial Radio Access

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 base station equipment are specified in the present document.

4.1 General

The equipment shall be tested in normal test environment defined in the conformance testing specification for base stations TS 125 141 [4] (for FDD) or TS 125 142 [5] (for TDD) or in the UTRA repeater conformance testing specification TS 125 143 [8]. The test conditions shall be recorded in the test report.

For emission and immunity tests the test arrangements, etc., as specified in the present document, clauses 4.2 to 4.5, shall apply.

For an EUT which contains more than one BS, it is sufficient to perform tests relating to connectors of each representative type of port forming part of the EUT.

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 UTRA Absolute Radio Frequency Channel Number (UARFCN) to an appropriate number.

A communication link shall be set up with a suitable test system capable of evaluating the EUT using the specified performance criteria at the air interface and/or the Iub interface. The test system shall be located outside of the test environment.

When the EUT is required to be in the transmit/receive mode, the following conditions shall be met:

- the EUT shall be commanded to operate at maximum rated transmit power;
- adequate measures shall be taken to avoid the effect of the unwanted 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.

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 modification.

The wanted input signal level shall be set to a level where the performance is not limited by the receiver noise floor or strong signal effects e.g. 15 dB above the reference sensitivity level as defined in TS 125 141 [4] (for FDD) or TS 125 142 [5] (for TDD), to provide a stable communication link/a424ce90-57bf-410d-a4c1-

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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.

4.2.5 Arrangements for test signals for repeaters

For immunity tests of repeaters, the wanted RF input signal shall be coupled to one antenna port at a level which will result, when measured, in the maximum rated RF output power per channel, as declared by the manufacturer. The test shall either be repeated with a wanted signal coupled to the other antenna port, or a single test shall be performed with the specified input signals being simultaneously coupled to both antenna ports.

4.3 Exclusion bands

4.3.1 Transmitter exclusion band

In the 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 this shall be the transmitter exclusion band from:

FDD bands I, III, VII, VIII	Carrier Frequency ±12,5 MHz
TDD Option 3,84 Mcps	Carrier Frequency ±12,5 MHz
TDD Option 1,28 Mcps	Carrier Frequency ±4,0 MHz

TDD Option 7,68 Mcps

Carrier Frequency ±25,0 MHz

4.3.2 Receiver exclusion band

The receiver exclusion band for terminals extends from the lower frequency of the allocated receiver band minus 20 MHz to the upper frequency of the allocated receiver band plus 20 MHz (except for FDD Band VIII, where the exclusion band ends 10 MHz above the receiver band edge; TDD band 1 900 MHz to 1 920 MHz, where the exclusion band ends 60 MHz above the receiver band edge; and TDD band 2 570 MHz to 2 620 MHz, where the exclusion band ends 70 MHz above the receiver band edge).

The exclusion bands are as set out below:

UTRA/FDD

Rand I	1 900 MHz to 2 000 MHz
Daliu I	1 900 IVITIL 10 2 000 IVITIL

- Band III 1 690 MHz to 1 805 MHz
- Band VII 2 480 MHz to 2 590 MHz
- Band VIII 860 MHz to 925 MHz

UTRA/TDD 3,84 Mcps, 1,28 Mcps, 7,68 Mcps options

1 880 MHz to 1 980 MHz

1 990 MHz to 2 045 MHz

2 550 MHz to 2 690 MHz DARD PREVIEW

4.4 Narrow band responses of receivers

Responses on receivers or duplex transceivers occurring during the immunity test at discrete frequencies which are narrow band responses (spurious responses), are identified by the following method:

• if during an immunity test the quantity being monitored goes outside the specified tolerances (see clause 6.1), it is necessary to establish whether the deviation is due to a narrow band response or to a wide band (EMC) phenomenon. Therefore, the test shall be repeated with the unwanted signal frequency increased, and then decreased by Δf FDD bands I, III, VII, VIII and TDD option 3,84 Mcps $\Delta f = 10,0$ MHz

FDD bands I, III, VII, VIII and TDD option 3,84 Mcps	$\Delta f = 10,0 \text{ MHz}$
TDD option 1,28 Mcps	$\Delta f = 3,2 \text{ MHz}$
TDD option 7,68 Mcps	$\Delta f = 20,0 \text{ MHz};$

- if the deviation disappears in either or both of the above ∆f offset cases, then the response is considered as a narrow band response;
- if the deviation does not disappear, this may be due to the fact that the offset has made the frequency of the unwanted signal correspond to the frequency of another narrow band response. Under these circumstances the procedure is repeated with the increase and decrease of the frequency of the unwanted signal set to Δf_1 ; FDD bands I, III, VII, VIII and TDD option 3,84 Mcps $\Delta f_1 = 12,5$ MHz TDD option 1,28 Mcps $\Delta f_1 = 4,0$ MHz TDD option 7,68 Mcps $\Delta f_1 = 25,0$ MHz;
- if the deviation does not disappear with the increased and/or decreased frequency, the phenomenon is considered wide band and therefore an EMC problem and the equipment fails the test.

Narrow band responses are disregarded.

4.5 Normal test modulation

A communication link shall be set up with a suitable base station system test equipment. The normal test modulation should be a bearer with the characteristics of data rate shown in table 1.