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Celična omrežja IMT - Harmonizirani EN, ki zajema bistvene zahteve člena 3.2 direktive R&TTE - 2. del: CDMA z neposrednim razprševanjem ("Direct Spread") (UTRA FDD) (UE)

IMT cellular networks - Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive - Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)

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Foreword

This Harmonized European Standard (EN) has been produced by ETSI Technical Committee Mobile Standards Group (MSG).

The present document has been produced by ETSI in response to mandate M/284 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 title and reference to the present document are intended to included in the publication in the Official Journal of the European Union of titles and references of Harmonized Standard under the Directive 1999/5/EC [i.2].

See article 5.1 of Directive 1999/5/EC [i.2] for information on presumption of conformity and Harmonised Standards or parts thereof the references of which have been published in the Official Journal of the European Union.

The requirements relevant to Directive 1999/5/EC [i.2] are summarised in annex A.

The present document is part 2 of a multi-part deliverable covering the essential requirements under article 3.2 of Directive 1999/5/EC [i.2] (R&TTE Directive) for Base Stations (BS), Repeaters and User Equipment (UE) for IMT cellular networks, as identified below:

Part 1: "Introduction and common requirements";

Part 2: "CDMA Direct Spread (UTRA FDD) User Equipment (UE)";

Part 3: "CDMA Direct Spread (UTRA FDD) Base Stations (BS)";

Part 4: "CDMA Multi-Carrier (cdma2000) User Equipment (UE)";

Part 5: "CDMA Multi-Carrier (cdma2000) Base Stations (BS)";

Part 6: "CDMA TDD (UTRA TDD) User Equipment (UE)";

Part 7: "CDMA TDD (UTRA TDD) Base Stations (BS)";

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: "CDMA Direct Spread (UTRA FDD) (Repeaters)";

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: "Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)";

Part 14: "Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS)";

Part 15: "Evolved Universal Terrestrial Radio Access (E-UTRA FDD) (Repeaters)";

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";

Part 18: "E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS)";

Part 19: "OFDMA TDD WMAN (Mobile WiMAX) TDD User Equipment (UE)";

Part 20: "OFDMA TDD WMAN (Mobile WiMAX) TDD Base Stations (BS)";

Part 21: "OFDMA TDD WMAN (Mobile WiMAX) FDD User Equipment (UE)";

Part 22: "OFDMA TDD WMAN (Mobile WiMAX) FDD Base Stations (BS)".

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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 type:

- User Equipment for IMT-2000 CDMA Direct Spread (UTRA FDD).

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

Table 1-1: UTRA FDD operating bands

UTRA FDD Band	Direction of transmission	UTRA FDD operating bands
I	Transmit	1 920 MHz to 1 980 MHz
	Receive	2 110 MHz to 2 170 MHz
III	Transmit	1 710 MHz to 1 785 MHz
	Receive	1 805 MHz to 1 880 MHz
VII	Transmit	2 500 MHz to 2 570 MHz
	Receive	2 620 MHz to 2 690 MHz
VIII	Transmit	880 MHz to 915 MHz
	Receive	925 MHz to 960 MHz
XV	Transmit	1 900 MHz to 1 920 MHz
	Receive	2 600 MHz to 2 620 MHz
XVI	Transmit	2 010 MHz to 2 025 MHz
	Receive	2 585 MHz to 2 600 MHz
XX	Transmit	832 MHz to 862 MHz
	Receive	791 MHz to 821 MHz

The present document covers requirements for UTRA FDD User Equipment from 3GPP Releases 99, 4, 5, 6, 7 and 8. In addition, the present document covers requirements for UTRA FDD User Equipment in the operating bands specified in TS 102 735 [i.4].

NOTE 1: For Band XX:

- for user equipment designed to be mobile or nomadic, the requirements in the present document measured at the antenna port also show conformity to the corresponding requirement defined as TRP (total radiated power), as described in Commision Decision 2010/267/EU [i.7], ECC Decision (09)03 [i.8] and CEPT Report 30 [i.9];

- for user equipment designed to be fixed or installed, the present document does not address the requirements described in Commision Decision 2010/267/EU [i.7], ECC Decision (09)03 [i.8] and CEPT Report 30 [i.9].

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 2: 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 specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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 necessary for the application of the present document.

[1] Void.

[2] ETSI TS 134 121-1 (V9.3.0): "Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Radio transmission and reception (FDD); Part 1: Conformance specification (3GPP TS 34.121-1 version 9.3.0 Release 9)".

[3] ETSI TS 134 108 (V9.3.0): "Universal Mobile Telecommunications System (UMTS); Common test environments for User Equipment (UE); Conformance testing (3GPP TS 34.108 version 9.3.0 Release 9)".

[4] ETSI TS 134 109 (V9.1.0): "Universal Mobile Telecommunications System (UMTS); LTE; Terminal logical test interface; Special conformance testing functions (3GPP TS 34.109 version 9.1.0 Release 9)".

[5] ETSI TS 125 101 (V8.14.0): "Universal Mobile Telecommunications System (UMTS); User Equipment (UE) radio transmission and reception (FDD) (3GPP TS 25.101 version 8.14.0 Release 8)".

[6] IEC 60068-2-1 (2007): "Environmental testing - Part 2-1: Tests. Test A: Cold".

[7] IEC 60068-2-2 (2007): "Environmental testing - Part 2-2: Tests. Test B: Dry heat".

[8] ETSI TS 125 214 (V9.4.0): "Universal Mobile Telecommunications System (UMTS); Physical layer procedures (FDD) (3GPP TS 25.214 version 9.4.0 Release 9)".

[9] ETSI TS 145 004 (V9.1.0): "Digital cellular telecommunications system (Phase 2+); Modulation (3GPP TS 45.004 version 9.1.0 Release 9)".

[10] ETSI EN 301 908-1 (V5.2.1): "IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Introduction and common requirements".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[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 Harmonized Standards for application under the R&TTE Directive".

[i.4] ETSI TS 102 735 (V7.1.0): "Universal Mobile Telecommunications System (UMTS); Band-specific requirements for UMTS Frequency Division Duplex (FDD) operation in the bands 1 900 MHz to 1 920 MHz paired with 2 600 MHz to 2 620 MHz and 2 010 MHz to 2 025 MHz paired with 2 585 MHz to 2 600 MHz".

[i.5] 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".

[i.6] 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".

[i.7] Commission Decision of 6 May 2010 on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union (2010/267/EU).

[i.8] ECC Decision of 30 October 2009 on harmonised conditions for mobile/fixed communications networks (MFCN) operating in the band 790 - 862 MHz (ECC/DEC/(09)03).

[i.9] CEPT Report 30 of 30 October 2009 to the European Commision in response to the Mandate on "The identification of common and minimal (least restrictive) technical conditions for 790 - 862 MHz for the digital dividend in the European Union".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

chip rate: rate of "chips" (modulated symbols after spreading) per second

NOTE: The UTRA FDD chip rate is 3,84 Mchip/s.

data rate: rate of the user information, which is transmitted over the Air Interface

EXAMPLE: Output rate of the voice codec.

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

maximum output power: measure of the maximum power the UE can transmit (i.e. the actual power as would be measured assuming no measurement error) in a bandwidth of at least (1 + α) times the chip rate of the radio access mode

NOTE: The period of measurement is assumed to be at least one timeslot.

mean power: power (transmitted or received) in a bandwidth of at least (1 + α) times the chip rate of the radio access mode, when applied to a WCDMA modulated signal

NOTE: The period of measurement is assumed to be at least one timeslot unless otherwise stated.

node B: logical node responsible for radio transmission/reception in one or more cells to/from the User Equipment

nominal maximum output power: nominal power defined by the UE power class

operating band: frequency range that is defined with a specific set of technical requirements, in which UTRA FDD operates

NOTE: Operating bands for UTRA are designated with Roman numerals, while the corresponding operating bands for E-UTRA are designated with Arabic numerals.

power spectral density: function of power versus frequency and when integrated across a given bandwidth, the function represents the mean power in such a bandwidth

NOTE 1: When the mean power is normalized to (divided by) the chip-rate it represents the mean energy per chip. Some signals are directly defined in terms of energy per chip, (DPCH_Ec, Ec, OCNS_Ec and S-CCPCH_Ec) and others defined in terms of PSD (I_o, I_{oc}, Ior and $\hat{I}$or). There also exist quantities that are a ratio of energy per chip to PSD (DPCH_E_c/I_{or}, E_c/I_{or}, etc.). This is the common practice of relating energy magnitudes in communication systems.

NOTE 2: It can be seen that if both energy magnitudes in the ratio are divided by time, the ratio is converted from an energy ratio to a power ratio, which is more useful from a measurement point of view. It follows that an energy per chip of X dBm/3,84 MHz can be expressed as a mean power per chip of X dBm. Similarly, a signal PSD of Y dBm/3,84 MHz can be expressed as a signal power of Y dBm.

NOTE 3: The units of Power Spectral Density (PSD) are extensively used in the present document.

RRC filtered mean power: mean power as measured through a root raised cosine filter with roll-off factor α and a bandwidth equal to the chip rate of the radio access mode

NOTE: The RRC filtered mean power of a perfectly modulated WCDMA signal is 0,246 dB lower than the mean power of the same signal.

3.2 Symbols

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

α	Roll-off factor of the root raised cosine filter, α = 0,22
DPCH_Ec	Average energy per PN chip for DPCH
E_c	Average energy per PN chip
F_{uw}	Frequency of unwanted signal

NOTE: This is specified in bracket in terms of an absolute frequency(s) or a frequency offset from the assigned channel frequency.

I_o	The total received power spectral density, including signal and interference, as measured at the UE antenna connector
I_{oc}	Power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized to the chip rate) of a band limited white noise source (simulating interference from cells, which are not defined in a test procedure) as measured at the UE antenna connector
I_{or}	Total transmit power spectral density (integrated in a bandwidth of (1 + α) times the chip rate and normalized to the chip rate) of the downlink signal at the Node B antenna connector
$\hat{I}_{or}$	Received power spectral density (integrated in a bandwidth of (1 + α) times the chip rate and normalized to the chip rate) of the downlink signal as measured at the UE antenna connector
β_c	Gain factor for DPCCH
β_d	Gain factor for DPDCH
β_{hs}	Gain factor for HS-DPCCH
β_{ec}	Gain factor for E-DPCCH
β_{ed}	Gain factor for E-DPDCH

3.3 Abbreviations

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

ACLR	Adjacent Channel Leakage power Ratio
ACS	Adjacent Channel Selectivity
BER	Bit Error Ratio
BS	Base Station