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9`Y_fca U[bYfbUnXfi y`1j cghf0A7L]b`nUXYj Yj`nj Yn]`n`fUX]`g_`ja`gdY_fca`f0FAŁ!
6 UnbYdcghU`Y`f6 GŁ]b`i dcfUVb]y`UcdfYa Ufl 9L`nUW]`bc`ca`fYy`Y`=AH!&\$\$\$`fYrY
[YbYfUM]Y`!, "XY.`< Ufa cb]n]fUb]`9B`nU`=AH!&\$\$\$žH8 A5`Í G]b[`Y!7 Uff]YfÎ`fi K 7
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Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS) and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; 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

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Candidate Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Base Stations (BS) and User Equipment (UE) for
IMT-2000 Third-Generation cellular networks;
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**

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

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- 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) 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".

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

National transposition dates	
Date of adoption of this EN:	4 January 2002
Date of latest announcement of this EN (doa):	30 April 2002
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 October 2002
Date of withdrawal of any conflicting National Standard (dow):	31 October 2003

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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.

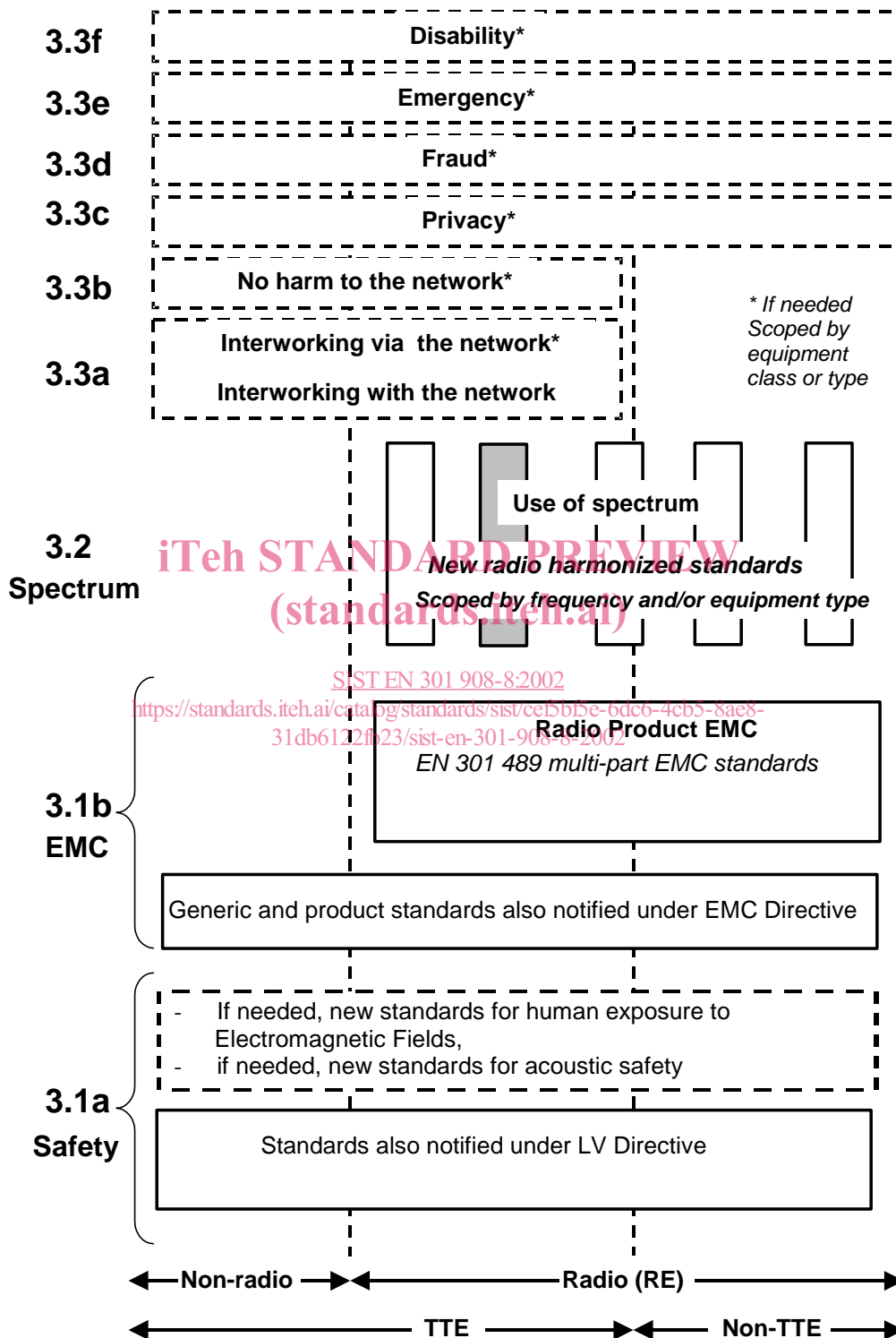


Figure 1: Modular structure for the various standards used under the R&TTE Directive

The left hand edge of 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 [7], 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 decision 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 all parts of EN 301 908 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:

- 1) IMT-2000 TDMA-SC UE.

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

Table 1: IMT-2000 TDMA-SC frequency bands

Direction of transmission	IMT-2000 TDMA-SC frequency bands
Receive	2 110 MHz to 2 170 MHz
Transmit	1 920 MHz to 1 980 MHz

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".

IMT-2000 TDMA-SC specifies operation over 30 kHz and 200 kHz channels. The present document specifies the requirements for these channels in separate clauses.

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/>.

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2 References

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

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- 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.

- [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.
- [2] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.
- [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.
- [4] ANSI/TIA/EIA-136-131-B-2000: "TDMA Third Generation Wireless, Digital Traffic Channel Layer 1" (included by reference into ITU-R Recommendation M.1457: Detailed Specifications of the Radio Interfaces of IMT-2000).
- [5] ANSI/TIA/EIA-136-270-B-2000: "TDMA Third Generation Wireless, Mobile Stations Minimum Performance" (included by reference into ITU-R Recommendation M.1457: Detailed Specifications of the Radio Interfaces of IMT-2000).
- [6] ANSI/TIA/EIA-136-121-A-1999: "TDMA Cellular PCS, Digital Control Channel Layer 1" (included by reference into ITU-R Recommendation M.1457: Detailed Specifications of the Radio Interfaces of IMT-2000).

- [7] ETSI EN 301 489 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services".
- [8] ETSI TR 100 028 (V1.3.1) (all parts): "Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
- [9] CEPT/ERC/REC 74-01: "Spurious Emissions" Siofok 1998.
- [10] ITU-R Recommendation SM.329-8 (2000): "Spurious emissions".
- [11] ETSI TS 151 010-1: "Digital cellular telecommunications system (Phase 2+); Mobile Station (MS) conformance specification; Part 1: Conformance specification (3GPP TS 51.010-1 version 4.1.0 Release 4)".

3 Definitions 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:

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

BER (Bit Error Ratio): ratio of the bits wrongly received to all data bits sent

BLER (Block Error Ratio): ratio of blocks received in error to the total number of received blocks, where a block is defined as received in error if the error detection functions in the receiver indicate an error as the result of the Block Check Sequence (BCS)

NOTE: For USF the Block Error Ratio is the ratio of incorrectly interpreted USF to the total number of received USF.

ESID (Erased SID Frame Ratio): A SID Frame is erased (SID=0) when the UE does not detect a valid transmitted SID frame as a valid SID frame (SID=2), or an invalid SID frame (SID=1). The Erased SID Frame Ratio is defined as the ratio of erased SID frames (SID=0), to the total number of valid SID frames transmitted.

EVSIDR (Erased Valid SID Frame Ratio): declared when the UE does not detect a valid transmitted SID frame as a valid SID frame (SID=2) and (BFI=0 and UFI=0)

NOTE: The Erased Valid SID Frame Ratio is defined as the ratio of erased valid SID frames (SID=0), or (SID=1), or ((BFI or UFI)=1), to the total number of valid SID frames transmitted.

FER (Frame Erasure Rate): A frame is defined as erased if the error detection functions in the receiver indicate an error (BFI = 1). For full rate or half rate speech this is the result of the 3 bit cyclic redundancy check (CRC) as well as other processing functions that cause a Bad Frame Indication (BFI). For signalling channels it is the result of the FIRE code or any other block code used. For data traffic FER is not defined.

RBBER (Residual Bit Error Ratio): Bit Error Ratio (BER) in frames which have not been declared as erased

TBF (Temporary Block Flow): connection used by the two radio resource peer entities to support the unidirectional transfer on packet data physical channels

UFR (Unreliable Frame Ratio): ratio of frames declared as erased (BFI=1), or unreliable (UFI=1), to the total number of frames transmitted

NOTE: An unreliable frame is indicated by setting the UFI flag (UFI=1) and an erased frame is indicated by setting the BFI flag (BFI = 1).

WER (Word Error Rate): is defined as the ratio (# of incorrect received words)/(total # of transmitted words).

NOTE: Incorrect words are defined as having a CRC check which fails. Note that when WER is used as a measurement criteria for RACH or BCCH tests, the word is equal to a Layer-2 frame.

3.2 Abbreviations

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

B	Appropriate frequency in the Bottom of the operating frequency band of the UE
BCS	Block Check Sequence
BER	Bit Error Ratio
BLER	Block Error Ratio
BS	Base Station
DVCC	Digital Verification Colour Code
EMC	Electro-Magnetic Compatibility
ESID	Erased SID Frame Ratio
EVSIDR	Erased Valid SID Frame Ratio
FER	Frame Erasure Rate
HT/no FH	Hilly Terrain/no Frequency Hopping
LV	Low Voltage
M	Appropriate frequency in the Middle of the operating frequency band of the UE
MCS	Modulation and Coding Scheme
PCCH	Packet Control CHannel
PDTCH	Packet Data Traffic CHannel
R&TTE	Radio and Telecommunications Terminal Equipment
RA/no FH	Random Access/no Frequency Hopping
RBER	Residual Bit Error Ratio
RLC	Radio Link Control
SACCH	Slow Associated Control Channel
SS	System Simulator
T	Appropriate frequency in the Top of the operating frequency band of the UE
TBF	Temporary Block Flow
TU high/no FH	Typical Urban/no Frequency Hopping
UE	User equipment
UFR	Unreliable Frame Ratio
USF	Uplink Status Flag
WER	Word Error Rate

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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, which shall be declared by the supplier. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

4.2 Conformance requirements

4.2.1 Introduction

To meet the essential requirement under article 3.2 of the R&TTE Directive [1] for IMT-2000 User Equipment (UE) eight essential parameters have been identified. Tables 2 and 3 provide a cross-reference between these essential parameters and the corresponding technical requirements for equipment within the scope of the present document.

Table 2: Cross-references 30 kHz

Essential parameter	Corresponding technical requirements
Spectrum emissions mask	4.2.2.1 Adjacent and alternate channel power due to modulation 4.2.2.2 Out of band power arising from switching transients
Conducted spurious emissions	4.2.2.3 Harmonic and spurious emissions (conducted)
Accuracy of maximum output power	4.2.2.4 RF power output
Prevention of harmful interference through control of power	4.2.2.4 RF power output
Impact of interference on receiver performance	4.2.2.5 Blocking and spurious-response rejection
Receiver adjacent channel selectivity	4.2.2.6 Adjacent and alternate channel desensitization
Receiver conducted spurious emissions	4.2.2.7 Receiver conducted spurious emissions (Idle mode)
Control & monitoring functions	Not defined.

Table 3: Cross-references 200 kHz

Essential parameter	Corresponding technical requirements
Spectrum emissions mask	4.2.3.1 Output RF spectrum
Conducted spurious emissions	4.2.3.2 Transmitter conducted spurious emissions
Accuracy of maximum output power	4.2.3.3 Transmitter output power
Prevention of harmful interference through control of power	4.2.3.3 Transmitter output power
Impact of interference on receiver performance	4.2.3.4.2 Blocking and spurious response 4.2.3.4.3 Intermodulation rejection 4.2.3.5 Cochannel rejection
Receiver adjacent channel selectivity	4.2.3.6 Adjacent channel selectivity
Receiver conducted spurious emissions	4.2.3.7 Receiver conducted spurious emissions (Idle mode)
Control & monitoring functions	Not defined.

NOTE: The power classes and the associated maximum output powers are defined separately for each channel type (30 kHz/200 kHz), in table 7 and tables 15 and 16 respectively.

<https://standards.iteh.ai/catalog/standards/sist/ce5b5e-6dc6-4cb5-8ac8-51d601224629/sist-en-301-908-8-2002>

4.2.2 Conformance requirements (30 kHz)

4.2.2.1 Adjacent and alternate channel power due to modulation

4.2.2.1.1 Definition

Spectrum noise suppression is the restraint of sideband energy outside the active transmit channel. This RF spectrum is the result of power ramping, modulation and all sources of noise. The spectrum is primarily the result of events that do not occur at the same time: digital modulation, and power ramping (switching transients). The RF spectrum from these two events is specified separately.

Adjacent and first or second alternate channel power is that part of the mean power output of the transmitter resulting from the modulation and noise: which falls within a specified passband centred on either of the adjacent or first or second alternate channels.

4.2.2.1.2 Limits

The emission power in either adjacent channel, centred ± 30 kHz from the centre frequency, shall not exceed a level of 26 dB below the mean output power. The emission power in either alternate channel, centred ± 60 kHz from the centre frequency, shall not exceed a level of 45 dB below the mean output power. The emission power in either second alternate channel centred ± 90 kHz from the centre frequency, shall not exceed a level of 45 dB below the mean output power or -13 dBm measured in 30 kHz bandwidth, whichever is the lower power.

4.2.2.1.3 Conformance

Conformance tests described in clause 5.4.1.1.1 shall be performed.