



SLOVENSKI STANDARD

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%`*`Łf6 GŁž_]`nUYa UV]ghj YbY`nU H]j Y` `YbU`" &X]fY_`h] YF/`HH9

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

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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 9: Harmonized EN for IMT-2000,
TDMA Single-Carrier (UWC 136) (BS)
covering essential requirements
of article 3.2 of the R&TTE Directive**

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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
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Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 October 2002
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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.

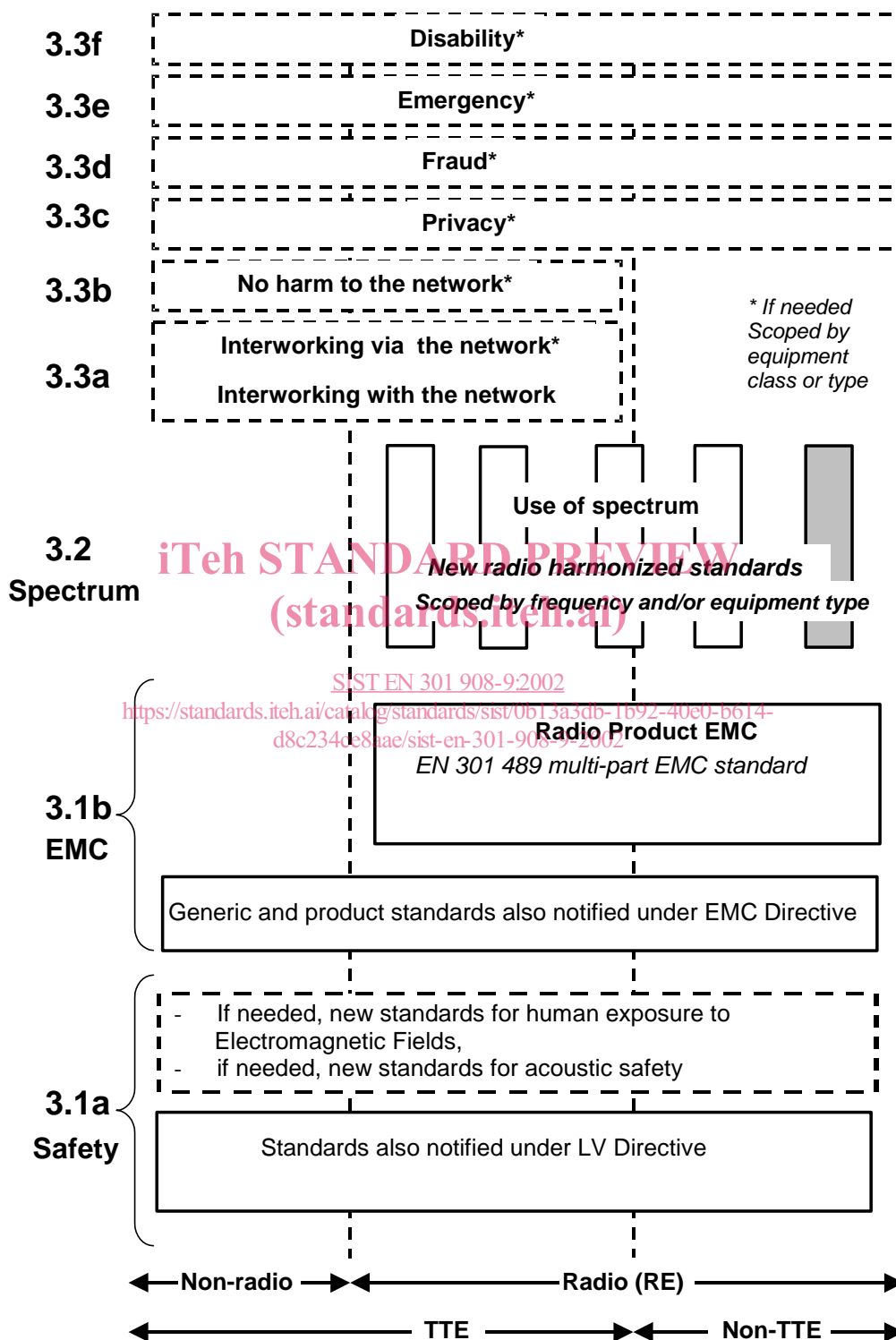


Figure 1: Modular structure for the various standards used under the R&TTE Directive

The left hand edge of 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 [18], 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 all parts of EN 301 908 are based differ in presentation, and this is reflected in the present document.

1 Scope

The present document applies to the following radio equipment types:

- IMT-2000 TDMA - Single-Carrier (SC) base station.

The 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.

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 service frequency bands

Direction of transmission	IMT-2000 service frequency bands
Transmit	2 110 MHz to 2 170 MHz
Receive	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".

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.

- 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] ETSI EN 300 910: "Digital cellular telecommunications system (Phase 2+) (GSM); Radio transmission and reception (GSM 05.05 version 8.3.1 Release 1999)".
- [5] ETSI EN 301 087: "Digital cellular telecommunications system (Phase 2 and Phase 2+) (GSM); Base Station System (BSS) equipment specification; Radio aspects (GSM 11.21 version 8.1.1 Release 1999)".
- [6] ETSI TR 101 115: "Digital cellular telecommunications system (Phase 2+) (GSM); Background for Radio Frequency (RF) requirements (GSM 05.50 version 8.2.0 Release 1999)".

- [7] ITU-T Recommendation O.153 (1992): "Basic parameters for the measurement of error performance at bit rates below the primary rate".
- [8] ANSI/TIA/EIA-136, Rev C (2001): "TDMA Cellular PCS (ANSI/TIA/EIA-136, Rev C-2001)".
- [9] ANSI/TIA/EIA-136-131-B (2000): "TDMA Third Generation Wireless - Digital Traffic Channel Layer 1".
- [10] ANSI/TIA/EIA-136-270-C (2001): "TDMA - Third Generation Wireless - Mobile Stations Minimum Performance".
- [11] ANSI/TIA/EIA-136-121-A (1999): "TDMA Cellular PCS - Digital Control Channel Layer 1".
- [12] 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".
- [13] ETSI EN 300 959: "Digital cellular telecommunications system (Phase 2+) (GSM); Modulation (GSM 05.04 version 8.1.2 Release 1999)".
- [14] ETSI TS 100 912: "Digital cellular telecommunications system (Phase 2+) (GSM); Radio subsystem synchronization (GSM 05.10 version 8.4.0 Release 1999)".
- [15] ANSI/TIA/EIA-136-280-C (2001): "TDMA - Third Generation Wireless - Base Stations Minimum Performance".
- [16] CEPT/ERC Recommendation 74-01 (1999): "Spurious emissions".
- [17] ITU-R Recommendation SM.329-8 (2000): "Spurious emissions".
- [18] ETSI EN 301 489 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services".
- [19] ETSI EN 300 908: "Digital cellular telecommunications system (Phase 2+) (GSM); Multiplexing and multiple access on the radio path".

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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.

3.2 Abbreviations

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

BCCH	Broadcast Common Control CHannel
BER	Bit Error Rate
BLER	BLOCK Error Rate
BS	Base Station
BSS	Base Station System
BTS	Base Transceiver Station
DCCH	Digital Control CHannel
DQPSK	Differential Quadrature Phase Shift Keying
DTC	Digital Traffic Channel
DVCC	Digital Verification Colour Code
EIA	Electronic Industry Association (USA)
EMC	Electro-Magnetic Compatibility

ERP	Effective Radiated Power
GMSK	Gaussian Minimum Shift Keying
GSM	Global Special Mobile
LV	Low Voltage
MS	Mobile Station (User Equipment)
MXM	MiXed Mode (a BS or network consisting of both 30 kHz and 200 kHz channels)
PCS	Personal Communication System
PSK	Phase Shift Keying
R&TTE	Radio equipment and Telecommunications Terminals Equipment
RACH	Random Access CHannel
RBER	Raw Bit Error Rate
RF	Radio Frequency
RMS	Root Mean Square
RX	Receiver
SACCH	Slow Associated Control CHannel
SC	Single Carrier
SFH	Slow Frequency Hopping
SWR	Standing Wave Ratio
TDMA	Time Division Multiplex Access
TIA	Telecommunication Industry Association
TRX	Transmitter-Receiver
TX	Transmitter
Tx	Transmit
UE	User Equipment

4 Technical requirements specifications (standards.iteh.ai)

4.1 Environmental profile

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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 base station (BS), seven 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	4.3.1 Emission mask
Conducted spurious emissions from the transmitter antenna connector	4.3.2 Transmitter conducted spurious emissions
Accuracy of maximum output power	4.3.3 RF output power
Intermodulation attenuation of the transmitter	4.3.4 Transmitter intermodulation spurious emissions
Conducted spurious emissions from the receiver antenna connector	4.3.5 Receiver conducted spurious emissions
Impact of interference on receiver performance	4.3.6 Intermodulation spurious response attenuation
Receiver adjacent channel selectivity	4.3.7 Adjacent and alternate channel desensitization

Table 3: Cross references (200 kHz)

Essential parameter	Corresponding technical requirements
Spectrum emissions mask	4.4.1 Emissions mask
Conducted spurious emissions from the transmitter antenna connector	4.4.2 Transmitter conducted spurious emissions
Accuracy of maximum output power	4.4.3 Maximum RF output power
Intermodulation attenuation of the transmitter	4.4.4 Transmitter intermodulation spurious emissions
Conducted spurious emissions from the receiver antenna connector	4.4.5 Receiver conducted spurious emissions
Impact of interference on receiver performance	4.4.6.1 AM suppression characteristics
	4.4.6.2 Intermodulation characteristics
	4.4.6.3 Receiver blocking characteristics
Receiver adjacent channel selectivity	4.4.7 Receiver adjacent channel selectivity

4.3 Conformance requirements (30 kHz)

4.3.1 Emissions mask

4.3.1.1 Definition

The transmitter emission mask is defined as the attenuation requirements of the out-of-channel-band RF energy. This out-of-band emission is the result of the carrier modulation process, noise and filtering imperfections. The emissions of interest are those that fall into the immediate adjacent and first or second alternate channels.

4.3.1.2 Limit

The emission power in either adjacent channel, centred ± 30 kHz from the carrier 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 carrier frequency, shall not exceed a level of 45 dB below the mean output power. For output powers 50 W or less, the emission power in either second alternate channel, centred ± 90 kHz from the carrier frequency, shall not exceed a level of 45 dB below the mean output power or -13 dBm, whichever is the lower power. For output powers greater than 50 W, the emission power in either second alternate channel, centred ± 90 kHz from the carrier frequency, shall not exceed a level of 60 dB below the mean output power.

4.3.1.3 Conformance

Conformance tests described in clause 5.4.2 shall be performed.

4.3.2 Transmitter conducted spurious emissions

4.3.2.1 Definition

Conducted harmonic and spurious emissions are emissions measured at the antenna terminal on a frequency or frequencies that are outside the authorized bandwidth of the transmitter. Reduction in the level of these spurious emissions is essential for avoiding harmful interference and will not affect the quality of information being transmitted.