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*Candidate Harmonized European Standard (Telecommunications series)*

**Harmonized EN for Global System  
for Mobile communications (GSM);  
Base Station and Repeater equipment covering essential  
requirements under article 3.2 of the R&TTE directive  
(GSM 13.21 version 8.0.0 Release 1999)**

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**GSM**®  
GLOBAL SYSTEM FOR  
MOBILE COMMUNICATIONS

**ETSI** 

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Reference

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REN/SMG-021321Q7R1

Keywords

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Digital cellular telecommunications system,  
Global System for Mobile communications (GSM)

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## Foreword

This Candidate Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Special Mobile Group (SMG), 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 Council Directive 98/34/EC 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 covers the general access requirements for base station and repeater equipment for Phase 2 and Phase 2+ Releases 1996, 1997, 1998 and 1999.

The present document is based on EN 301 087 (GSM 11.21) [2] and ETS 300 609-4 (GSM 11.26) [3].

The contents of the present document may be subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of the present document it will then be re-submitted for formal approval procedures by ETSI with an identifying change of release date and an increase in version number as follows:

Version 8.x.y

where:

- 8 GSM Phase 2+ Release 1999.
- x the second digit is incremented for changes of substance, i.e. technical enhancements, corrections, updates, etc..
- y the third digit is incremented when editorial only changes have been incorporated in the specification.

<b>Proposed national transposition dates</b>	
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):	6 months after doa

# 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.

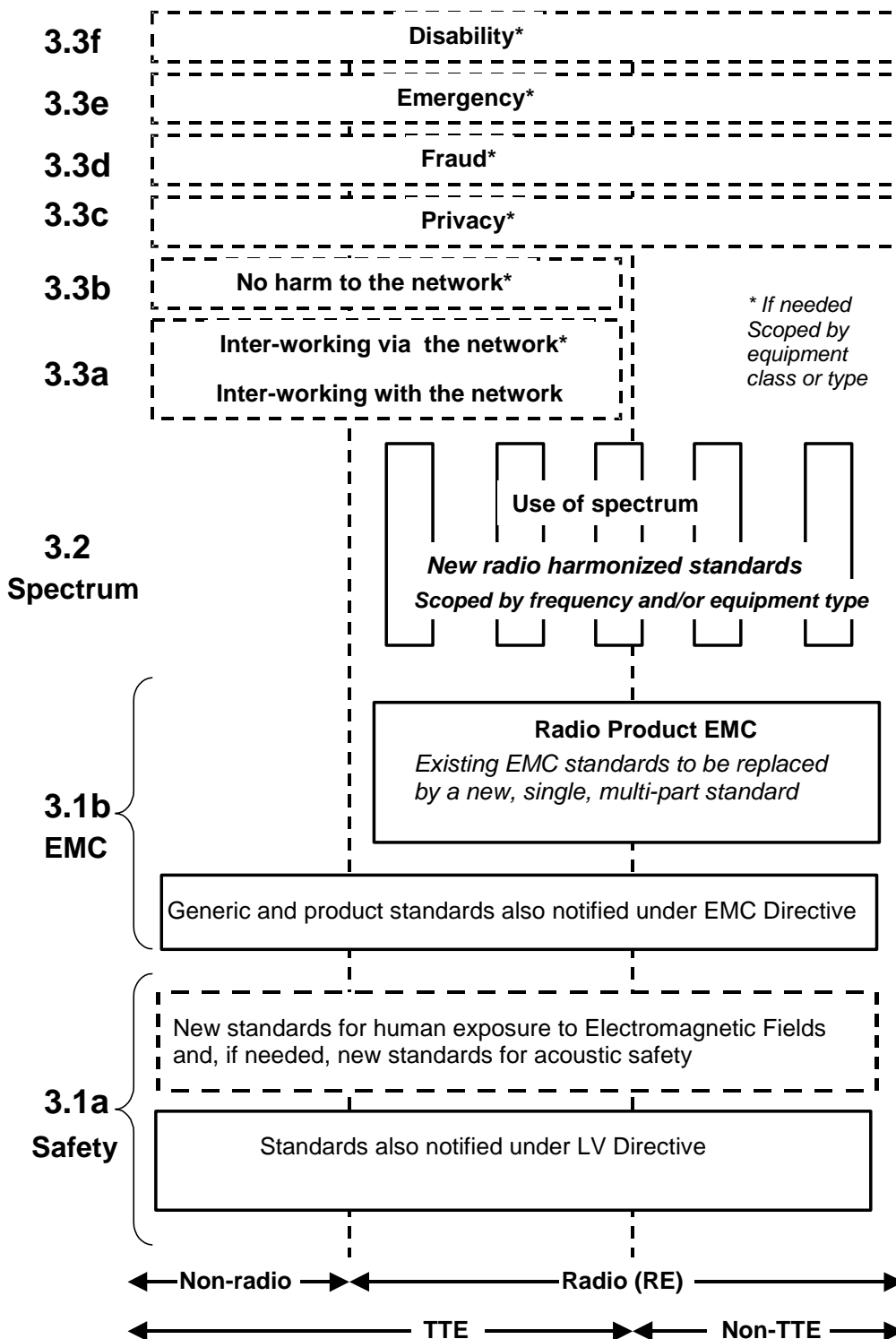


Figure 1: Modular structure for the various standards used under the R&TTE Directive [1]

The left hand edge of the figure 1 shows the different subclauses 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 this standard 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 the diagram shows the new single multi-part product EMC standard for radio, and the existing collection of generic and product standards currently used under the EMC Directive [2]. The parts of this new standard will become available in the second half of 2000, and the existing separate product EMC standards will be used until it is available.

For article 3.1a the diagram 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 the figure 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 decisionswithout 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.

# 1 Scope

The present document specifies minimum technical performance requirements for the following radio equipment type:

- 1 GSM Base Station System.
- 2 GSM Repeater equipment

This radio equipment type is for operation within the Digital cellular telecommunications system in the GSM frequency bands as shown in table 1.

**Table 1: Frequency bands for GSM Base Station System**

	<b>TX:</b>	<b>RX:</b>
<b>P-GSM900</b>	935 - 960 MHz	890 - 915 MHz
<b>E-GSM900</b>	925 - 960 MHz	880 - 915 MHz
<b>R-GSM900</b>	921 - 960 MHz	876 - 915 MHz
<b>DCS1800</b>	1805 - 1880 MHz	1710 - 1785 MHz
<b>GSM 450</b>	460.4-467.6 MHz	450.4-457.6 MHz
<b>GSM 480</b>	488.8-496 MHz	478.8-486 MHz

with a channel separation of 200 kHz, carrying traffic channels according to the Time Division Multiple Access (TDMA) principle.

The present document is intended to cover the provisions of Directive 1999/5/EC (R&TTE Directive) [1] 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>.

# 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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[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 (R&TTE Directive).

[2] Council Directive of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (89/336/EEC) (EMC Directive).

[3] Council Directive of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (73/23/EEC) (LV Directive).

- [4] EN 301 087 V8.3.y: "Digital cellular telecommunications system (Phase 2 & Phase 2+); Base Station System (BSS) equipment specification; Radio aspects (GSM 11.21 version 8.3.y)".
- [5] EN 300 609-4 V8.0.y: "Digital cellular telecommunications system (Phase 2 and Phase 2+); Base Station System (BSS) equipment specification; Part 4: Repeaters (GSM 11.26 version 8.0.y)".

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## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions in the R&TTE Directive [1], and the following terms and definitions 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 Symbols

There are no special symbols used in the present document.

### 3.3 Abbreviations

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

R&TTE	Radio and Telecommunications Terminal Equipment
RE	Radio Equipment

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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 required operational environmental profile.

### 4.2 Conformance requirements and essential tests for base station equipment

#### 4.2.1 Modulation accuracy

The requirements and tests in EN 301 087 [4], subclause 6.2, except subclause 6.2.4.

#### 4.2.2 Mean transmitted RF carrier power

The requirements and tests in EN 301 087 [4], subclause 6.3, except subclause 6.3.4.

#### 4.2.3 Transmitted RF carrier power versus time

The requirements and tests in EN 301 087 [4], subclause 6.4, except subclause 6.4.4.



#### 4.2.4 Adjacent channel power

The requirements and tests in EN 301 087 [4], subclause 6.5, except subclause 6.5.1.4 and 6.5.2.4.

#### 4.2.5 Spurious emissions from the transmitter antenna connector

The requirements and tests in EN 301 087 [4], subclause 6.6, except subclause 6.6.1.4, 6.6.2.1.4, 6.6.2.2.4 and 6.6.2.3.4.

#### 4.2.6 Intermodulation attenuation

The requirements and tests in EN 301 087 [4], subclause 6.7, except subclause 6.7.4.

#### 4.2.7 Intra Base Station System intermodulation attenuation

The requirements and tests in EN 301 087 [4], subclause 6.8, except subclause 6.8.4.

#### 4.2.8 Static Reference Sensitivity Level

The requirements and tests in EN 301 087 [4], subclause 7.3, except subclause 7.3.4.

#### 4.2.9 Multipath Reference Sensitivity Level

The requirements and tests in EN 301 087 [4], subclause 7.4, except subclause 7.4.4.

#### 4.2.10 Reference Interference Level

The requirements and tests in EN 301 087 [4], subclause 7.5, except subclause 7.5.4.

#### 4.2.11 Blocking Characteristics

The requirements and tests in EN 301 087 [4], subclause 7.6, except subclause 7.6.4.

#### 4.2.12 Intermodulation characteristics

The requirements and tests in EN 301 087 [4], subclause 7.7, except subclause 7.7.4

#### 4.2.13 AM suppression

The requirements and tests in EN 301 087 [4], subclause 7.8, except subclause 7.8.4.

#### 4.2.14 Spurious emissions from the receiver antenna connector

The requirements and tests in EN 301 087 [4], subclause 7.9, except subclause 7.9.4.

#### 4.2.15 Radiated spurious emissions

The requirements and tests in EN 301 087 [4], clause 8, except subclause 8.4.

## 4.3 Conformance requirements and essential tests for repeater equipment

### 4.3.1 Spurious emissions

The requirements and tests in EN 300 609-4 [5], clause 5.

### 4.3.2 Intermodulation attenuation

The requirements and tests in EN 300 609-4 [5], clause 6.

### 4.3.3 Out of band gain

The requirements and tests in EN 300 609-4 [5], clause 7.

### 4.3.4 Frequency error

The requirements and tests in EN 300 609-4 [5], clause 8.

### 4.3.5 Modulation accuracy at GMSK modulation

The requirements and tests in EN 300 609-4 [5], clause 9.

### 4.3.6 Modulation accuracy at 8-PSK modulation

The requirements and tests in EN 300 609-4 [5], clause 10.

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## Annex A (informative): Change history

This annex lists all change requests approved for the present document since the first version was approved by ETSI SMG.

SMG#	SMG tdoc	SMG2 tdoc	VERS	CR	RV	PH	CAT	SUBJECT	Resulting Version
s32	P-00-253	971/00	7.0.0	001		R99	B	Update of GSM 13.21 to R99	8.0.0

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# History

<b>Document history</b>			
V8.0.0	August 2000	One-step Approval Procedure	OAP 20001215: 2000-08-16 to 2000-12-15