SLOVENSKI STANDARD
SIST TBR 007 E2:2004

01-oktober-2004

Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) - Izboljšani sistem za radijsko sporočanje (ERMES) - Zahteve za sprejemnik

Electromagnetic compatibility and Radio spectrum Matters (ERM); Enhanced Radio MEssage System (ERMES); Receiver requirements

Ta slovenski standard je istoveten z: TBR 007 Edition 2

ICS:

33.060.20	Sprejemna in oddajna oprema	Receiving and transmitting equipment
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

SIST TBR 007 E2:2004 **en**

TECHNICAL BASIS for REGULATION

TBR 7

December 1997

Second Edition

Source: ERM

Reference: RTBR/ERM-RP04-008

ICS: 33.020

Key words: ERMES, paging, radio, type approval

Electromagnetic Compatibility and Radio spectrum Matters (ERM); Enhanced Radio MEssage System (ERMES); Receiver requirements

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 4 92 94 42 00 - Fax: +33 4 93 65 47 16

Contents

Foreword

This second edition Technical Basis for Regulation (TBR) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This TBR covers the requirements for terminal (mobile) equipment for use within the Enhanced Radio MEssage System (ERMES).

This TBR contains the procedures and requirements for the approval testing of ERMES terminal (mobile) equipment which are mainly intended to be body worn.

The ERMES equipment to be approved is not intended to be physically attached to the public network.

This TBR is based on ETS 300 133-4 [2] and ETS 300 133-5 [3].

This TBR also includes a vocabulary of terms and a list of abbreviations and acronyms.

Annexes A, B and C are normative and therefore integral parts of this TBR.

ETSI Interim Intellectual Property Rights (IPR) Policy

The attention of ETSI has been drawn to the Intellectual Property Rights (IPRs) listed below which are, or may be, or may become, essential to the present standard. The IPR owner has undertaken to grant irrevocable licences on fair, reasonable and non-discriminatory terms and conditions to these IPRs pursuant to the ETSI Interim IPR Policy. Further details pertaining to these IPRs can be obtained directly from the IPR owner.

The present information is accurate to the best of ETSI's knowledge. Pursuant to the ETSI Interim IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs, which are, or may be, or may become, essential to the present standard.

IPRs:

EP Patent No. 0090851: Decoder for Transmitted Message Activation Codes;

EP App. No. 89909668,9: Multiple Frequency Message System;

EP App. No. 89913131,2: Power Conservation Method and Apparatus for a Portion of Information Signal;

EP App. No. 92901376,1: Multiple Format Signalling Protocol for a Selective Call Receiver;

EP App. No. 90915018,7: Nation-wide Paging with Local Modes of Operation;

EP App. No. 91904526,0: Multiple Frequency Scanning.

IPR owner:

MOTOROLA Ltd, 110 Bath Road, Slough, GB-BERKSHIRE SL1 3SZ

Blank page

1 Scope

This Technical Basis for Regulation (TBR) specifies the technical characteristics to be provided by Enhanced Radio MEssage System (ERMES) terminal equipment, which are mainly intended to be body worn and are capable of the reception and decoding of signals transmitted according to the ERMES standard, as described in ETS 300 133-4 [2].

The objective of this TBR is to ensure that ERMES terminal equipment meets the essential requirements as laid down in terms of the Directive 91/263/EEC [6], articles 4d to 4g.

There are no specific EMC requirements included in this TBR for Article 4c of Directive 91/263/EEC [6]. The general EMC requirements for ERMES are included in ETS 300 340 [9].

2 Normative references

This TBR incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this TBR only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETS 300 133-2 (1997): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Enhanced Radio MEssage System (ERMES); Part 2: Service aspects".

[2] ETS 300 133-4 (1997): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Enhanced Radio MEssage System (ERMES); Part 4: Air interface specification".

[3] ETS 300 133-5 (1997): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Enhanced Radio MEssage System (ERMES); Part 5: Receiver conformance specification".

[4] ISO Standard 1073 parts 1 & 2: "Alphanumeric character sets for optical recognition".

[5] CTR Scope (5/3/92): "European Radio Message System (ERMES) - Approval requirements for paging receivers" (NTRAC).

[6] Official Journal of the European Communities Volume 34, 23 May 1991: "Council Directive 91/263 /EEC of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity".

[7] ETS 300 133-6 (1997): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Enhanced Radio MEssage System (ERMES); Part 6: Base station conformance specification".

[8] ETR 028: "Radio Equipment and Systems (RES) - Uncertainties in the measurement of mobile radio equipment characteristics".

[9] ETS 300 340: "Radio Equipment and Systems (RES); Electro-Magnetic Compatibility (EMC) for European Radio Message System (ERMES) paging receivers".

[10] ITU-T Recommendation E.212: "Identification plan for land mobile stations".

[11] ETR 027 (1991): "Radio Equipment and Systems (RES); Methods of measurement for private mobile radio equipment".

3 Definitions, abbreviations and symbols

3.1 Introduction

The terms, definitions and abbreviations used within this TBR are given in this clause. A definition or a reference to a definition given in this clause is valid for all clauses of this TBR.

An explanation of all the abbreviations and acronyms used in this TBR is given in alphabetical order in subclause 3.3.

The definitions are presented in six groups. Within each group the definitions are given in a conceptual order rather than alphabetical order.

3.2 Vocabulary

3.2.1 Administrative terms

user: A person or machine initiating an access to the operator network or receiving a message through the operator network. User includes mobile subscribers, fixed subscribers and non-registered customers.

network operator: The administration/company which is responsible for the technical and commercial operation of the operator network.

home operator: The network operator to which a specific user has subscribed.

3.2.2 Identity related terms

basic Radio Identity Code (RIC): The prime identity of the paging receiver allocated by the network operator when service is initiated. It can not be changed without safeguards against unauthorised changes.

country code: Binary representation of the country number defined in ITU-T Recommendation E.212, annex A [10]. The country code consists of 7 bits.

initial address: The 18 most significant bits of the local address.

operator identity: The number used by the system on the radio path to identify the home operator of a receiver. It has a total length of 13 bits and consists of three parts, the zone code, the country code and the operator code.

operator code: The number used by the system to identify an operator within a country. It consists of 3 bits.

Radio Identity Code (RIC): The number used by the system on the radio path to identify the receiver(s) for which the paging signal is intended. RIC has a total length of 35 bits and consists of four parts: The zone code (3 bits) the country code (7 bits), the operator code (3 bits) and the local address (22 bits).

zone code: Binary representation of the zone number defined in ITU-T Recommendation E.212, annex A [10]. The zone code consists of 3 bits.

3.2.3 Services, facilities and receiver features

group call: A call intended for two or more mobile subscribers.

3.2.4 Network related terms

ERMES system: The totality of the operator networks.

home network: The operator network with which a mobile subscriber has signed a subscription.

3.2.5 Area concepts

paging area: The area controlled by a Paging Area Controller (PAC). It is the minimum area to which a mobile subscriber is permitted to subscribe in order to receive his paging messages.

3.2.6 Terms related to the radio subsystem

alert signal: The signal generated by the receiver as an indication of a received paging signal.

alert signal indicator: The information bits contained in the I1 message header that determines which alert signal should be generated at the receiver. It is related to the address code input by the calling party.

batch number: The 4 bit number corresponding to a particular batch type. Batch type A corresponds to batch number 0000. Batch type P corresponds to batch number 1111.

batch type: The letter (A to P) which identifies one of the 16 batches within a sub-sequence.

code word: The standard information unit of 30 bits length (used on the air interface).

code block: The unit of nine interleaved code words used in the message partition of the air interface.

End Of Message (EOM) character: A specific character used to indicate the end of an alphanumeric message. It corresponds to DC1 as defined in ETS 300 133-2 [1], clause B.2.

paging signal: The signal sent on the radio path to a paging receiver.

3.3 Abbreviations and acronyms

For the purposes of this TBR, the following abbreviations apply:

AII	Additional Information Indicator
BAI	Border Area Indicator
BER	Bit Error Ratio
CTAP	Common Temporary Address Pointer
EB	External Bit
EOM	End of Message
ERMES	Enhanced Radio MEssage System
ETI	External Traffic Indicator
EUT	Equipment Under Test
FSI	Frequency Subset Indicator
FSN	Frequency Subset Number
IA	Initial Address
LCD	Liquid Crystal Display
MD	Message Delimiter
OPID	Operator Identity (of the home operator)
PA	Paging Area
PAC	Paging Area Controller
RF	Radio Frequency
RIC	Radio Identity Code
rms	root mean square
RSVD	Reserved bits for future definition
SSI	Supplementary System Information
TBR-RT	Technical Basis for Regulation - Requirements Table
VSWR	Voltage Standing Wave Ratio

3.4 Symbols

For the purposes of this TBR, the following symbols apply:

APT	address partition terminator
PR	preamble word
SI	system information word
SSI	supplementary system information word
SYN	synchronization word

4 General

4.1 Introduction

This TBR is based on the CTR Scope statement [5] from NTRAC on CTR No. 7.

This TBR specifies the receiver conformance requirements and the considered relevance of the Articles from the directive 91/263/EEC [6] with regard to ERMES receivers. The CTR Scope statement suggests that this TBR should only consider Articles 4e, 4f, and 4g. Article 4a is dealt with under the Low Voltage Directive (73/23/EEC), while Articles 4b and 4d are considered not relevant for this TBR. In the TBR Requirements Table (TBR-RT) given in clause 6, the tests to be carried out on ERMES receivers are tabulated.

4.2 Choice of model for approval testing

The applicant shall provide one preliminary or production model of the equipment, as appropriate for approval testing.

If approval is given on the basis of tests on a preliminary model, then the corresponding production models shall be identical in all respects to the preliminary model tested.

4.3 Description of equipment

The applicant shall provide the following information to the test laboratory.

4.3.1 Manufacturer's declaration

A declaration by the manufacturers or applicant shall be supplied detailing the following parameters:

a) the normal and extreme test voltages, see ETS 300 133-5 [3], subclauses 4.2 and 4.3;

b) any combination of the control characters ESC, LF and CR and any other character which should not be used for test in subclause 4.6.24.3, see ETS 300 133-5 [3], subclause 7.3;

c) a statement demonstrating that no combination of the Reserved bits for future definition (RSVD) bits affects the performance of the receiver with respect to this TBR, subclause 4.6.31;

d) the method to simulate insufficient quality of reception (Bit Error Ratio (BER), code word error rate, erroneous system information) and the time constraints to be used in the test in subclause 8.11, see ETS 300 133-5 [3] subclause 7.2.5;

e) a statement demonstrating that any features in the receiver that are additional to the requirements of this TBR do not affect the performance of the receiver with respect to this TBR, see subclause 4.6.32;

f) there will be a certain minimum time after a receiver is switched on before it is capable of receiving messages as described in the tests in clause 6. It is required that this time is stated, see ETS 300 133-5 [3] subclause 7.12.1;

g) the category of receiver shall be declared (see subclause 4.5);

h) the alerts associated with all the alert signal indicator bit sequences shall be declared. In addition the means whereby these alerts may be tested shall be explained. If any additional equipment is required to test these alerts, then this shall be supplied by the manufacturer, see ETS 300 133-5 [3] subclause 6.3.1;

j) the message presentation technique shall be declared by the manufacturer. This is required to enable the test laboratory to test the message function;

k) the receiver shall have a basic RIC. The manufacturer shall declare that this RIC is within the definition in ETS 300 133-4 [2], clause 3;

l) the reference orientation that shall be close to the orientation in normal use;

m) for the calculations of spurious response measurement the manufacturer shall state the frequency of the oscillator signal applied to the first mixer of the receiver, the intermediate frequencies of the receiver and the switching range;

n) the time required by the receiver to achieve synchronization before the radio performance criteria may be determined;

p) the time during which the receiver remains on channel after loss of signal;

q) the intended use of the receiver shall be declared as either being body worn (class 1) or non body worn (class 2) (see subclause 4.5.2).

4.4 Mechanical and electrical design

Any control or adjustment which, if maladjusted, could affect the conformance of the product to this TBR shall not be readily accessible to the user.

4.5 Categories and classes of receivers

4.5.1 Categories of receivers

There are four categories of receivers, according to the different paging services they are designed to provide. Table 1 describes each of the four categories.

Table 1: Categories of receivers

Category	Description
1	A receiver providing this function shall respond to at least one combination of the alert signal indicator bits. Responses to the remaining seven alert indicator bits shall (if implemented) be clearly distinguishable.
2	A receiver including this function shall provide for the reception of a 20 digit numeric message. The numeric character set is included in annex C. Receivers having this function shall also have the tone-only function.
3	A receiver including this function shall provide for the reception of a 400 character text message. The alphanumeric character set is included in annex C. Receivers having this function shall also have the numeric and the tone-only functions.
4	A receiver including this function shall provide for the reception of an arbitrary data message.

4.5.2 Classes of receivers

Paging receivers are divided into classes according to their intended use as shown in table 2.

Table 2: Classes of paging receiver

	Body worn	Non body worn
Class	1	2