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**Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) - Standard elektromagnetne združljivosti (EMC) za radijsko opremo in storitve - 18. del: Posebni pogoji za opremo prizemnega snopovnega radia (TETRA)**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 18: Specific conditions for Terrestrial Trunked Radio (TETRA) equipment

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# ETSI EN 301 489-18 V1.3.1 (2002-08)

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*Candidate Harmonized European Standard (Telecommunications series)*

**Electromagnetic compatibility  
and Radio spectrum Matters (ERM);  
ElectroMagnetic Compatibility (EMC)  
standard for radio equipment and services;  
Part 18: Specific conditions for  
Terrestrial Trunked Radio (TETRA) equipment**

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# Contents

Intellectual Property Rights .....	4
Foreword.....	4
1 Scope .....	5
2 References .....	5
3 Definitions and abbreviations.....	6
3.1 Definitions.....	6
3.2 Abbreviations .....	6
4 Test conditions .....	7
4.1 General .....	7
4.2 Arrangements for test signals.....	7
4.2.1 Arrangements for wanted signals at the input of the transmitter .....	7
4.2.2 Arrangements for wanted signals at the output of the transmitter .....	7
4.2.3 Arrangements for wanted signals at the input of the receiver.....	7
4.2.4 Arrangements for wanted signals at the output of the receiver.....	7
4.2.5 Arrangements for testing a transmitter and a receiver together (as a system).....	7
4.3 RF exclusion band of radio communications equipment.....	7
4.3.1 Receiver and receivers of transceivers exclusion band.....	8
4.3.2 Transmitter exclusion band.....	8
4.4 Narrow band responses of receivers.....	8
4.5 Normal test modulation.....	8
5 Performance assessment.....	9
5.1 General .....	9
5.2 Equipment which supports circuit mode traffic transmission .....	9
5.3 Equipment which does not provide a continuous communication link .....	9
5.4 Ancillary equipment.....	9
5.5 Equipment classification.....	9
5.6 Performance assessment of equipment providing an audio path.....	9
5.6.1 Assessment of audio path using the audio breakthrough method .....	9
5.6.2 Assessment of audio path using the audio distortion method .....	11
6 Performance criteria .....	11
6.1 Performance criteria for Continuous phenomena applied to transmitters.....	11
6.1.1 Audio test criteria .....	12
6.1.1.1 Audio breakthrough requirement .....	12
6.1.1.2 Audio distortion requirement: .....	12
6.1.2 Non-audio test criteria .....	12
6.2 Performance criteria for transient phenomena applied to transmitters .....	12
6.3 Performance criteria for continuous phenomena applied to receivers.....	12
6.3.1 Audio test criteria .....	13
6.3.2 Non-audio test criteria .....	13
6.4 Performance criteria for Transient phenomena applied to Receivers.....	13
7 Applicability overview .....	13
7.1 Emission.....	13
7.1.1 General.....	13
7.1.2 Special conditions.....	13
7.2 Immunity .....	14
7.2.1 General.....	14
7.2.2 Special conditions.....	14
<b>Annex A (informative): Examples of radio equipment in the scope of the present document .....</b>	<b>15</b>
A.1 Mobile, base station, and portable equipment of TERrestrial Trunked Radio (TETRA) equipment .....	15
History .....	16

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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 [10] (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 Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility ("the EMC Directive") (89/336/EEC [3] as amended) and Directive 1999/5/EC [2] 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" [2]).

The present document is part 18 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

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### National transposition dates

Date of adoption of this EN:	9 August 2002
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Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2003
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## 1 Scope

The present document, together with EN 301 489-1 [1], covers the assessment of Terrestrial Trunked Radio (TETRA) radiocommunications and ancillary equipment in respect of ElectroMagnetic Compatibility (EMC).

Technical specifications related to the antenna port and emissions from the enclosure port of radio equipment are not included in the present document. Such technical specifications are found in the relevant product standards for the effective use of the radio spectrum.

The present document specifies the applicable test conditions, performance assessment and performance criteria for TETRA equipment, and associated ancillary equipment.

Examples of equipment covered by the present document are given in annex A.

In case of differences (for instance concerning special conditions, definitions, abbreviations) between the present document and EN 301 489-1 [1], the provisions of the present document take precedence.

The environmental classification and the emission and immunity requirements used in the present document are as stated in EN 301 489-1 [1], except for any special conditions included in the present document.

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## 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 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] ETSI EN 301 489-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".
- [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).
- [3] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).
- [4] ETSI EN 300 394-1: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 1: Radio".
- [5] ITU-T Recommendation O.153: "Basic parameters for the measurement of error performance at bit rates below the primary rate".
- [6] ETSI ETS 300 395-2 (1995): "Terrestrial Trunked Radio (TETRA); Speech codec for full-rate traffic channel; Part 2: TETRA codec".
- [7] ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".
- [8] ETSI EN 300 396-2: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 2: Radio aspects".
- [9] ETSI ETS 300 393-2: "Terrestrial Trunked Radio (TETRA); Packet Data Optimized (PDO); Part 2: Air Interface (AI)".

- [10] 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.

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 489-1 [1] and the following apply:

**ancillary equipment:** equipment (apparatus), used in connection with a receiver or transmitter

NOTE: It is considered as an ancillary equipment (apparatus) if:

- the equipment is intended for use in conjunction with a receiver or transmitter to provide additional operational and/or control features to the radio equipment, (e.g. to extend control to another position or location); and
- the equipment cannot be used on a stand alone basis to provide user functions independently of a receiver or transmitter; and
- the receiver or transmitter to which it is connected, is capable of providing some intended operation such as transmitting and/or receiving without the ancillary equipment (i.e. it is not a sub-unit of the main equipment essential to the main equipment basic functions).

Infrastructure and control equipment intended to provide the required data and communication link establishment shall also be considered as ancillary equipment for the purposes of the present document.

**equipment which is capable of speech operation:** equipment that contains, or can be directly connected to a microphone and/or loudspeaker or earpiece, or which includes analogue audio signal interfaces

**non-speech equipment:** equipment that does not have an audio input or output capability either built in or via audio signal interfaces

NOTE: This category includes data only equipment, both base stations and terminals, and also (for example) V+D and PDO base stations and DMO repeaters which do not include any direct analogue audio capability.

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in EN 300 392-2 [7] and the following apply:

BER	Bit Error Ratio
DMO	Direct Mode Operation
EMC	ElectroMagnetic Compatibility
ERP	Ear Reference Point
EUT	Equipment Under Test
MER	Message Error Ratio
MRP	Mouth Reference Point
PDO	Packet Data Optimized
SPL	Sound Pressure Level
TETRA	TErrestrial TRunked RADio
V+D	Voice plus Data



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## 4 Test conditions

### 4.1 General

For the purposes of the present document, the test conditions of EN 301 489-1 [1], clause 4, shall apply as appropriate. Further product related test conditions for radio equipment are specified in the present document.

The equipment shall be tested under normal test conditions as specified in EN 300 394-1 [4].

### 4.2 Arrangements for test signals

The provisions of EN 301 489-1 [1], clause 4.2 shall apply.

#### 4.2.1 Arrangements for wanted signals at the input of the transmitter

The provisions of EN 301 489-1 [1], clause 4.2.1 shall apply.

#### 4.2.2 Arrangements for wanted signals at the output of the transmitter

The provisions of EN 301 489-1 [1], clause 4.2.2 shall apply with the following modification.

For equipment under test which can support Direct Mode Operation (DMO), a TETRA transceiver may form part of the measuring system. For V+D and PDO equipment a base station or a mobile/portable may form part of the measuring system.

#### 4.2.3 Arrangements for wanted signals at the input of the receiver

The provisions of EN 301 489-1 [1], clause 4.2.3 shall apply with the following modification.

For equipment under test which can support Direct Mode Operation (DMO), a TETRA transceiver may form part of the measuring system. For V+D and PDO equipment a base station or a mobile/portable may form part of the measuring system.

#### 4.2.4 Arrangements for wanted signals at the output of the receiver

The provisions of EN 301 489-1 [1], clause 4.2.4 shall apply with the following modification.

The TTCI interface defined in EN 300 394-1 [4] annex C or the RF loopback method defined in EN 300 394-1 [4] annex D may be applied, it shall be agreed with the test house and the manufacturer which method to apply.

#### 4.2.5 Arrangements for testing a transmitter and a receiver together (as a system)

The provisions of EN 301 489-1 [1], clause 4.2.5 shall apply.

### 4.3 RF exclusion band of radio communications equipment

The provisions of EN 301 489-1 [1], clause 4.3 shall apply with the following modification.

For transceivers and equipment operated in a duplex mode both exclusions bands detailed in clauses 4.3.1 and 4.3.2 apply simultaneously.