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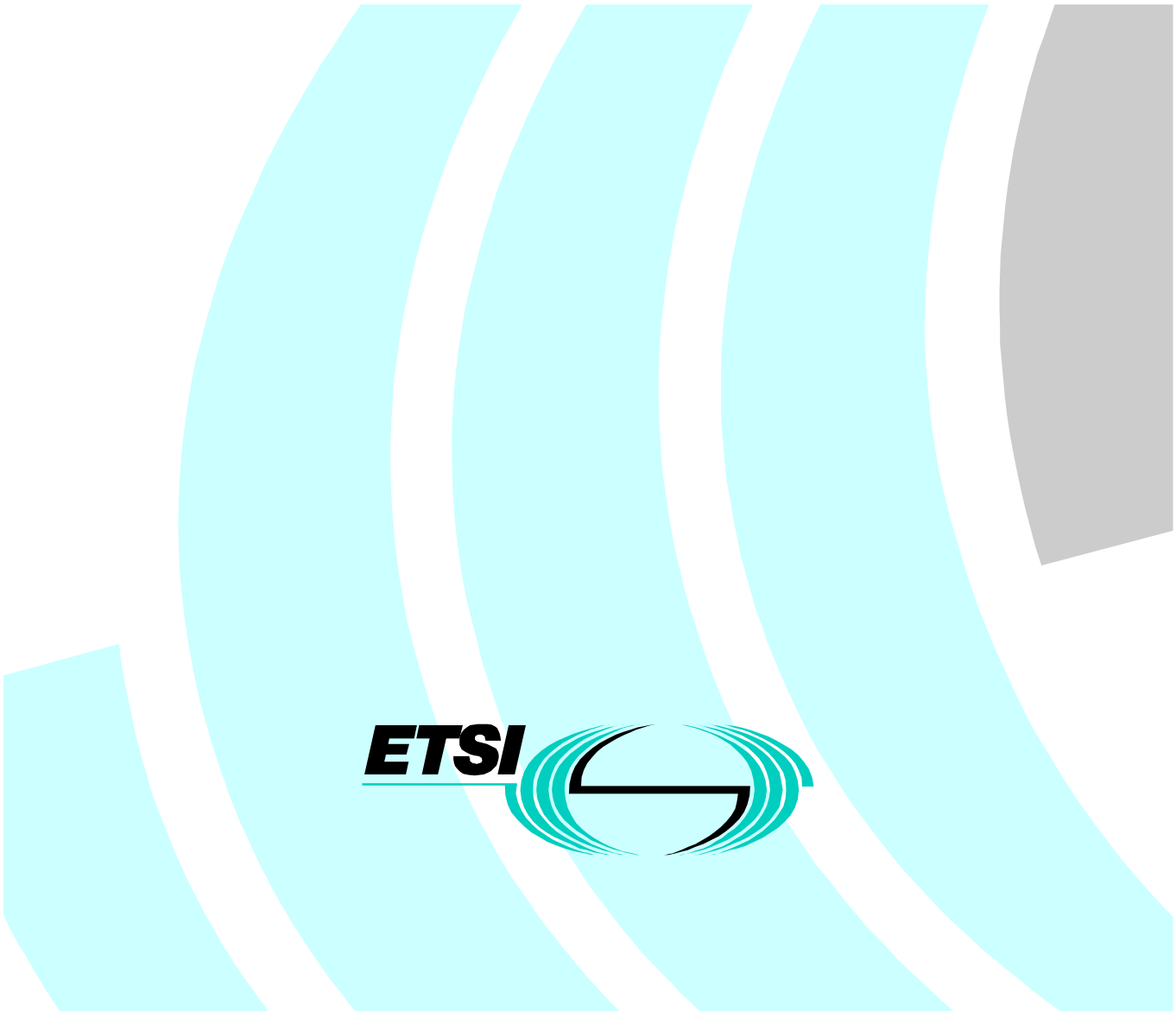
Candidate Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communications



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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

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

Siret N° 348 623 562 00017 - NAF 742 C
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Contents

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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 the Council Directive 98/34/EC [4] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulation.

The present document, together with EN 301 489-1 [1], is intended to become a Harmonized EMC 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 the Council Directive on the approximation of the laws of the Member States relating to radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (the "R&TTE Directive" 1999/5/EC [2]).

The present document is part 19 of a multi-part deliverable covering the ElectroMagnetic Compatibility (EMC) standard for radio equipment and services, as identified below:

Part 1: "Common technical requirements";

Part 2: "Specific conditions for radio paging equipment";

Part 3: "Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz";

Part 4: "Specific conditions for fixed radio links and ancillary equipment and services";

Part 5: "Specific conditions for Private land Mobile Radio (PMR) and ancillary equipment (speech and non-speech)";

Part 6: "Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment";

Part 7: "Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)";

Part 8: "Specific conditions for GSM base stations";

Part 9: "Specific conditions for wireless microphones and similar Radio Frequency (RF) audio link equipment";

Part 10: "Specific conditions for First (CT1 and CT1+) and Second Generation Cordless Telephone (CT2) equipment";

Part 11: "Specific conditions for FM broadcasting transmitters";

Part 12: "Specific conditions for Earth Stations operated in the frequency ranges between 4 GHz and 30 GHz in the Fixed Satellite Service (FSS)";

Part 13: "Specific conditions for Citizens' Band (CB) radio and ancillary equipment (speech and non-speech)";

Part 15: "Specific conditions for commercially available amateur radio equipment";

Part 16: "Specific conditions for analogue cellular radio communications equipment, mobile and portable";

Part 17: "Specific conditions for Wideband data and HIPERLAN equipment";

Part 18: "Specific conditions for Terrestrial Trunked Radio (TETRA) equipment";

Part 19: "Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communications";

Part 20: "Specific conditions for Mobile Earth Stations (MES) used in the Mobile Satellite Services (MSS)";

Part 22: "Specific conditions for ground based VHF aeronautical mobile and fixed radio equipment".

National transposition dates	
Date of adoption of this EN:	17 November 2000
Date of latest announcement of this EN (doa):	28 February 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 August 2001
Date of withdrawal of any conflicting National Standard (dow):	31 August 2002

1 Scope

The present document, together with EN 301 489-1 [1], covers the assessment of Receive Only Mobile Earth Stations (ROMES), as defined in annex A, and associated ancillary equipment in respect of ElectroMagnetic Compatibility (EMC).

Technical specifications related to the antenna port and emissions from the enclosure port of ROMES 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 ROMES and associated ancillary equipment.

ROMESs can have several configurations, including:

- portable equipment;
- fixed equipment;
- a number of modules including a display/control interface to the user.

The performance criteria used in the present document require that the satellite communications system of which the ROMES is a part provides reliable delivery of data or messages.

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. The applicable environments referred to in EN 301 489-1 [1] where ROMES may be used shall be declared by the manufacturer.

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.

[1] ETSI EN 301 489-1 (V1.2.1) (2000): "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 equipment and the mutual recognition of their conformity.

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

[4] 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.

[5] ITU R Radio Regulations (1998).

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:

stand-by mode of operation: mode of operation in which the receiver is capable of receiving calls.

3.2 Abbreviations

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

CR	Continuous phenomena applied to ROMES
EMC	ElectroMagnetic Compatibility
EUT	Equipment Under Test
LISN	Line Impedance Stabilizing Network
LMSS	Land Mobile Satellite Service
RF	Radio Frequency
ROMES	Receive Only Mobile Earth Station
TR	Transient phenomena applied to ROMES

4 Test conditions

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 ROMES are specified in the present document.

4.1 General

For emission and immunity tests the test modulation, test arrangements, etc., as specified in the present document, subclauses 4.1 to 4.5, shall apply.

In the following clauses, the Equipment Under Test (EUT) is the ROMES with the selected configuration of ancillary equipment.

4.2 Arrangements for test signals

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

4.2.1 Arrangements for test signals at the input of receivers (ROMES)

The provisions of EN 301 489-1 [1] subclause 4.2.3 shall apply with the following modifications.

The manufacturer may, at the time of submitting the ROMES for testing, supply, if necessary, a test fixture and a message generator to generate the wanted input signal.

The wanted RF input signal level for ROMES, modulated with the normal test modulation, shall be set to a value significantly above the threshold sensitivity but below the overload characteristics of the ROMES (the threshold sensitivity and overload characteristic shall be specified by the manufacturer).

The source of the wanted input signal, modulated with normal test modulation (subclause 4.5), shall be located outside the test environment and the signal level used shall be chosen to be a value significantly above the threshold sensitivity but below the overload characteristics of the ROMES (the threshold sensitivity and overload characteristic shall be specified by the manufacturer). Adequate measures shall be taken to protect the measuring equipment from the effect of the test environment.

4.2.2 Arrangements for test signals at the output of receivers (ROMES)

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

For the performance check before and after the test it shall be possible to assess the performance of the ROMES from the presented messages and/or the call received alert signal(s) of the ROMES.

During the spot frequency test of the immunity test with radiated RF electromagnetic fields (EN 301 489-1 [1], subclause 9.2) the call received alert signal output of the ROMES shall be coupled to the outside of the test environment and it shall be possible to assess the performance of the equipment from the call received alert signal(s) of the ROMES.

4.3 Exclusion bands

There are no exclusion bands for ROMES as the operating frequency of a ROMES is outside the range of frequencies specified for immunity tests either with radiated or conducted RF.

4.4 Narrow band responses of receivers

The provision of EN 301 489-1 [1], subclause 4.4 shall apply.

4.5 Normal test modulation

The test modulation signal to be used for the calling function shall be a signal representing selective messages generated by a signal generator. The signal generator may be supplied by the manufacturer.

5 Performance assessment

5.1 General

The provision of EN 301 489-1 [1], subclause 5.1 shall apply with the following modification.

If the ROMES has several optional features or configurations, tests shall be performed on the minimum representative configuration of the EUT.

In all cases, the minimum configuration of the EUT as marketed, shall comply with the EMC requirements of the present document.

The manufacturer shall keep on record information about the ancillary equipment intended for use with the ROMES and make this information available to the user.

In addition to the information requested from the manufacturer in EN 301 489-1 [1], subclause 5.1, the manufacturer shall keep on record the following information:

- the optional features of the equipment and the actual features of the equipment which are assessed for the performance or degradation of performance.

5.2 Equipment which can provide a continuous communications link

The provision of EN 301 489-1 [1], subclause 5.2 shall apply.

5.3 Equipment which does not provide a continuous communications link

The provision of EN 301 489-1 [1], subclause 5.3 shall apply.

5.4 Ancillary equipment

The provision of EN 301 489-1 [1], subclause 5.4 shall apply.

5.5 Equipment classification

The provision of EN 301 489-1 [1], subclause 5.5 shall apply.

6 Performance criteria

6.1 General performance criteria

If the equipment is a ROMES of a non specialized nature or ROMES equipment combined with an ancillary equipment, the test modulation, test arrangements etc. as required in clause 4 shall apply.

The ROMES, for all immunity tests according to the present document, except the spot frequency test of the immunity test with radiated RF electromagnetic fields (see EN 301 489-1 [1], subclause 9.2), shall be assessed for:

- the storage of messages in the memory of the ROMES at the start of the test;
- unintentional responses of the ROMES during the test;
- the maintenance of the ROMES memory assessed at the conclusion of the test;
- the ability to receive and store messages at the conclusion of the test.

For the spot frequency test of the immunity test with radiated RF electromagnetic fields (see EN 301 489-1 [1], subclause 9.2) the ROMES shall be assessed by monitoring the accuracy of the call received alert signal.

6.2 Performance criteria for Continuous phenomena applied to ROMES receivers (CR)

For ROMES, excluding spot frequency tests as part of the immunity test with radiated RF electromagnetic fields (see EN 301 489-1 [1], subclause 9.2):

- the general performance criteria set out in subclause 6.1;
- during the test no false calls shall occur;
- at the conclusion of the test comprising the series of individual exposures the ROMES shall operate as intended with no loss of functions or stored data (messages), as declared by the manufacturer.

For the spot frequency test as part of the immunity test with radiated RF electromagnetic fields (see EN 301 489-1 [1], subclause 9.2) the ROMES shall be assessed by monitoring the accuracy of the call received alert signal.

6.3 Performance criteria for Transient phenomena applied to ROMES receivers (TR)

For ROMES:

- the general performance criteria set out in subclause 6.1;
- during the test no false calls shall occur;
- at the conclusion of the test comprising the series of individual exposures, the ROMES shall operate as intended with no loss of function and/or stored data (messages), as declared by the manufacturer.

6.4 Performance criteria for equipment which does not provide a continuous communication link

The provision of EN 301 489-1 [1], subclause 6.3 shall apply with the following modifications.

For ROMES of a specialized nature and/or ancillary equipment tested on a stand alone basis the manufacturer shall define the method of test to determine the acceptable level of performance or degradation of performance during and/or after the test. Under these circumstances the manufacturer will also provide the following information:

- the primary functions of the equipment to be tested during and after EMC stress;
- the intended functions of the EUT which shall be in accordance with the documentation accompanying the equipment;
- the pass/failure criteria for the equipment;
- the method of observing a degradation of performance of the equipment.

The assessment of the performance or the degradation of performance which shall be carried out during and/or at the conclusion of the tests, shall be simple, but at the same time give adequate proof that the primary functions of the equipment are operational.

7 Applicability overview

7.1 Emission

7.1.1 General

EN 301 489-1 [1], table 2, contains the applicability of EMC emission measurements to the relevant ports of radio and/or associated ancillary equipment.

7.1.2 Special conditions

The following special conditions set out in table 1, relate to the emission test methods used in EN 301 489-1 [1], clause 8.

Table 1: Special conditions for EMC emission measurements

Reference to subclauses in EN 301 489-1 [1]	Special product-related conditions, additional to or modifying the test conditions in EN 301 489-1 [1], clause 8
8.1 Test configuration; Methods of measurement and limits for EMC emissions	The message memory shall be loaded with recognizable messages.

7.2 Immunity

7.2.1 General

EN 301 489-1 [1], table 3, contains the applicability of EMC immunity measurements to the relevant ports of radio and/or associated ancillary equipment.

7.2.2 Special conditions

The following special conditions set out in table 2, relate to the immunity test methods and performance criteria used in EN 301 489-1 [1], clause 9.

Table 2: Special conditions for EMC immunity tests

Reference to subclauses in EN 301 489-1 [1]	Special product-related conditions, additional to or modifying the test conditions in EN 301 489-1 [1], clause 9
9.1 Test configuration; **Test methods and levels for immunity tests**	The message memory shall be loaded with recognizable messages. The ROMES shall operate in stand-by mode of operation, except for the spot frequency test as part of the immunity test with radiated RF electromagnetic fields (see EN 301 489-1 [1], subclause 9.2) where repetitive calls shall be coupled to the input of the receiver. - for the immunity tests of ancillary equipment, without a separate pass/fail criteria, a ROMES coupled to the ancillary equipment shall be used to judge whether the ancillary equipment passes or fails;
9.2.2: Test method; **Radio frequency electromagnetic field (80 MHz - 1 000 MHz)**	**Spot frequency test:** A spot frequency test shall additionally be performed at: - 80 MHz; - 104 MHz; - 136 MHz; - 165 MHz; - 200 MHz; - 260 MHz; - 330 MHz; - 430 MHz; - 560 MHz; - 715 MHz ± 1 MHz; - a spot frequency test shall be performed at 920 MHz ± 1 MHz using a test level of 3 V/m (measured unmodulated) 100 % modulated by 200 Hz pulses of equal mark to space ratio.

Annex A (normative): Definitions of ROMES within the scope of the present document

The present document covers types of ROMES as set out below.

A.1 Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band

The present document applies to ROMES which operate in the Land Mobile Satellite Service (LMSS) space to earth bands, 1 525 MHz to 1 544 MHz and 1 555 MHz to 1 559 MHz, allocated by the ITU Radio Regulations [5]. The ROMES operate as part of a satellite system providing one way data communications.

Bibliography

The following material, though not specifically referenced in the body of the present document, gives supporting information.

- ETSI ETS 300 487: "Satellite Earth Stations and Systems (SES); Receive-Only Mobile Earth Stations (ROMESs) operating in the 1,5 GHz band providing data communications; Radio Frequency (RF) specifications".

History

Document history			
V1.1.1	July 2000	One-step Approval Procedure	OAP 20001117: 2000-07-19 to 2000-11-17
V1.1.1	December 2000	Publication	