
Standard elektromagnetne združljivosti (EMC) za radijsko opremo in storitve - 19. del: Posebni pogoji za sprejemne mobilne zemeljske postaje (ROMES), ki delujejo v pasu 1,5 GHz in zagotavljajo podatkovne komunikacije, ter za sprejemnike GNSS, ki delujejo v pasu RNSS (ROGNSS) in zagotavljajo določanje položaja, navigacijo in časovne podatke - Harmonizirani standard za elektromagnetno združljivost

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 and GNSS receivers operating in the RNSS band providing positioning, navigation, and timing data - Harmonised Standard for ElectroMagnetic Compatibility

<https://standards.iteh.ai/catalog/standards/sist/df321b87-6b9b-4d13-adfe-a45ed2587c9a/sist-en-301-489-19-v2-2-1-2022>

Ta slovenski standard je istoveten z: ETSI EN 301 489-19 V2.2.1 (2022-09)

ICS:

33.060.01	Radijske komunikacije na splošno	Radiocommunications in general
33.070.40	Satelit	Satellite
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

SIST EN 301 489-19 V2.2.1:2022 **en**

ETSI EN 301 489-19 V2.2.1 (2022-09)



HARMONISED EUROPEAN STANDARD

**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 and GNSS receivers operating
in the RNSS band providing positioning, navigation,
and timing data;
Harmonised Standard for ElectroMagnetic Compatibility**

ReferenceREN/ERM-EMC-406

Keywordsdata, earth station, EMC, GNSS,
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Sous-Préfecture de Grasse (06) N° w061004871

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Contents

Intellectual Property Rights	4
Foreword.....	4
Modal verbs terminology.....	5
1 Scope	6
2 References	7
2.1 Normative references	7
2.2 Informative references.....	7
3 Definition of terms, symbols and abbreviations.....	8
3.1 Terms.....	8
3.2 Symbols.....	8
3.3 Abbreviations	8
4 Test conditions	9
4.1 General	9
4.2 Arrangements for test signals	9
4.2.0 General.....	9
4.2.1 Arrangements for test signals at the input of ROMES and GNSS receivers.....	9
4.2.2 Arrangements for test signals at the output of ROMES and GNSS receivers.....	9
4.3 Exclusion bands.....	10
4.3.0 General.....	10
4.3.1 Receiver exclusion bands.....	10
4.3.1.1 General	10
4.3.1.2 GNSS exclusion bands.....	10
4.3.1.3 ROMES Exclusion Bands.....	10
4.3.1.4 Combined Equipment GNSS & ROMES.....	11
4.3.1.5 Exclusion Bands Summary	11
4.4 Narrow band responses of receivers.....	11
4.5 Normal test modulation	11
5 Performance assessment.....	12
5.1 General	12
5.2 Ancillary equipment.....	12
6 Performance criteria	12
6.0 Introduction	12
6.1 Performance criteria for Continuous phenomena	12
6.2 Performance criteria for Transient phenomena	12
7 Applicability overview	13
7.1 Emission	13
7.1.1 General.....	13
7.1.2 Special conditions.....	13
7.2 Immunity	13
Annex A (informative): Relationship between the present document and the essential requirements of Directive 2014/53/EU	15
Annex B (informative): Void	17
Annex C (informative): Change history	18
History	19

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Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.2] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.1].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

The present document is part 19 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

National transposition dates	
Date of adoption of this EN:	30 August 2022
Date of latest announcement of this EN (doa):	30 November 2022
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2023
Date of withdrawal of any conflicting National Standard (dow):	31 May 2024

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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1 Scope

The present document covers the assessment of Receive Only Mobile Earth Stations (ROMES) and Global Navigation Satellite System (GNSS) receivers in respect of electromagnetic compatibility.

ROMES operate in the Land Mobile Satellite Service (LMSS) space to earth bands, 1 518 MHz to 1 559 MHz, allocated by the ITU Radio Regulations [i.3]. ROMES operate as part of a satellite system providing one way data communications.

Global Navigation Satellite System (GNSS) receivers operate in either or both of the space to earth RNSS frequency bands of 1 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz defined as "A radiodetermination-satellite service used for the purpose of radionavigation" (article 1.43 of ITU Radio Regulations [i.3]) with the ability to receive any GNSS (e.g. Galileo, Global Positioning System (GPS), BeiDou (BDS), GLObal NAVigation Satellite System (GLONASS), Space Based Augmentation Systems (SBAS)).

Technical specifications related to the antenna port and emissions from the enclosure port of ROMES and GNSS 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 in table 1.

Table 1: Radio Technologies in Scope of the present document

Technology	ETSI Standard
ROMES	ETSI EN 300 487 [i.4]: "Satellite Earth Stations and Systems (SES); Harmonised Standard for Receive-Only Mobile Earth Stations (ROMES) providing data communications operating in the 1,5 GHz frequency band; Radio Frequency (RF) specifications covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
GNSS	ETSI EN 303 413 [i.5]: "Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz frequency bands; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU".

Emissions requirements in the present document are specified for frequencies above 9 kHz.

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

ROMESs and GNSS can have several configurations, including:

- vehicular equipment;
- 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 and GNSS is a part provides reliable delivery of data or messages.

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

NOTE: The relationship between the present document and essential requirements of article 3.1(b) of Directive 2014/53/EU [i.1] is given in annex A.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

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The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 301 489-1 (V2.2.3) (11-2019): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.2] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.
- [i.3] ITU Radio Regulations (2016).
- [i.4] ETSI EN 300 487 (V2.1.2) (11-2016): "Satellite Earth Stations and Systems (SES); Harmonised Standard for Receive-Only Mobile Earth Stations (ROMES) providing data communications operating in the 1,5 GHz frequency band; Radio Frequency (RF) specifications covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.5] ETSI EN 303 413 (V1.2.1) (04-2021): "Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz frequency bands; Harmonised Standard for access to radio spectrum".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

ancillary equipment: electrical or electronic equipment that is intended to be used with a receiver

NOTE: It is considered as an ancillary equipment if:

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

critical stored data: data that is essential for an EUT to perform a primary function in accordance with that EUT's specification

NOTE: This may include data previously stored by the user.

Equipment Under Test (EUT): equipment subject to the performance requirements of the present document

fixed equipment: equipment intended for use in a fixed location and fitted with one or more antennas

live sky signal: signal received from actual existing satellites

portable equipment: radio equipment intended for portable use and powered by integral batteries or battery

NOTE: Devices will typically be handheld.

stand-alone radio equipment: equipment that is intended primarily as communications equipment and that is normally used on a stand-alone basis

vehicular equipment: radio equipment intended for installation and use in a vehicle, and powered by the main battery of the vehicle

3.2 Symbols

Void.

3.3 Abbreviations

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

AC	Alternating Current
BDS	BeiDou - Chinese satellite navigation system
dB	decibel
DC	Direct Current
EMC	ElectroMagnetic Compatibility
EUT	Equipment Under Test
GHz	Gigahertz
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
kHz	Kilohertz
LMSS	Land Mobile Satellite Service
MFCN	Mobile Fixed Communications Network

MHz	Megahertz
P _{min}	Minimum power required to establish a communication link
RF	Radio Frequency
RNSS	Radio-Navigation Satellite Service
ROMES	Receive Only Mobile Earth Station
RX	Receiver
SBAS	Space Based Augmentation System
SES	Satellite Earth System

4 Test conditions

4.1 General

The manufacturer should at the time of submission of the equipment for test, supply the applicable environments, referred to in ETSI EN 301 489-1 [1], where ROMES, and or GNSS may be used.

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

The Equipment Under Test (EUT) is the ROMES or GNSS receiver, together with any applicable ancillary equipment.

4.2 Arrangements for test signals

4.2.0 General

The test configuration and mode of operation shall represent the intended use and shall be recorded.

4.2.1 Arrangements for test signals at the input of ROMES and GNSS receivers

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

If necessary, an appropriate test fixture and/or message generator capable of generating the wanted input signal may be supplied with the ROMES or GNSS receiver to facilitate testing.

Alternatively, the wanted signal may be presented to the EUT via a live sky signal from outdoors.

For radiated immunity, the level of the wanted signal at the input of the receiver or the enclosure port of the EUT, shall be 20 dB (± 3 dB) above the P_{min} for the EUT. For all other tests the level of the wanted signal, required to establish a communication link, shall be representative of the EUT intended use.

NOTE: A simple method to establish the required communication link is establish link, reduce power to point of link failure then increase by 20 dB.

4.2.2 Arrangements for test signals at the output of ROMES and GNSS receivers

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

The performance of the ROMES and GNSS device shall be checked before and after the assessment using one or more of the following:

- presented messages;
- satellite information;
- call received alert signal(s).