

SLOVENSKI STANDARD

SIST EN 302 574-1 V1.1.1:2010

01-november-2010

Satelitske zemeljske postaje in sistemi (SES) - Harmonizirani standard za satelitske zemeljske postaje za MSS, ki delujejo v frekvenčnih pasovih od 1980 MHz do 2010 MHz (zemlja-vesolje) in 2170 MHz do 2200 MHz (vesolje-zemlja) - 1. del: Komplementarna talna komponenta (CGC) za širokopasovne sisteme: Harmonizirani EN, ki zajema bistvene zahteve člena 3.2 direktive R&TTE

Satellite Earth Stations and Systems (SES) - Harmonized standard for satellite earth stations for MSS operating in the 1 980 MHz to 2 010 MHz (earth-to-space) and 2 170 MHz to 2 200 MHz (space-to-earth) frequency bands - Part 1: Complementary Ground Component (CGC) for wideband systems: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

[SIST EN 302 574-1 V1.1.1:2010](https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010)

<https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010>

Ta slovenski standard je istoveten z: EN 302 574-1 Version 1.1.1

ICS:

33.060.30 Radiorelejni in fiksni satelitski komunikacijski sistemi Radio relay and fixed satellite communications systems

SIST EN 302 574-1 V1.1.1:2010 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 302 574-1 V1.1.1:2010

<https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010>

ETSI EN 302 574-1 V1.1.1 (2010-08)

Harmonized European Standard (Telecommunications series)

**Satellite Earth Stations and Systems (SES);
Harmonized Standard for satellite earth stations for
MSS operating in the 1 980 MHz to
2 010 MHz (earth-to-space) and 2 170 MHz to
2 200 MHz (space-to-earth) frequency bands;
Part 1: Complementary Ground
Component (CGC) for wideband systems:
Harmonized EN covering the essential requirements
of article 3.2 of the R&TTE Directive**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 302 574-1 V1.1.1:2010](https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010)

<https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010>



Reference

DEN/SES-00283-1

Keywords

broadband, IMT 2000, mobile, satellite**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
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 302 574-1 V1.1.1:2010<https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9f71/etsi-en-302-574-1-v1-1-1-2010>**Important notice**

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2010.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™**, **TIPHON™**, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

LTE™ is a Trade Mark of ETSI currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	6
Foreword.....	6
Introduction	7
1 Scope	8
2 References	9
2.1 Normative references	9
2.2 Informative references.....	9
3 Definitions, symbols and abbreviations	10
3.1 Definitions	10
3.2 Symbols.....	11
3.3 Abbreviations	11
4 Technical requirements specifications	12
4.1 Environmental profile.....	12
4.2 Conformance requirements	12
4.2.1 Introduction.....	12
4.2.2 Spectrum emission mask	12
4.2.2.1 Definition	12
4.2.2.2 Limits	13
4.2.2.3 Conformance.....	14
4.2.3 Adjacent channel leakage power ratio (ACLR).....	14
4.2.3.1 Definition	14
4.2.3.2 Limits	14
4.2.3.3 Conformance.....	15
4.2.4 Transmitter spurious emissions.....	15
4.2.4.1 Definition	15
4.2.4.2 Limits	16
4.2.4.2.1 Spurious emissions	16
4.2.4.2.2 Coexistence with other systems in the same geographical area.....	16
4.2.4.2.3 Protection of UTRA FDD in adjacent frequency band.....	16
4.2.4.2.4 Protection of UTRA -TDD	17
4.2.4.2.5 Protection of UTRA BS.....	17
4.2.4.2.6 Protection of the CGC receiver of own or different CGC	17
4.2.4.3 Conformance.....	18
4.2.5 CGC maximum output power.....	18
4.2.5.1 Definition	18
4.2.5.2 Limit.....	18
4.2.5.3 Conformance.....	18
4.2.6 Transmit inter modulation	18
4.2.6.1 Definition	18
4.2.6.2 Limit.....	18
4.2.6.3 Conformance.....	18
4.2.7 Receiver spurious emissions	19
4.2.7.1 Definition	19
4.2.7.2 Limits	19
4.2.7.3 Conformance.....	19
4.2.8 Blocking characteristics	19
4.2.8.1 Definition	19
4.2.8.2 Limit.....	19
4.2.8.3 Conformance.....	20
4.2.9 Receiver inter-modulation characteristics.....	20
4.2.9.1 Definition	20
4.2.9.2 Limit.....	20
4.2.9.3 Conformance.....	21

4.2.10	Receiver adjacent selectivity.....	21
4.2.10.1	Definition	21
4.2.10.2	Limit.....	21
4.2.10.3	Conformance.....	22
5	Testing for compliance with technical requirements.....	22
5.1	Environmental and other conditions for testing.....	22
5.2	Interpretation of the measurement results	23
5.3	Essential radio test suites.....	25
5.3.1	Spectrum emission mask	25
5.3.1.1	Initial conditions	25
5.3.1.2	Procedures.....	25
5.3.2	Adjacent Channel leakage Power Ratio (ACLR).....	25
5.3.2.1	Initial conditions	25
5.3.2.2	Procedure	26
5.3.3	Transmitter spurious emissions.....	26
5.3.3.1	Initial conditions	26
5.3.3.2	Procedure	26
5.3.4	CGC maximum output power.....	26
5.3.4.1	Initial conditions	26
5.3.4.2	Procedure	26
5.3.5	Transmit intermodulation	27
5.3.5.1	Initial conditions	27
5.3.5.2	Procedures.....	27
5.3.6	Receiver spurious emissions.....	27
5.3.6.1	Initial conditions	27
5.3.6.2	Procedure	27
5.3.7	Blocking characteristics.....	28
5.3.7.1	Initial conditions	28
5.3.7.2	Procedure	28
5.3.8	Receiver intermodulation characteristics.....	29
5.3.8.1	Initial conditions	29
5.3.8.2	Procedures.....	29
5.3.9	Receiver Adjacent Channel Selectivity (ACS).....	29
5.3.9.1	Initial conditions	29
5.3.9.2	Procedure	29
Annex A (normative):	HS Requirements and conformance Test specifications Table (HS-RTT).....	30
Annex B (normative):	Complementary Ground Component configurations.....	32
B.1	Receiver diversity.....	32
B.2	Duplexers	32
B.3	Splitters.....	32
B.4	Power supply options	33
B.5	Ancillary RF amplifiers.....	33
B.6	CGC using antenna arrays.....	34
B.6.1	Receiver tests.....	34
B.6.2	Transmitter tests	34
B.7	Transmit diversity	35
B.8	CGC with integrated Iuant CGC modem	35
B.9	Combining of CGCs.....	35
Annex C (informative):	Environmental profile specification.....	36
C.1	Tests environment	36
C.1.1	Measurement of test environments.....	36

C.1.2	Normal test Environment	36
C.1.3	Extreme test environment.....	37
C.1.4	Extreme temperature	37
C.1.5	Vibration.....	37
C.1.6	Power supply	37
C.1.7	Definition of Additive White Gaussian Noise (AWGN) Interferer.....	38
Annex D (informative): Measurement system set-up		39
D.1	Transmitter	39
D.1.1	Maximum output power	39
D.1.2	Out of band emission.....	39
D.1.3	Transmit intermodulation	40
D.2	Receiver.....	40
D.2.1	Adjacent Channel Selectivity (ACS).....	40
D.2.2	Blocking characteristics	41
D.2.3	Intermodulation characteristics	41
D.2.4	Receiver spurious emission	42
Annex E (informative): The EN title in the official languages		43
Annex F (informative): Bibliography.....		44
History		45

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 302 574-1 V1.1.1:2010](https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010)

<https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010>

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI 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 not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [i.2] (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 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 requirements relevant to Directive 1999/5/EC [1] are summarised in annex A.

The present document is part 1 of a multi-part deliverable covering the Harmonized Standard for satellite earth stations for MSS operating in the 1 980 MHz to 2 010 MHz (earth-to-space) and 2 170 MHz to 2 200 MHz (space-to-earth) frequency bands, as identified below:

- Part 1: "Complementary Ground Component (CGC) for wideband systems: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive";**
- Part 2: "User Equipment (UE) for wideband systems: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive";
- Part 3: "User Equipment (UE) for narrowband systems: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive".

National transposition dates	
Date of adoption of this EN:	2 August 2010
Date of latest announcement of this EN (doa):	30 November 2010
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2011
Date of withdrawal of any conflicting National Standard (dow):	31 May 2012

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive [1]. The modular structure is shown in EG 201 399 [i.3].

The technical requirements in the present document are adapted from the requirements in EN 301 908-1 [3] and EN 301 908-3 [4]. The adaptations include a variable channel bandwidth and frequency band changes to the MSS band.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 302 574-1 V1.1.1:2010](https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010)

<https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-2b45912b9033/sist-en-302-574-1-v1-1-1-2010>

1 Scope

The present document applies to Complementary Ground Components (CGC) operating as part of a satellite network. These Complementary Ground Components (CGC) transmit only to the User Equipment or transmit and receive to/from the User Equipment in the frequency bands allocated to the Mobile Satellite Service (MSS) on a primary basis as defined in table 1.

NOTE 1: The CGC may include various types of interfaces, to terrestrial and/or satellite networks, but their specifications are out of the scope of the present document.

The present document applies to Complementary Ground Component (CGC) radio equipment type deployed in Mobile Satellite Services systems which have the following characteristics:

- These CGCs may have both transmit and receive capabilities and are part of a hybrid Satellite/terrestrial network.
- These CGCs operate with an assigned channel signal bandwidth (CBw) of 1 MHz or greater.
- These CGCs may be local coverage, medium coverage or wide coverage ground components.
- These CGCs may be an element in a multi-mode base station. It may consist of a number of modules with associated connections, or may be a self contained single unit.

If the CGC is an element in a multi-mode base station, unless otherwise stated in the present document, its requirements apply only to the CGC element of the terminal operating in the Mobile Satellite Service (MSS) frequency bands given in table 1.

iTeh STANDARD PREVIEW

The present document applies to the following terminal equipment types:

(standards.iteh.ai)

- 1) Complementary Ground Components for Wideband Satellite Systems.

This radio equipment type is capable of operating in all or any part of the frequency bands given in table 1.

<https://standards.iteh.ai/catalog/standards/sist/57a09a62-61fd-44e5-9152-45012b923261/en-302-574-1-v1.1.1-2010>

Table 1: Mobile Satellite Service Complementary Ground Component frequency bands

Operating band	Direction of transmission	CGC frequency bands
I	Transmit	2 170 MHz to 2 200 MHz
	Receive	1 980 MHz to 2 010 MHz

The present document only applies to the radio interface between the CGC and the User Equipment.

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

NOTE 2: In addition to the unwanted emission limits defined in clause 4.2.2 of the present document, additional operational constraints may be required to prevent harmful interference into services operating in the neighbouring bands outside the operational band defined in table 1.

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] may apply to equipment within the scope of the present document.

NOTE 3: A list of such ENs is included on the web site <http://www.newapproach.org>.

2 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 reference document (including any amendments) applies.

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

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

2.1 Normative references

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

- [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] ETSI TS 125 141 (V6.19.0) (2008-04): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (FDD) (3GPP TS 25.141 version 6.19.0 Release 6)".
- [3] ETSI EN 301 908-1 (V3.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements, covering essential requirements of article 3.2 of the R&TTE Directive".
- [4] ETSI EN 301 908-3 (V3.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 3: Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD) (BS) covering essential requirements of article 3.2 of the R&TTE Directive".
- [5] ITU-R Recommendation SM.329-10 (02/2003): "Unwanted emissions in the spurious domain".
- [6] ITU-T Recommendation O.153 (10/1992): "Basic parameters for the measurement of error performance at bit rates below the primary rate".
- [7] IEC 60068-2-1 (2007): "Environmental testing - Part 2-1: Tests - Test A: Cold".
- [8] IEC 60068-2-2 (2007): "Environmental testing - Part 2-2: Tests - Test B: Dry heat".
- [9] IEC 60068-2-6 (2007): "Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)".

2.2 Informative references

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] ETSI TR 100 028 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
- [i.2] 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.
- [i.3] ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".
- [i.4] ETSI TR 102 215: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Recommended approach, and possible limits for measurement uncertainty for the measurement of radiated electromagnetic fields above 1 GHz".

- [i.5] ETSI EN 302 574-2: "Satellite Earth Stations and Systems (SES); Harmonized standard for satellite earth stations for MSS operating in the 1 980 MHz to 2 010 MHz (earth-to-space) and 2 170 MHz to 2 200 MHz (space-to-earth) frequency bands; Part 2: User Equipment (UE) for wideband systems: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive".
- [i.6] ETSI EN 302 574-3: "Satellite Earth Stations and Systems (SES); Harmonized Standard for satellite earth stations for MSS operating in the 1 980 MHz to 2 010 MHz (earth-to-space) and 2 170 MHz to 2 200 MHz (space-to-earth) frequency bands; Part 3: User Equipment (UE) for narrowband systems: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive".
- [i.7] IEC 60721-3-3 (2002): "Classification of environmental conditions - Part 3-3: Classification of groups of environmental parameters and their severities - Stationary use at weatherprotected locations".
- [i.8] IEC 60721-3-4 (1995): "Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 4: Stationary use at non-weather protected locations".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

ancillary equipment: equipment (apparatus) used in connection with a CGC, which is considered as ancillary equipment (apparatus) if:

- the equipment is intended for use in conjunction with an CGC to provide additional operational and/or control features to the radio equipment, (e.g. to extend control to another position or location);
- the equipment cannot be used on a stand alone basis to provide user functions independently of an CGC; and
- the CGC 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).

channel multiplex: set of one or several RF carriers forming one coherent signal

Complementary Ground Component (CGC): ground-based infrastructure at fixed locations used to enhance satellite coverage in zones where communications with one or several space stations cannot be ensured with the required quality

CGC class: wide coverage CGC, medium coverage CGC or local coverage CGC, as declared by the manufacturer

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

local coverage CGC: CGC characterized by requirements derived from picocell scenarios with a CGC to UE minimum coupling loss equal to 45 dB

maximum output power: mean power level per carrier of the CGC measured at the antenna connector in a specified reference condition

mean power: average power (transmitted or received) supplied to the antenna port during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions

medium coverage CGC: CGC characterized by requirements derived from microcell scenarios with a CGC to UE minimum coupling loss equal to 53 dB

output power: mean power of one carrier of the CGC, delivered to a load with resistance equal to the nominal load impedance of the transmitter

rated output power: rated output power of the CGC is the mean power level per carrier that the manufacturer has declared to be available at the antenna connector

wide coverage CGC: CGC characterized by requirements derived from macrocell scenarios with a CGC to UE minimum coupling loss equal to 70 dB

NOTE: The coupling loss is defined as the space loss that will depend on the propagation channel: Line of Sight, Urban, Suburban, etc.

3.2 Symbols

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

α	roll-off factor of the transmitter filter
CBw	Channel multiplex bandwidth (multiplex spacing)
CBw _{assigned}	Assigned channel multiplex bandwidth (multiplex spacing)
CBw _{adjacent}	Adjacent channel multiplex bandwidth (multiplex spacing)
F _{uw}	Frequency of unwanted signal

NOTE: This is specified in bracket in terms of an absolute frequency(s) or a frequency offset from the assigned channel frequency.

Ω	Ohm
----------	-----

iTeh STANDARD PREVIEW

3.3 Abbreviations (standards.iteh.ai)

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

ACLR	Adjacent Channel Leakage power Ratio
ACS	Adjacent Channel Selectivity
ATT	Attenuator
BER	Bit Error Ratio
BS	Base Station
CDMA	Code Division Multiple Access
CGC	Complementary Ground Component
CW	Continuous Wave (unmodulated signal)
EUT	Equipment Under Test
FDD	Frequency Division Duplexing
F _{uw}	Frequency of unwanted signal
GMSK	Gaussian Minimum Shift Keying
GSM	Global System for Mobile communications
HYB	Hybrid
MS	Mobile Station
MSS	Mobile Satellite Service
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
RMS	Root Mean Square
RRC	Root-Raised Cosine
Rx	Receiver
TDD	Time Division Duplexing
TTE	Telecommunications Terminal Equipment
Tx	Transmitter
UE	User Equipment
UTRA	Universal Terrestrial Radio Access
WCDMA	Wideband Code Division Multiple Access