



# SLOVENSKI STANDARD SIST EN 301 489-7:2001

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9`Y\_fca U[ bYfbUnXfi y` 1j cghf0 A 7 L]b`nUXYj Yj`nj Yn]`n`fUX]`g\_ ja`gdY\_fca`f0FAŁ!  
GHUbXUfX`YY\_fca U[ bYfbY`nXfi y` 1j cgh]`f0 A 7 L`nUfUX]`g\_c`cdfYa c`]b`ghcf]`j Y!`+`  
XY. `DcgYVb]`dc[ c`1`nUa cV]`bc`]b`dfYbcgbc`fUX]`g\_c`]b`dca c`ybc`cdfYa c`X][`]U`b]`  
W`] b]`fUX]`ch`Y`\_ca i b]`U`V]`g\_`]`g]`ghYa c j`f]`GA`]b`8 7 GŁ

ElectroMagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)

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33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

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

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GSM\_Phase2\_Plus, radio, regulation**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

Intellectual Property Rights .....	5
Foreword.....	5
1 Scope .....	7
2 References .....	7
3 Definitions and abbreviations.....	8
3.1 Definitions .....	8
3.2 Abbreviations .....	8
4 Test conditions .....	9
4.1 General .....	9
4.2 Arrangements for test signals .....	9
4.2.1 Arrangements for establishing a communications link .....	9
4.2.1.1 Calibration of the overall audio link performance .....	9
4.2.1.2 Measurement of the audio level at the speech output of the EUT.....	11
4.2.2 Arrangements for test signals at the input of transmitters.....	12
4.2.3 Arrangements for test signals at the output of transmitters.....	12
4.2.4 Arrangements for test signals at the input of receivers .....	12
4.2.5 Arrangements for test signals at the output of receivers .....	13
4.2.6 Idle mode .....	13
4.3 Exclusion bands.....	13
4.3.1 Receiver and receivers of duplex transceivers exclusion band .....	13
4.3.2 Transmitter exclusion band .....	13
4.4 Narrow band responses of receivers and receivers of duplex transceivers .....	13
4.5 Normal test modulation .....	14
5 Performance assessment.....	14
5.1 General .....	14
5.2 Equipment which can provide a continuous communications link .....	14
5.2.1 Equipment with analogue speech circuits.....	14
5.2.2 Equipment without analogue speech circuits.....	14
5.3 Equipment which does not provide a continuous communications link.....	14
5.4 Ancillary equipment .....	14
5.5 Equipment classification .....	14
6 Performance criteria .....	15
6.1 General .....	15
6.2 Performance criteria for Continuous phenomena applied to Transmitters (CT) .....	15
6.3 Performance criteria for Transient phenomena applied to Transmitters (TT).....	15
6.4 Performance criteria for Continuous phenomena applied to Receivers (CR).....	16
6.5 Performance criteria for Transient phenomena applied to Receivers (TR) .....	16
6.6 Performance criteria for ancillary equipment tested on a stand alone basis .....	16
7 Applicability overview .....	16
7.1 Emission .....	16
7.1.1 General.....	16
7.1.2 Special conditions .....	16
7.2 Immunity .....	17
7.2.1 General.....	17
7.2.2 Special conditions .....	17

<b>Annex A (informative):</b>	<b>Examples of mobile and portable radio and ancillary equipment for digital cellular radio telecommunications systems within the scope of the present document.....</b>	<b>19</b>
A.1	Mobile and portable radio equipment, and ancillary equipment meeting Phase 1, Phase 2, and Phase 2+ requirements of GSM 450 MHz, 900 MHz or DCS 1 800 MHz digital cellular telecommunications system.....	19
History	.....	20

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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 [9] (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 7 of a multi-part EN covering the ElectroMagnetic Compatibility (EMC) standard for radio equipment and services, as identified below:

- <https://standards.iteh.ai/catalog/standards/sist/7e169f44-1189-4085-bb64-2bcb2/sist-en-301-489-7-2001>
- 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".

<b>National transposition dates</b>	
Date of adoption of this EN:	22 September 2000
Date of latest announcement of this EN (doa):	31 December 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 June 2001
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# 1 Scope

The present document, together with EN 301 489-1 [1], covers the assessment of radio equipment meeting Phase 1, Phase 2, and Phase 2+ GSM and DCS digital cellular mobile and portable radio equipment transmitting and receiving speech and/or data, and operating in digital cellular radio telecommunications systems, and associated 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 Phase 1, Phase 2, and Phase 2+ GSM and DCS digital cellular mobile and portable radio equipment, transmitting and receiving speech and/or data, and associated ancillary equipment.

Examples of digital cellular mobile and portable radio 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.

Base station equipment (BTS and BSS) operating within network infrastructure is outside the scope of the present document. However, the present document does cover mobile and portable equipment that is intended to be operated in a fixed location while connected to the AC mains (see clause 5.5).

The environment 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, 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.
- [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 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] ETSI I-ETS 300 034-1: "European digital cellular telecommunications system (Phase 1); Radio subsystem link control (GSM 05.08)".
- [5] ETSI I-ETS 300 034-2: "European digital cellular telecommunications system (Phase 1); Radio subsystem link control; Part 2: DCS extension (GSM 05.08-DCS)".
- [6] ETSI ETS 300 578: "Digital cellular telecommunications system (Phase 2); Radio subsystem link control (GSM 05.08 version 4.22.1)".
- [7] ETSI TS 100 911: "Digital cellular telecommunications system (Phase 2+); Radio subsystem link control (GSM 05.08 version 6.2.0 Release 1997)".

- [8] ITU-T Recommendation P.64: "Telephone transmission quality, Telephone installations, Local line networks, Objective electro-acoustical measurements. Determination of sensitivity/frequency characteristics of local telephone systems".
- [9] 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.
- [10] ITU-T Recommendation P.76: "Determination of loudness ratings; fundamental principles".

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions of EN 301 489-1 [1], clause 3 and the following apply.

**idle mode:** mode of operation of a receiver or a transceiver, where the Equipment Under Test (EUT) is powered, available for service and available to respond to a request to set up a call.

**RXQUAL:** measure of the received signal quality, which is generated by the mobile or portable equipment, for use as a criterion in the Radio Frequency (RF) power control and handover processes. For more information see:

- I-ETS 300 034-1 [4] clause 8.2 for Phase 1 GSM 900 equipment;
- I-ETS 300 034-2 [5] clause 8.2 for Phase 1 DCS 1800 equipment; or
- ETS 300 578 [6] clause 8.2 for Phase 2 GSM 900 or Phase 2 DCS 1800 equipment;
- TS 100 911 [7] clause 8.2 for Phase 2+ GSM 900 or Phase 2+ DCS 1800 equipment.

### 3.2 Abbreviations

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

AC	Alternating Current
ARFCN	Absolute Radio Frequency Channel Number (see note)
BCCH	Broadcast Control Channel (see note)
BS	Base Station
BSS	Base Station System
BTS	Base Transceiver Station
CCCH	Common Control Channel (see note)
CR	Continuous phenomena applied to Receivers (clause 6.4)
CT	Continuous phenomena applied to Transmitters (clause 6.2)
DC	Direct Current
DTX	Discontinuous Transmission (see note)
EMC	Electromagnetic Compatibility
EUT	Equipment Under Test
LISN	Line Impedance Stabilizing Network
MRP	Mouth Reference Point (artificial head)
RF	Radio Frequency
rms	root mean square
RXQUAL	Receiver Quality (see note)
SPL	Sound Pressure Level
TR	Transient phenomena applied to Receivers (clause 6.5)
TT	Transient phenomena applied to Transmitters (clause 6.3)

NOTE: Refer to (GSM) functional radio standards for further details.

## 4 Test conditions

For the purpose 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 digital cellular mobile and portable radio equipment 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, clauses 4.1 to 4.5, shall apply.

Whenever the Equipment Under Test (EUT) is provided with a detachable antenna, the EUT shall be tested with the antenna fitted in a manner typical of normal intended use, unless specified otherwise.

### 4.2 Arrangements for test signals

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

#### 4.2.1 Arrangements for establishing a communications link

The nominal frequency of the wanted RF input signal (for the receivers) shall be selected by setting the Absolute Radio Frequency Channel Number (ARFCN) to an appropriate number (e.g. in case of GSM 900 MHz this is 60 to 65, and in case of GSM 1 800 MHz this is 690 to 706).

A communication link shall be set up with a suitable base station simulator (hereafter called "the test system").

When the EUT is required to be in the transmit/receive mode, the following conditions shall be met:

- the EUT shall be commanded to operate at maximum transmit power;
- the downlink RXQUAL shall be monitored.

##### 4.2.1.1 Calibration of the overall audio link performance

Prior to the test sequence, the reference level of the speech output signal on both the downlink and uplink shall be recorded on the test instrumentation, as shown in figure 1.

If the equipment does not include acoustical transducers (e.g. a microphone or loudspeaker) the equivalent electrical reference levels shall be specified by the manufacturer.

The voice processor may often apply noise and echo cancellation algorithms which attempt to eliminate or reduce steady state audio signals as e.g. the 1 kHz calibration signals.

The calibration shall be carried out with the noise and echo cancellation algorithms disabled. (Specific test software may be required).

If the noise and echo cancellation algorithms can not be disabled then the reference level of the speech output signal shall be measured using a max-hold detection on the audio level meter in order to determine the level before the noise and echo cancellation algorithms become effective.