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Radijska oprema in sistemi (RES) - Elektromagnetna združljivost (EMC) evropskih digitalnih celiļ nih telekomunikacijskih sistemov (GSM 900 MHz in DCS 1 800 MHz) - 1. del: Mobilna in prenosna radijska in pomoģna oprema

Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) for European digital cellular telecommunications system (GSM 900 MHz and DCS 1 800 MHz); Part 1: Mobile and portable radio and ancillary equipment

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Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) for European digital cellular telecommunications system (GSM 900 MHz and DCS 1 800 MHz) Part 1: Mobile and portable radio and ancillary equipment

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Foreword

This European Telecommunication Standard (ETS) has been produced by the European Telecommunications Standards Institute (ETSI) in response to a mandate from the European Commission issued under Council Directive 83/189/EEC (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

This ETS 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 as amended).

Technical specifications relevant to the EMC Directive are given in annex A.

This ETS consists of 3 parts as follows:

Part 1: **"Mobile and portable radio and ancillary equipment";**

Part 2: "Base station radio and ancillary equipment (Phase 1)" (RE/RES-09035-2);

Part 3: "Base station radio and ancillary equipment (Phase 2)" (DE/RES-09035-3).

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Date of adoption:	6 June 1997
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1 Scope

This second edition European Telecommunication Standard (ETS) covers the assessment of radio communication 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 found in the related product standards for the effective use of the radio spectrum.

This ETS specifies the applicable EMC tests, the methods of measurement, the frequency range, the limits and the minimum performance criteria for Phase 1 and Phase 2 GSM 900 MHz and DCS 1 800 MHz digital public cellular mobile and portable radio equipment, transmitting and receiving speech and/or data, and the associated ancillary equipment.

Base station equipment operating within network infrastructure is outside the scope of this ETS. However, this ETS does cover mobile and portable equipment that is intended to be operated in a fixed location while connected to the AC mains.

The environment classification used in this ETS refers to the environment classification used in the Generic Standards EN 50081-1 [1], EN 50082-1 [2], except the vehicular environment class which refers to ISO 7637 Part 1 [3] and Part 2 [4].

For the purposes of this ETS, Mobile Stations (MS) are considered to be radio communications equipment.

The EMC requirements have been selected to ensure an adequate level of compatibility for apparatus in residential, commercial, light industrial and vehicular environments. The levels however, do not cover extreme cases which may occur in any location but with low probability of occurrence.

This ETS may not cover those cases where a potential source of interference which is producing individually repeated transient phenomena, or a continuous phenomena, is permanently present, e.g. a radar or broadcast site in the near vicinity. In such a case it may be necessary to use special protection applied to either the source of interference or the interfered part or both.

Compliance of radio equipment to the requirements of this ETS does not signify compliance to any requirement related to the use of the equipment (i.e. licensing requirements).

Compliance to this ETS does not signify compliance to any safety requirement. However, it is the responsibility of the assessor of the equipment that any observation regarding the equipment becoming dangerous or unsafe as a result of the application of the tests of this ETS, should be recorded in the test report.

2 Normative references

This ETS incorporates, by dated or undated reference, provisions from other publications. These normative and informative references are cited at the appropriate places in the text and the publications listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

[1] EN 50081-1 (1992): "Electromagnetic compatibility - Generic emission standard. Part 1: Residential, commercial and light industry".

[2] EN 50082-1 (1992): "Electromagnetic compatibility - Generic immunity standard. Part 1: Residential, commercial and light industry".

[3] ISO 7637-1 (1990): "Road vehicles - Electrical disturbance by conduction and coupling - Part 1: Passenger cars and light commercial vehicles with nominal 12 V supply voltage - Electrical transient conduction along supply lines only".

[4] ISO 7637-2 (1990): "Road vehicles - Electrical disturbance by conduction and coupling - Part 2: Commercial vehicles with nominal 24 V supply voltage - Electrical transient conduction along supply lines only".

[5] I-ETS 300 034-1 (1993-10): "European digital cellular telecommunications system (Phase 1); Radio sub-system link control (GSM 05.08)".

[6] I-ETS 300 034-2 (1993-9): "European digital cellular telecommunications system (Phase 1); Radio sub-system link control Part 2: DCS extension (GSM 05.08-DCS)".

[7] ETS 300 578 Edition 6 (1996-8): "Digital cellular telecommunications system (Phase 2); Radio subsystem link control (GSM 05.08)".

[8] EN 55022 (1994): "Limits and methods of measurement of radio disturbance characteristics of information technology equipment".

[9] CISPR 16-1 (1993): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1: Radio disturbance and immunity measuring apparatus".

[10] EN 61000-4-3: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test".

[11] EN 61000-4-2: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 2: Electrostatic discharge immunity test. Basic EMC publication".

[12] EN 61000-4-4: "Electromagnetic Compatibility (EMC); Part 4: Testing and measurements techniques - Section 4: Electrical fast transient/burst immunity test. Basic EMC publication".

[13] EN 61000-4-6: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 6: Immunity to conducted disturbances induced by radio-frequency fields".

[14] EN 61000-4-11: "Electromagnetic Compatibility (EMC); Part 4: Testing and measurements techniques - Section 11: Voltage dips, short interruptions and voltage variations immunity tests".

[15] EN 61000-4-5: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 5: Surge immunity test".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

ancillary equipment: Equipment (apparatus), used in connection with a receiver, transmitter or transceiver, is considered as an ancillary equipment (apparatus) if:

- the equipment is intended for use in conjunction with a receiver, transmitter or transceiver 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, transmitter or transceiver; and

- the receiver, transmitter or transceiver 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).

base station equipment: Mobile or portable equipment that is also intended to operate in a fixed location and powered from the AC mains.

idle mode: A 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.

integral antenna equipment: Equipment fitted with an antenna designed to be connected to the equipment without the use of an external connector and considered to be part of the equipment. An integral antenna may be fitted internally or externally to the equipment.

port: A particular interface of the specified equipment (apparatus) with the electromagnetic environment.

radio communications equipment: An apparatus which includes one or more transmitters and/or receivers and/or parts thereof. This type of equipment (apparatus) can be used in a fixed, mobile or a portable application.

RXQUAL: A 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 [5] subclause 8.2 for Phase 1 GSM 900 equipment;

- I-ETS 300 034-2 [6] subclause 8.2 for Phase 1 DCS 1800 equipment; or

- ETS 300 578 Edition 6 [7] subclause 8.2 for Phase 2 GSM 900 or Phase 2 DCS 1800 equipment.

standby mode: Mode of operation of a transmitter, where the EUT is powered, and available for transmission on demand.

3.2 Symbols

For the purposes of this ETS, the following symbols apply:

AC	Alternating Current
DC	Direct Current
BPF	BandPass Filter
BW	BandWidth
CF	Centre Frequency
emf	electromotive force
rms	root mean square
RXQUAL	RX Quality

3.3 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

ARFCN	Absolute Radio Frequency Channel Number
BCCH	Broadcast Control Channel
BS	Base Station
CCCH	Common Control CHannel
CR	Continuous phenomena applied to Receivers (subclause 6.3)
CT	Continuous phenomena applied to Transmitters (subclause 6.1)
DTX	Discontinuous Transmission
EMC	ElectroMagnetic Compatibility
ERP	Ear Reference Point
EUT	Equipment Under Test
LISN	Line Impedance Stabilizing Network
MRP	Mouth Reference Point
MS	Mobile Station
RF	Radio Frequency
SPL	Sound Pressure Level
TR	Transient phenomena applied to Receivers (subclause 6.4)
TT	Transient phenomena applied to Transmitters (subclause 6.2)