SLOVENSKI STANDARD
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Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM) – Storitev kopenskih mobilnih komunikacij – Predstavitev opreme za preskušanje tipa

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Land mobile service; Presentation of equipment for type testing

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document is based upon RES-TR 003.

The present document is voluntary in application, however, it can be made mandatory, e.g. by National Administrations as a part of the conditions attached to the issue of type approval certificates for radio apparatus.

National Transposition dates	
Date of adoption of this EN:	23 January 1998
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Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 1998
Date of withdrawal of any conflicting National Standard (dow):	30 November 1998

Introduction

The present document is intended to provide guidance on the presentation of equipment for type testing, as stated in the scope. More specifically, it is expected that product standards for which (some of) the clauses of this standard are appropriate, will merely refer to the present document or to the applicable clauses of the present document (rather than copying the text of the appropriate clauses, in order to avoid having similar clauses in a number of different documents).

The material included in this standard is therefore intended for use by manufacturers (applicants), accredited testing laboratories and the appropriate administrations, to assess the number of samples that should be submitted for testing and so ensure that the performance of the equipment is representative of the performance of the corresponding production model.

The present document was drafted on the assumption that type test measurements performed in an accredited testing laboratory in one country would be accepted by the Administration in another country provided that the national regulatory requirements are met (in accordance to CEPT/ERC Recommendation T/R 01-06 [3]).

1 Scope

The present document provides guidance on the presentation of equipment for type testing purposes. The present document covers, in particular:

- the choice of model for type testing;
- the number of equipment samples required;
- the number and range of tests required for each sample of submitted equipment.

Annex A gives examples of the number of tests that are required for different categories of equipment.

The types of equipment covered by the present document are as follows:

- base station (equipment fitted with an antenna socket, intended for use in a fixed location);
- mobile station (equipment fitted with an antenna socket, normally used in a vehicle or as a transportable);
- handportable stations (equipment having either an antenna socket, or an integral antenna).

2 References

References may be made to:

a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or

b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or

c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or

d) publications without mention of a specific version, in which case 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] ETS 300 086 (1991): "Radio Equipment and Systems (RES); Land mobile group; Technical characteristics and test conditions for radio equipment with an internal or external RF connector intended primarily for analogue speech".

[2] ETS 300 341 (1995): "Radio Equipment and Systems (RES); Land mobile service; Technical characteristics and test conditions for radio equipment using an integral antenna transmitting signals to initiate a specific response in the receiver".

[3] CEPT/ERC Recommendation T/R 01-06: "Procedures for type testing and approval for radio equipment intended for non public systems".

3 Definitions and symbols

3.1 Definitions

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

full tests: The full range of tests as defined in the product standard(s) (e.g. ETS) to which measurements are being performed.

limited tests: The limited tests referred to in subclauses 4.1 to 4.13 are the limited tests as defined in the product standard(s) (e.g. ETS) to which measurements are being performed. Examples of the limited tests as defined in ETS 300 086 [1] and ETS 300 341 [2] are contained in annex B.

3.2 Symbols

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

AR	Alignment Range
AR0, AR1, …	Category of alignment range (see subclauses 4.2.2 and 4.3)
FR_C	Centre of frequency range (see table 1)
FR_H	Higher end of frequency range (see table 1).
FR_L	Lower end of frequency range (see table 1)
FT	Full Tests (see definition in subclause 3.1)
LT	Limited Tests (see definition in subclause 3.1)
OFR	Operating Frequency Range (see definition in subclause 4.2.3)
RF	Radio Frequency
SR	Switching Range (see definition in subclause 4.2.1)

4 Presentation of equipment for testing purposes

Each equipment submitted for type testing shall fulfil the requirements of the product standard(s) to which measurements are to be performed, on all channels over which it is intended to operate.

The manufacturer should choose the appropriate frequencies for testing in consultation with the Administration(s) from whom type approval is sought and in accordance with subclauses 4.4 to 4.13 (see also annex A).

To simplify and harmonize the type testing procedures between the different testing laboratories, measurements shall be performed, according to the present document, on samples of equipment defined in subclauses 4.1 to 4.13, see also annex A.

These subclauses are intended to give confidence that the requirements set out in the product standard(s) to which measurements are to be performed have been met without the necessity of performing measurements on all channels.

4.1 Choice of model for type testing

The manufacturer shall provide one or more samples of the equipment, as appropriate, for type testing.

If an equipment has several optional features, considered not to affect the Radio Frequency (RF) parameters, then tests need only be performed on the equipment configured with that combination of features considered to be the most complex, as proposed by the manufacturer and agreed by the test laboratory.

In the case of hand portable equipment without a 50 Ω external antenna connector, see subclause 4.13.

4.2 Definitions of switching range, alignment range and operational frequency range

4.2.1 Definition of switching range

The manufacturer shall state the switching ranges of the receiver and the transmitter (which may differ).

The Switching Range (SR) is the maximum frequency range, as specified by the manufacturer, over which the receiver or the transmitter can be operated within the alignment range without reprogramming or realignment.

4.2.2 Definition of alignment range

The manufacturer shall also, when submitting equipment for type testing, state the alignment ranges for the receiver and the transmitter.

The Alignment Range (AR) is defined as the frequency range over which the receiver and/or the transmitter can be programmed and/or aligned to operate, without any change to the circuit other than the substitution of programmable read only memories or crystals (for the receiver and transmitter) and the trimming of discrete components.

Trimming is an act by which the value (in this case relating to frequency) of a component is changed within the circuit. This act may include the physical alteration, substitution (by components of similar size and type) or activation/de-activation (via the setting of soldered bridges) of components.

For the purpose of all measurements, the receiver and transmitter shall be considered separately.

4.2.3 Definition of operating frequency range

The Operating Frequency Range (OFR) is the total range of frequencies covered either by one type, or by a family of equipment.

It is noted that a family of equipment may be capable of covering a wider frequency range than the alignment range of one type of equipment.

4.3 Definition of the categories of the alignment range (AR0, AR1, AR2 and AR3)

The alignment range falls into one of four categories:

- the first category, defined as AR0, corresponds to equipment having an alignment range of less than or equal to 5 MHz;
- the second category, defined as AR1, corresponds to an alignment range greater than 5 MHz but less than or equal to 30 MHz;
- the third category, defined as AR2, corresponds to an alignment range greater than 30 MHz, but less than or equal to 60 MHz;
- the fourth category, defined as AR3, corresponds to an alignment range greater than 60 MHz.

4.4 Testing of equipment of category AR0

Full tests shall be carried out on a channel within 50 kHz of the centre frequency of the alignment range, category AR0.

4.5 Testing of equipment of category AR1

Full tests shall be carried out on a channel within 50 kHz of the highest frequency of the alignment range and full tests on a channel within 50 kHz of the lowest frequency of the alignment range.