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Australian Standard®

Radio equipment and systems—Short range devices

Part 2: Technical characteristics and test methods for radio equipment to be used in the 25 MHz to 25 GHz frequency range with power levels ranging up to 1 W

[Based on IETS 300 220:1993, Radio Equipment and Systems—Short range devices: Technical characteristics and test methods for radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW]

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee RC/3, Radiocommunications Equipment—Low Power. It was approved on behalf of the Council of Standards Australia on 5 December 1994 and published on 5 February 1995.

The following interests are represented on Committee RC/3:

Australian Electrical and Electronic Manufacturers Association

Australian Federation of Consumer Organisations

Consumer Electronics Suppliers Association

Department of Communications and the Arts

Ministry of Commerce, NZ

Model Aeronautical Association of Australia

National Association of Testing Authorities Australia

Spectrum Management Agency

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee RC/3 on Radiocommunications Equipment—Low Power. It is one of a series of Standards intended to provide specification for spectrum management and minimum radio equipment performance.

This Standard is the result of a consensus among Australian and New Zealand representatives on the Joint Committee to produce it as an Australian Standard.

It has been reproduced from European Telecommunication Standard IETS 300 220:1993, *Radio Equipment and Systems—Short range devices: Technical characteristics and test methods for radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW*, drawn up by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute.

Where the text of IETS 300 220 has been varied technically to accommodate different or additional requirements for Australia, it is indicated by double vertical lines in the left-hand margin against the clause affected. Australian variations to IETS 300 220 are given in Appendix ZZ at the end of this publication.

This Standard differs from IETS 300 220:1993 in that some test signals and spectral conditions are varied to reflect local conditions and usage. Any limit derived from the measurement of radiated signals is expressed in equivalent isotropic radiated power.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

As this Standard is reproduced from a European Standard, the following applies:

(a) The Standard number does not appear on each page of text and its identity is shown only on the cover.

(b) In the source text, 'this Interim European Telecommunications Standard' should read 'this Australian Standard'.

References to international Standards should be replaced by equivalent Australian, New Zealand or Australian/New Zealand Standards, as follows:

Reference to International Standard or Other Publication	*Australian/New Zealand Standard*
CCITT Recommendation 0.153: Basic parameters for the measurement of error performance at bit rates below the primary rate	—
CEPT Recommendation T/R 20-03: Low power telecommand and telemetry equipment operating on collective frequencies in the ISM frequency bands	—
CEPT Recommendation T/R 20-04: Low power narrow band telecommand and telemetry equipment for use outside the ISM frequency bands	—
CEPT Recommendation T/R 01-04: Use of Low Power Devices (LPD) using integral antennas and operating in harmonized frequency bands	—

CEPT	Recommendation T/R 71-03: Procedures for type testing and approval for radio equipment intended for non-public systems	—
CISPR	Publication 16: Specifications for radio interference measuring apparatus and measurement methods	AS/NZS 1052 CISPR specification for radio interference measuring apparatus and measurement methods
ETR 028	Radio Equipment and Systems; Uncertainties in the measurement of mobile radio equipment characteristics	—

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FOREWORD

This Interim European Telecommunication Standard (I-ETS) has been prepared by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI) and having passed through ETSI standards approval procedure, is now published.

This is a general standard based upon CEPT Recommendations T/R 20-03 [1] and T/R 20-04 [2].

All types of modulation for radio devices, except Code Division Multiple Access (CDMA), are covered by this I-ETS.

For regulatory purposes the equipment is divided into four main classes based on frequency range and maximum output power (see table 1), and further divided into classes based on the use inside or outside the Industrial Scientific and Medical (ISM) bands and on the use of the antenna (see table 2).

Table 1

Class	Frequency range MHz	Power level (conducted or radiated) milliWatts (mW)
I	25 to 1 000	10
II	300 to 1 000	25
III	25 to 300	100
IV	300 to 1 000	500

Table 2

Sub-class	Frequency band	Antenna type/connector
a	I.S.M.	Integral
b	Non-I.S.M.	Integral
c	I.S.M.	External socket
d	Non-I.S.M.	External socket

The CEPT Recommendation T/R 01-04 [6] covering Low Power Devices (LPD) is supported by class I.a., from the above tables, see Annex A, Clause A.1.

For non-harmonised parameters, national administrations may impose conditions on the type of modulation, channel/frequency separations, maximum transmitter output power/effective radiated power, equipment marking and the inclusion of an automatic transmitter shut-off facility as a condition of the issue of an individual or general licence, or, as a condition of use under licence exemption. The extreme temperature ranges are fixed and are given in subclause 5.4.1.2.

This I-ETS does not cover requirements for radiated emissions below 25 MHz.

Additional standards or specifications may be required for equipment such as that intended for connection to the Public Switched Telephone Network (PSTN).

INTRODUCTION

This I-ETS is intended to specify the minimum performance and the methods of measurement for short range devices as specified in the scope.

When ETSI publishes a standard covering a specific application for short range devices, it will supersede this general standard.

Interference from other services and systems has not been taken into account in this I-ETS.

Included are methods of measurement for equipments fitted with antenna sockets and/or integral antenna. Equipment designed for use with an integral antenna may be supplied with a temporary external/internal or permanent internal 50 ohm connector for the purpose of testing, providing, the characteristics being measured are not expected to be affected.

The performance of the equipment submitted for type testing should be representative of the performance of the corresponding production model. In order to avoid any ambiguity in that assessment, this I-ETS contains instructions for the presentation of equipment for type testing purposes (see subclause 4.1), conditions of testing (see Clause 5).

This I-ETS was drafted on the assumption that:

- "Type test measurements, performed in an accredited test laboratory, shall be accepted by the various National Regulatory Authorities in order to grant type approval, provided the National regulatory requirements are met. In addition national administrations may accept a "certificate of conformity" based on the type test report".

This is in compliance with CEPT Recommendation T/R 71-03 [7].

Clauses 1 and 3 provide a general description on the types of equipment covered by this I-ETS and the definitions and abbreviations used. Clause 4 provides a guide as to the number of samples required in order that type tests may be carried out, and any markings on the equipment which the applicant should provide.

Clauses 7 and 8 provide the limits of the parameters which are required to be tested. These limits have been chosen to minimise harmful interference to other equipment and services. It also provides details on how the equipment should be tested and the conditions which should be applied.

Clause 9 gives the maximum measurement uncertainty values.

Annex A provides information on specific applications covered by this I-ETS.

Annex B provides specifications concerning radiated measurements.

Annex C contains specifications for adjacent channel power measurement arrangements.

Annex D is a graphic representation of subclause 4.1, referring to the presentation of equipment for testing purposes.

Annex E provides information on the correction curve to be used for pulsed systems.

Annex F provides information on the spectrum analyser specification.

NOTES

AUSTRALIAN STANDARD

Radio equipment and systems—Short range devices

Part 2:
Technical characteristics and test methods for radio equipment to be used in the 25 MHz to 25 GHz frequency range with power levels ranging up to 1 W

1 Scope

This I-ETS covers the minimum characteristics considered necessary in order to make the best use of the available frequencies.

It does not necessarily include all the characteristics which may be required by a user, nor does it necessarily represent the optimum performance achievable.

It applies to short range devices:

- with an antenna connection and/or with an integral antenna;
- for alarms, telecommand, telemetry, etc., applications;
- with or without speech;
- operating on radio frequencies between 25 MHz and 1 000 MHz, with power levels up to 500 mW, radiated or terminated.

This I-ETS covers fixed stations, mobile stations and portable stations. It applies also to Low Power Devices (LPD), as defined in the CEPT Recommendation T/R 01-04 [6]. In this I-ETS basic requirements are given for the different frequency bands, channel separation etc., where appropriate.

2 Normative references

This I-ETS incorporates by dated or undated reference, provisions from other publications. These normative 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 I-ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CEPT Recommendation T/R 20-03: "Low power telecommand and telemetry equipment operating on collective frequencies in the ISM frequency bands".

[2] CEPT Recommendation T/R 20-04: "Low power narrow band telecommand and telemetry equipment for use outside the ISM frequency bands".

[3] CCITT Recommendation O.153: "Basic parameters for the measurement of error performance at bit rates below the primary rate".

[4] CISPR Publication 16: "Specifications for radio interference measuring apparatus and measurement methods".

[5] ETR 028: "Radio Equipment and Systems; Uncertainties in the measurement of mobile radio equipment characteristics".

[6] CEPT Recommendation T/R 01-04: "Use of Low Power Devices (LPD) using integral antennas and operating in harmonised frequency bands".

[7] CEPT Recommendation T/R 71-03: "Procedures for type testing and approval for radio equipment intended for non public systems".