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Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24,05 GHz to 24,25 GHz frequency range for automotive application; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

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Foreword

This Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

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.1] (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 [i.2] 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").

Technical specifications relevant to Directive 1999/5/EC [i.2] are given in annex A.

The present document is part 2 of a multi-part deliverable covering Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24,05 GHz to 24,25 GHz frequency range for automotive application, as identified below:

Part 1: "Technical characteristics and test methods";

Part 2: "Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

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 [i.2]. The modular structure is shown in EG 201 399 [i.3].

1 Scope

The present document applies to Short Range Devices (SRDs) in Road Transport and Traffic Telematics (RTTT) systems as described in the scope of EN 302 858-1 [1]:

- with an integral antenna;
- for low power motion and distance monitoring radars for mobile applications only;
- operating in the 24,05 GHz to 24,25 GHz frequency range.

The applicability of the present document covers only the 24 GHz Narrow Band Short Range Radar (NBSRR) for road vehicles. The present document does not necessarily include all the characteristics which may be required by a user, nor does it necessarily represent the optimum performance achievable.

The present document is intended to cover the provisions of Directive 1999/5/EC [i.2] (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".

These radio equipment types are capable of operating in all or part of the frequency band as specified below.

Table 1: Narrow band short range radar devices frequency of operation

	Frequency Bands/frequencies	Applications
Transmit and Receive	24.050 to 24.250 GHz	Short range radar for vehicle applications

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 [i.2] may apply to equipment within the scope of the present document.

NOTE: 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 a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

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 indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1] ETSI EN 302 858-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24 GHz range; Part 1: Technical requirements and methods of measurement".

[2] ETSI TR 100 028 (V1.4.1) (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

[i.1] 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.2] 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).

[i.3] ETSI EG 201 399 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".

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 [i.2] and EN 302 858-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 302 858-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 858-1 [1] apply.

4 Technical requirements specifications

4.1 Environmental conditions

4.1.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the supplier. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

4.1.2 Choice of models for test suite

Measurement shall be performed according to the present document on samples of equipment defined in EN 302 858-1 [1], clause 4.1.1.

4.2 Transmitter conformance requirements

4.2.1 Permitted range of operating frequencies

The permitted range of operating frequencies shall not exceed the limits specified in clause 7.3.3 of EN 302 858-1 [1].

4.2.2 Maximum radiated peak power (e.i.r.p.)

The maximum radiated peak power density (e.i.r.p.) shall not exceed the limits specified in clause 7.4.3 of EN 302 858-1 [1].

4.2.3 Dwell time and repetition time

The maximum dwell time and minimum repetition time shall not violate the limits specified in clause 7.5.3 of EN 302 858-1 [1].

4.2.4 Frequency modulation range

The minimum frequency modulation range shall not fall below the limits specified in clause 7.6.3 of EN 302 858-1 [1].

4.2.5 Radiated spurious emissions

The maximum radiated spurious emissions shall not exceed the limits specified in clause 7.7.3 of EN 302 858-1 [1].

4.3 Receiver conformance requirements

4.3.1 Receiver spurious radiations

Spurious radiations from the receiver shall not exceed the limits specified in clause 8.1.3 of EN 302 858-1 [1].

4.4 Installation requirements

The installation requirements as defined in EN 302 858-1 [1], annex B shall be applied.

5 Testing for compliance with technical requirements

5.1 Environmental conditions for testing

Tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile.

Where technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions (within the boundary limits of the declared operational environmental profile) to give confidence of compliance for the affected technical requirements.

5.1.1 Normal and extreme test conditions

Tests shall be made under normal test conditions, and also where stated, under extreme test conditions. The test procedures shall be as specified in EN 302 858-1 [1], clauses 5.3 and 5.4.

5.1.2 Test power sources

The test power sources shall meet the requirements of EN 302 858-1 [1], clause 5.2.

5.2 Interpretation of the measurement results

The interpretation of the results recorded in a test report for the measurements described in the present document shall be as follows:

- the measured value related to the corresponding limit shall be used to decide whether an equipment meets the requirements of the present document;
- the value of the measurement uncertainty for the measurement of each parameter shall be included in the test report;
- the recorded value of the maximum expanded measurement uncertainty, for each measurement, shall comply with the values in clause 9.1, table 9 of EN 302 858-1 [1].

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with the principles contained within TR 100 028 [2] and shall correspond to an expansion factor (coverage factor) k = ±1,96 or k = ±2 (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

The particular expansion factor used for the evaluation of the measurement uncertainty shall be stated.

5.3 Essential radio test suites

5.3.1 Transmitter test suites

5.3.1.1 Permitted range of frequencies

The test defined in clause 7.3 of EN 302 858-1 [1] shall be carried out.

5.3.1.2 Maximum radiated peak power (e.i.r.p.)

The test defined in clause 7.4 of EN 302 858-1 [1] shall be carried out.

5.3.1.3 Dwell time and repetition time

The test defined in clause 7.5 of EN 302 858-1 [1] shall be carried out.

5.3.1.4 Frequency modulation range

The test defined in clause 7.6 of EN 302 858-1 [1] shall be carried out.

5.3.1.5 Radiated spurious emissions

The tests defined in clause 7.7 of EN 302 858-1 [1] shall be carried out.

5.3.2 Receiver test suites

5.3.2.1 Receiver spurious emissions

The receiver spurious emissions test as defined in clause 8.1 of EN 302 858-1 [1] shall be carried out.

5.3.3 Installation requirements

The installation requirements as defined in EN 302 858-1 [1], annex B, shall be applied.

5.4 Interpretation of results and maximum measurement uncertainty

Clause 9 of EN 302 858-1 [1] shall apply.