



**Electromagnetic compatibility  
and Radio spectrum Matters (ERM);  
Short Range Devices;  
Transport and Traffic Telematics (TTT);  
Radar equipment operating in the 76 GHz to 77 GHz range;  
Part 2: Harmonized EN covering the essential requirements of  
article 3.2 of the R&TTE Directive for ground based  
vehicular radar equipment  
operating in the 76 GHz to 77 GHz range**

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**Reference**

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## Foreword

This draft Harmonized European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document has been produced by ETSI in response to mandate M/284 issued from the European Commission under Directive 98/34/EC [i.2] as amended by Directive 98/48/EC [i.3].

The title and reference to the present document are intended to be included in the publication in the Official Journal of the European Union of titles and references of Harmonized Standard under the Directive 1999/5/EC [i.1]

The requirements relevant to Directive 1999/5/EC [i.1] are summarized in annex A.

The present document is part 2 of a multi-part deliverable covering Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Transport and Traffic Telematics (TTT); Radar equipment operating in the 76 GHz to 77 GHz range, as identified below:

- Part 1: "Technical characteristics and test methods for ground based vehicular radar equipment operating in the 76 GHz to 77 GHz range";
- Part 2: "Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for ground based vehicular radar equipment operating in the 76 GHz to 77 GHz range";**
- Part 3: "Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for Railway/Road Crossings obstacle detection system applications operating in the 76 GHz to 77 GHz range".

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

## Modal verbs terminology

In the present document **"shall"**, **"shall not"**, **"should"**, **"should not"**, **"may"**, **"may not"**, **"need"**, **"need not"**, **"will"**, **"will not"**, **"can"** and **"cannot"** are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

**"must"** and **"must not"** are **NOT** allowed in ETSI deliverables except when used in direct citation.

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# 1 Scope

The present document covers radar applications for ground based vehicle applications in the frequency range from 76 GHz to 77 GHz. It covers integrated transceivers and separate transmit/receive modules.

The present document is intended to cover the provisions of Directive 1999/5/EC [i.1] (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".

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.1] 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>

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# 2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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 necessary for the application of the present document.

- [1] ETSI EN 301 091-1 (V1.4.0) (07-2014): " Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Transport and Traffic Telematics (TTT); Radar equipment operating in the 76 GHz to 77 GHz range; Part 1: Technical characteristics and test methods for ground based vehicular radar equipment operating in the 76 GHz to 77 GHz range".

## 2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] 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.2] 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.3] Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998 amending Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations.

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## 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.1], EN 301 091-1 [1] and the following apply:

**environmental profile:** range of environmental conditions under which equipment within the scope of the present document is required to comply with the provisions of the present document

### 3.2 Symbols

For the purposes of the present document, the symbols given in EN 301 091-1 [1] apply.

### 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 301 091-1 [1] apply.

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## 4 Technical requirements specifications

### 4.1 Environmental conditions

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.

### 4.2 Conformance requirements

#### 4.2.1 Transmitter

##### 4.2.1.1 Permitted range of operating frequencies

The permitted range of operating frequencies shall not exceed the limits specified in clause 7.1.3 of EN 301 091-1 [1].

##### 4.2.1.2 Radiated mean power (e.i.r.p.)

The radiated mean power (e.i.r.p.) shall not exceed the limits specified in clause 7.2.3 of EN 301 091-1 [1].

##### 4.2.1.3 Radiated peak power (e.i.r.p.)

The radiated peak power (e.i.r.p.) shall not exceed the limits specified in clause 7.2.3 of EN 301 091-1 [1].

##### 4.2.1.4 Out-of-band emissions

The transmitter out-of-band emissions shall not exceed the limits specified in clause 7.3.4 of EN 301 091-1 [1], table 4.

##### 4.2.1.5 Spurious emissions

The transmitter spurious emissions, shall not exceed the limits specified in clause 7.4.4 of EN 301 091-1 [1], table 5.

## 4.2.2 Receiver spurious emissions

The receiver spurious emissions shall not exceed the limits specified in clause 8.1.3 of EN 301 091-1 [1].

NOTE: Not required on receivers co-located with transmitters.

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# 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.

## 5.2 Interpretation of the measurement results

Clause 4.4 of EN 301 091-1 [1] shall apply.

## 5.3 Essential radio test suites

### 5.3.1 Transmitter

#### 5.3.1.1 Permitted range of operating frequencies

The test defined in clause 7.1.2 of EN 301 091-1 [1] shall be carried out.

#### 5.3.1.2 Radiated mean power (e.i.r.p.)

The test defined in clause 7.2.2. of EN 301 091-1 [1] shall be carried out.

#### 5.3.1.3 Radiated peak power (e.i.r.p.)

The test defined in clause 7.2.2 of EN 301 091-1 [1] shall be carried out.

#### 5.3.1.4 Out-of-band emissions

The test defined in clause 7.3.3 of EN 301 091-1 [1] shall be carried out.

#### 5.3.1.5 Spurious emissions

The test defined in clause 7.4.3 of EN 301 091-1 [1] shall be carried out.

### 5.3.2 Receiver spurious emissions

The test defined in clause 8.1.2 of EN 301 091-1 [1] shall be carried out.

## Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT)

The HS Requirements and conformance Test specifications Table (HS-RTT) in table A.1 serves a number of purposes, as follows:

- it provides a statement of all the requirements in words and by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it provides a statement of all the test procedures corresponding to those requirements by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it qualifies each requirement to be either:
  - Unconditional: meaning that the requirement applies in all circumstances; or
  - Conditional: meaning that the requirement is dependent on the manufacturer having chosen to support optional functionality defined within the schedule.
- in the case of Conditional requirements, it associates the requirement with the particular optional service or functionality;
- it qualifies each test procedure to be either:
  - Essential: meaning that it is included with the Essential Radio Test Suite and therefore the requirement shall be demonstrated to be met in accordance with the referenced procedures;
  - Other: meaning that the test procedure is illustrative but other means of demonstrating compliance with the requirement are permitted.

**Table A.1: HS Requirements and conformance Test specifications Table (HS-RTT)**

Harmonized Standard EN 301 091-2						
The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive [i.1]						
Requirement			Requirement Conditionality		Test Specification	
No.	Description	Reference Clause No	U/C	Condition	E/O	Reference Clause No
1	Permitted range of operating frequencies	4.2.1.1	U		E	5.3.1.1
2	Radiated mean power	4.2.1.2	U		E	5.3.1.2
3	Radiated peak power	4.2.1.3	U		E	5.3.1.3
4	Out-of-band emissions	4.2.1.4	U		E	5.3.1.4
5	Spurious emissions	4.2.1.5	U		E	5.3.1.5
6	Receiver spurious emissions	4.2.2	U		E	5.3.2

### Key to columns:

#### Requirement:

**No** A unique identifier for one row of the table which may be used to identify a requirement or its test specification.

**Description** A textual reference to the requirement.

**Clause Number** Identification of clause(s) defining the requirement in the present document unless another document is referenced explicitly.



**Requirement Conditionality:**

**U/C** Indicates whether the requirement is to be *unconditionally* applicable (U) or is *conditional* upon the manufacturers claimed functionality of the equipment (C).

**Condition** Explains the conditions when the requirement shall or shall not be applicable for a requirement which is classified "conditional".

**Test Specification:**

**E/O** Indicates whether the test specification forms part of the Essential Radio Test Suite (E) or whether it is one of the Other Test Suite (O).

NOTE: All tests are relevant to the requirements. The completion of all tests classified "E" as specified with satisfactory outcomes is a necessary condition for a presumption of conformity.

**Clause Number** Identification of clause(s) defining the test specification in the present document unless another document is referenced explicitly. Where no test is specified (that is, where the previous field is "X") this field remains blank.

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## History

Document history		
V1.1.1	June 1998	Publication as EN 301 091
V1.2.1	November 2004	Publication
V1.2.2	July 2005	Publication
V1.3.2	November 2006	Publication
V1.4.0	July 2014	EN Approval Procedure AP 20141108: 2014-07-11 to 2014-11-10