

ETSI EN 300 718-3 V1.2.1 (2004-02)

Candidate Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Avalanche Beacons;
Transmitter-receiver systems;
Part 3: Harmonized EN covering essential requirements
of article 3.3e of the R&TTE Directive**



Reference

REN/ERM-TG36-001-3

Keywords

radio, regulation, safety, SAR, testing

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, send your comment to:

editor@etsi.org

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2004.
All rights reserved.

DECT™, **PLUGTESTS™** and **UMTS™** are Trade Marks of ETSI registered for the benefit of its Members.
TIPHON™ and the **TIPHON logo** are Trade Marks currently being registered by ETSI for the benefit of its Members.
3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

Contents

Intellectual Property Rights	4
Foreword.....	4
Introduction	5
1 Scope	7
2 References	7
3 Definitions, abbreviations and symbols	8
3.1 Definitions	8
3.2 Abbreviations	8
3.3 Symbols.....	8
4 Environmental conformance requirement specifications	8
4.1 General	8
4.1.1 Environmental profile	8
4.2 Drop test on hard surface.....	8
4.2.1 Conformance.....	8
4.2.2 Requirements	8
4.3 Temperature tests	9
4.3.1 Conformance.....	9
4.3.2 Requirements	9
4.4 Immersion test	9
4.4.1 Conformance.....	9
4.4.2 Requirements	9
5 Technical conformance requirements specifications.....	9
5.1 General	9
5.1.1 Operational Requirements	9
5.2 Conformance requirements	10
5.2.1 Maintaining the transmit mode	10
5.2.2 Battery check	10
5.2.3 Minimum output field strength (H-field)	10
5.2.3.1 Definition	10
5.2.3.2 Conformance.....	10
5.2.3.3 Limit.....	10
5.2.4 Receiver sensitivity	10
5.2.4.1 Definition	10
5.2.4.2 Conformance.....	10
5.2.4.3 Limit.....	10
5.2.5 Changes in the received signal.....	10
5.2.5.1 Definition	10
5.2.5.2 Limit.....	10
6 Measurement uncertainties.....	11
Annex A (normative): The EN Requirements Table (EN-RT).....	12
Annex B (informative): The EN title in the official languages	13
History	14

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document is part 3 of a multi-part deliverable covering the Avalanche Beacons; Transmitter-receiver systems, as identified below:

Part 1: "Technical characteristics and test methods";

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

Part 3: "Harmonized EN covering essential requirements of article 3.3e of the R&TTE Directive".

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (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 [1] 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").

The present document implements requirements laid down in Commission Decision 2001/148/EC [8].

National transposition dates	
Date of adoption of this EN:	6 February 2004
Date of latest announcement of this EN (doa):	31 May 2004
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2004
Date of withdrawal of any conflicting National Standard (dow):	30 November 2005

Introduction

The present document is part of a set of standards designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

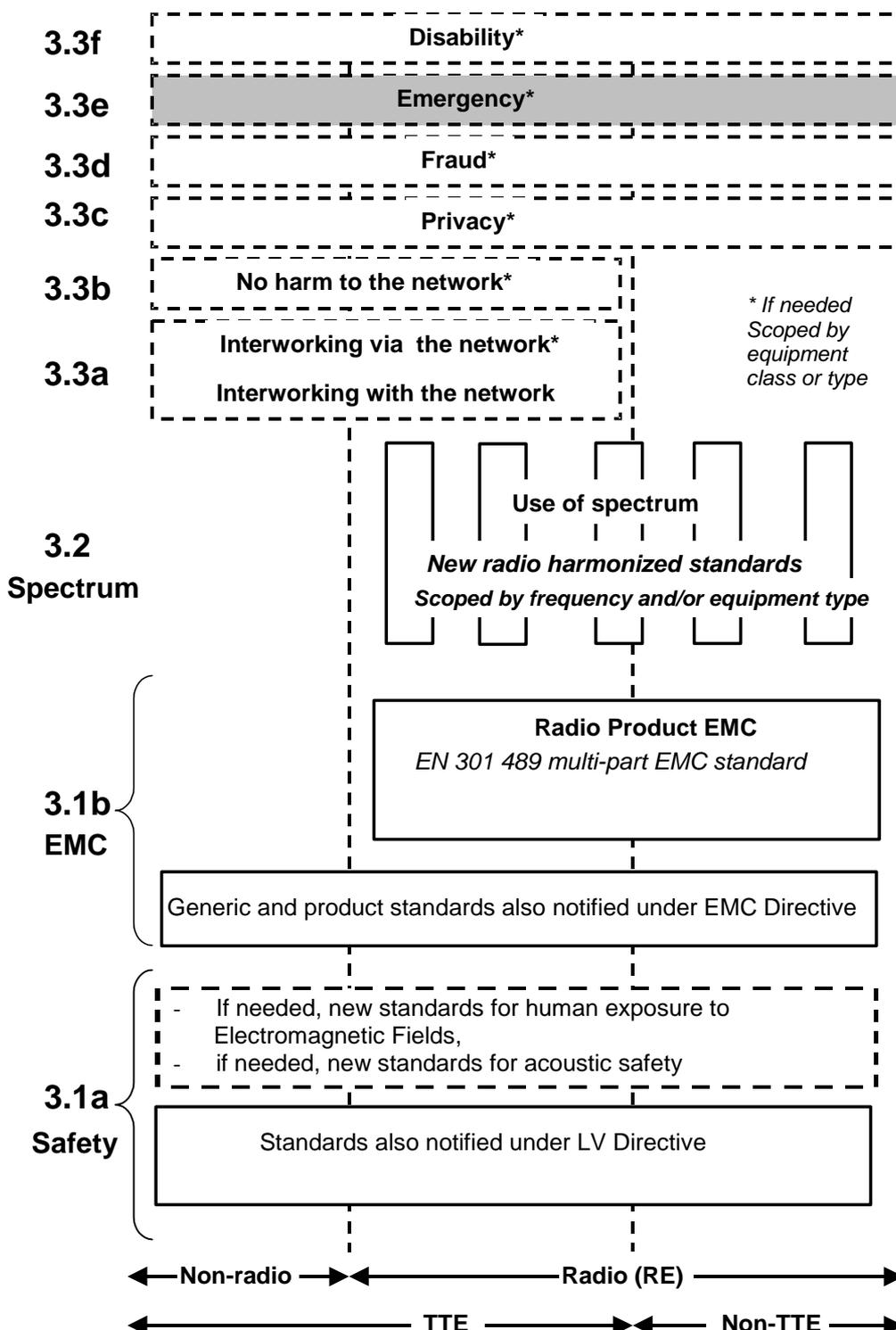


Figure 1: Modular structure for the various standards used under the R&TTE Directive

The left hand edge of the figure shows the different clauses of article 3 of the Directive.

For article 3.3 various horizontal boxes are shown. Dotted lines indicate that at the time of publication of the present document essential requirements in these areas have to be adopted by the Commission. If such essential requirements are adopted, and as far and as long as they are applicable, they will justify individual standards whose scope is likely to be specified by function or interface type.

The vertical boxes show the standards under article 3.2 for the use of the radio spectrum by radio equipment. The scopes of these standards are specified either by frequency (normally in the case where frequency bands are harmonized) or by radio equipment type.

For article 3.1b the diagram shows EN 301 489, the multi-part product EMC standard for radio used under the EMC Directive [2].

For article 3.1a the diagram shows the existing safety standards currently used under the LV Directive [3] and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.

The bottom of the figure shows the relationship of the standards to radio equipment and telecommunications terminal equipment. A particular equipment may be radio equipment, telecommunications terminal equipment or both. A radio spectrum standard will apply if it is radio equipment. An article 3.3 standard will apply as well only if the relevant essential requirement under the R&TTE Directive [1] is adopted by the Commission and if the equipment in question is covered by the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the R&TTE Directive [1] may be covered in a set of standards.

The modularity principle has been taken because:

- it minimizes the number of standards needed. Because equipment may, in fact, have multiple interfaces and functions it is not practicable to produce a single standard for each possible combination of functions that may occur in an equipment;
- it provides scope for standards to be added:
 - under article 3.2 when new frequency bands are agreed or;
 - under article 3.3 should the Commission take the necessary decisions without requiring alteration of standards that are already published;
- it clarifies, simplifies and promotes the usage of Harmonized Standards as the relevant means of conformity assessment.

1 Scope

The present document applies to requirements for avalanche beacons. Avalanche beacons are portable radio systems used for locating avalanche victims, for the purpose of direct rescue, i.e. for rescue by comrades not hit by the avalanche.

The present document is applicable for avalanche beacons operating on the frequency 457 kHz.

The present document is intended to cover the provisions of Directive 1999/5/EC (R&TTE Directive) [1]: article 3.3e, which states that radio equipment within the scope of the present document shall be so constructed that: "it supports certain features ensuring access to emergency services".

In addition to the present document, and other ENs (e.g. EN 300 718-2 [7]) that specify technical requirements in respect of essential requirements under other parts of article 3 of the R&TTE Directive [1] may apply to equipment within the scope of the present document.

NOTE: A list of such ENs is included on the ETSI web site at <http://www.newapproach.org/>.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- 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.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

- [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).
- [2] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).
- [3] Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LV Directive).
- [4] ETSI EN 300 718-1 (V1.2.1, 2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Avalanche Beacons; Transmitter-receiver systems; Part 1: Technical characteristics and test methods".
- [5] ETSI ETR 028 (Edition 2, 1994): "Radio Equipment and Systems (RES); Uncertainties in the measurement of mobile radio equipment characteristics".
- [6] ITU Radio Regulations (1998), Appendix S1: "Classification of emissions and necessary bandwidths".
- [7] ETSI EN 300 718-2 (V1.1.1, 2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Avalanche Beacons; Transmitter-receiver systems; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive".
- [8] Commission Decision 2001/148/EC of 21 February 2001 on the application of Article 3(3)(e) of Directive 1999/5/EC to avalanche beacons.

3 Definitions, abbreviations and symbols

3.1 Definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [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

H-field: magnetic component of the field measured as current per unit length

3.2 Abbreviations

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

R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency

3.3 Symbols

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

A1A	Class of emission (ITU Radio Regulations [6])
f	Frequency
H	Magnetic field strength

4 Environmental conformance requirement specifications

4.1 General

Environmental tests shall be carried out before tests of the same equipment in respect to the other requirements of the present document are performed. The following tests shall be carried out in the order they appear in this clause.

Where electrical tests are required the equipment shall be powered by its internal battery.

4.1.1 Environmental profile

The normal and extreme test conditions shall be as specified in EN 300 718-1 [4], clauses 5.1 to 5.4.

The operating and storage temperature ranges declared by the manufacturer of the equipment shall include the ranges as specified in EN 300 718-1 [4], clause 4.2.11.

4.2 Drop test on hard surface

4.2.1 Conformance

The test procedures shall be as stated in EN 300 718-1 [4], clause 7.2.2.

4.2.2 Requirements

The equipment shall meet the requirements as stated in EN 300 718-1 [4], clause 7.2.3.

4.3 Temperature tests

4.3.1 Conformance

The test procedures shall be as stated in EN 300 718-1 [4], clauses 7.3.1, 7.3.2 and 7.3.3.

4.3.2 Requirements

The equipment shall meet the requirements as stated in EN 300 718-1 [4.], clause 7.3.4.

4.4 Immersion test

4.4.1 Conformance

The test procedures shall be as stated in EN 300 718-1 [4], clause 7.4.1.

4.4.2 Requirements

The equipment shall meet the requirements as stated in EN 300 718-1 [4], clause 7.4.2.

5 Technical conformance requirements specifications

5.1 General

These shall be as described in EN 300 718-1 [4], clauses 6.1 to 6.4.

5.1.1 Operational Requirements

Transmitter and receiver shall be combined in one unit and be capable of being attached to the user's body.

The equipment shall be portable and capable of being used only for rescue operations, caused by avalanche, between persons that are in snowy, arctic areas or in similar areas.

The equipment shall in one unit only comprise:

- an transmitter/receiver including antenna(s) and battery;
- a control unit including an on/off switch; and
- a means for conveying information about the received signals to the user.

Where a unit of equipment provides a facility which is additional to requirements of the present document, the operation or malfunction of such an additional facility shall not prevent the avalanche beacons conforming fully to the requirements of the present document during normal combined operation.

5.2 Conformance requirements

5.2.1 Maintaining the transmit mode

The equipment shall conform to EN 300 718-1 [4], clause 4.2.3.

5.2.2 Battery check

The equipment shall conform to EN 300 718-1 [4], clause 4.2.6.

5.2.3 Minimum output field strength (H-field)

5.2.3.1 Definition

This shall be as defined in EN 300 718-1 [4], clause 8.3.1.

5.2.3.2 Conformance

Conformance tests as defined in EN 300 718-1 [4], clause 8.3.2 shall be carried out.

5.2.3.3 Limit

The minimum transmitter output field strength shall be as stated in EN 300 718-1 [4], clause 8.3.3.1.

5.2.4 Receiver sensitivity

5.2.4.1 Definition

This shall be as defined in EN 300 718-1 [4], clause 9.1.1.

5.2.4.2 Conformance

Conformance tests as defined in EN 300 718-1 [4], clause 9.1.2 shall be carried out.

5.2.4.3 Limit

The limit on receiver sensitivity shall be as stated in EN 300 718-1 [4], clause 9.1.3.

5.2.5 Changes in the received signal

5.2.5.1 Definition

This shall be as defined in EN 300 718-1 [4], clause 9.2.1.

5.2.5.2 Limit

The requirements shall be as stated in EN 300 718-1 [4], clause 9.2.2.

6 Measurement uncertainties

The accumulated measurement uncertainties of the test system in use for the parameters to be measured should not exceed those given in table 1. This is in order to ensure that the measurements remain within an acceptable uncertainty.

Table 1: Parameter uncertainty

Parameter	Maximum uncertainty
RF frequency	$\pm 1 \times 10^{-6}$
Radiated emission of transmitter, valid up to 1 GHz (Substitution method)	± 2 dB
Radiated emission of transmitter, valid up to 1 GHz (Direct measurement, using calibrated antennas)	± 6 dB
Temperature	$\pm 1^{\circ}\text{C}$
Humidity	± 5 %
Transmitted H field at a distance of 10 m	$\pm 0,1 \mu\text{A/m}$
NOTE: Where applicable for the test methods according to the present document the uncertainty figures are valid to a confidence level of 95 % calculated according to the methods described in ETR 028 [5].	

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 will 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 measurement uncertainty shall be, for each measurement, equal to or lower than the figures in table 1.

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with ETR 028 [5] and shall correspond to an expansion factor (coverage factor) $k = 1,96$ of $k = 2$ (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 1 is based on such expansion factors.

Annex A (normative): The EN Requirements Table (EN-RT)

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the EN-RT proforma in this annex so that it can be used for its intended purposes and may further publish the completed EN-RT proforma.

The EN Requirements Table (EN-RT) serves a number of purposes, as follows:

- it provides a tabular summary of all the requirements;
- it shows the status of each EN-R, whether it is essential to implement in all circumstances (Mandatory), or whether the requirement is dependent on the supplier having chosen to support a particular optional service or functionality (Optional). In particular it enables the EN-Rs associated with a particular optional service or functionality to be grouped and identified;
- when completed in respect of a particular equipment it provides a means to undertake the static assessment of conformity with the EN.

The EN-RT is placed in an annex of the EN in order that it may be photocopied and used as a proforma.

Table A.1: EN Requirements Table (EN-RT)

EN Reference		EN 300 718-3 (the present document)			Comment
No.	Reference	EN-R (see note)	Status		
1	4.2	Drop test on hard surface	M		
2	4.3	Temperature test	M		
3	4.4	Immersion test	M		
4	5.1.1	Operational requirement	M		
5	5.2.1	Maintaining the transmit mode	M		
6	5.2.2	Battery check	M		
7	5.2.3	Minimum output field strength (H-field)	M		
8	5.2.4	Receiver sensitivity	M		
9	5.2.5	Changes in the received signal	M		

NOTE: These EN-Rs are justified under article 3.3 of the R&TTE Directive.

Key to columns:

- No** table entry number;
- Reference** clause reference number of conformance requirement within the present document;
- EN-R** title of conformance requirement within the present document;
- Status** status of the entry as follows:
- M mandatory, shall be implemented under all circumstances;
 - O optional, may be provided, but if provided shall be implemented in accordance with the requirements;
 - O.n this status is used for mutually exclusive or selectable options among a set. The integer "n" shall refer to a unique group of options within the EN-RT. A footnote to the EN-RT shall explicitly state what the requirement is for each numbered group. For example, "It is mandatory to support at least one of these options", or, "It is mandatory to support exactly one of these options".
- Comments** to be completed as required.

Annex B (informative): The EN title in the official languages

Language	EN title
Czech	
Danish	
Dutch	
English	Electromagnetic compatibility and Radio spectrum Matters (ERM); Avalanche Beacons; Transmitter-receiver systems; Part 3: Harmonized EN covering essential requirements of article 3.3e of the R&TTE Directive
Estonian	
Finnish	
French	
German	
Greek	
Hungarian	
Icelandic	
Italian	
Latvian	
Lithuanian	
Maltese	
Polish	Kompatybilność Elektromagnetyczna i Zagadnienia Widma Radiowego (ERM); Sygnalizatory lawinowe; Systemy nadawczo-odbiorcze; Część 3: Zharmonizowana EN zapewniająca spełnienie zasadniczych wymagań zgodnie z artykułem 3.3e dyrektywy R&TTE
Portuguese	
Slovak	
Slovenian	
Spanish	
Swedish	

History

Document history		
V1.1.1	May 2001	Publication
V1.2.1	October 2003	One-step Approval Procedure OAP 20040206: 2003-10-08 to 2004-02-06
V1.2.1	February 2004	Publication