

STN	Zariadenia s krátkym dosahom Telematika dopravy a premávky (TTT) Radarové zariadenia pracujúce v rozsahu od 24,05 GHz do 24,25 GHz alebo od 24,05 GHz do 24,50 GHz Harmonizovaná norma vzťahujúca sa na základné požiadavky podľa článku 3.2 smernice 2014/53/EÚ	STN EN 302 858 V2.1.1 87 2200
------------	---	---

Short Range Devices; Transport and Traffic Telematics (TTT); Radar equipment operating in the 24,05 GHz to 24,25 GHz or 24,05 GHz to 24,50 GHz range; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/18

Obsahuje: EN 302 858 V2.1.1:2016

126040

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2018
Podľa zákona č. 264/1999 Z. z. o technických požiadavkách na výrobky a o posudzovaní zhody a o zmene a doplnení niektorých zákonov v znení neskorších predpisov sa slovenská technická norma a časti slovenskej technickej normy môžu rozmnožovať alebo rozširovať len so súhlasom slovenského národného normalizačného orgánu.

ETSI EN 302 858 V2.1.1 (2016-12)



**Short Range Devices;
Transport and Traffic Telematics (TTT);
Radar equipment operating in the 24,05 GHz to 24,25 GHz
or 24,05 GHz to 24,50 GHz range;
Harmonised Standard covering the essential requirements
of article 3.2 of the Directive 2014/53/EU**

Reference

REN/ERM-TGSRR-77

Keywordsharmonised standard, radar, radio, RTTT, SRD,
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 noticeThe present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (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
<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2016.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.
GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	5
Foreword.....	5
Modal verbs terminology.....	5
1 Scope	6
2 References	6
2.1 Normative references	6
2.2 Informative references.....	7
3 Definitions, symbols and abbreviations	7
3.1 Definitions.....	7
3.2 Symbols.....	7
3.3 Abbreviations	8
4 Technical requirements specification.....	8
4.1 Environmental conditions.....	8
4.2 General	8
4.2.1 Background information.....	8
4.2.2 Wanted performance criteria.....	9
4.2.3 Fixed and scanning antennas	9
4.3 Transmitter Conformance Requirements.....	10
4.3.1 Operating Frequency Range	10
4.3.1.1 Applicability.....	10
4.3.1.2 Description	10
4.3.1.3 Limits	10
4.3.1.4 Conformance.....	10
4.3.2 Peak Power	10
4.3.2.1 Applicability.....	10
4.3.2.2 Description	10
4.3.2.3 Limits	10
4.3.2.4 Conformance.....	11
4.3.3 Unwanted emissions in the out-of-band domain.....	11
4.3.3.1 Applicability.....	11
4.3.3.2 Description	11
4.3.3.3 Limits	11
4.3.3.4 Conformance.....	12
4.3.4 Unwanted emissions in the spurious domain	12
4.3.4.1 Applicability.....	12
4.3.4.2 Description	12
4.3.4.3 Limits	12
4.3.4.4 Conformance.....	12
4.4 Receiver Conformance Requirements	12
4.4.1 Introduction.....	12
4.4.2 Receiver spurious emissions	13
4.4.2.1 Applicability.....	13
4.4.2.2 Description	13
4.4.2.3 Limits	13
4.4.2.4 Conformance.....	13
4.4.3 Receiver in-band, out-of-band and remote-band signals handling.....	13
4.4.3.1 Applicability.....	13
4.4.3.2 Description	14
4.4.3.3 Limits	14
4.4.3.4 Conformance.....	14
4.5 Requirements for Spectrum Access.....	14
4.5.1 Spectrum Access Duty Cycle.....	14
4.5.1.1 Applicability.....	14
4.5.1.2 Description	14

4.5.1.3	Limits	14
4.5.1.4	Conformance	15
4.5.2	Dwell Time and Repetition Time	15
4.5.2.1	Applicability	15
4.5.2.2	Description	15
4.5.2.3	Limits	15
4.5.2.4	Conformance	16
4.5.3	Frequency Modulation Range	16
4.5.3.1	Applicability	16
4.5.3.2	Description	16
4.5.3.3	Limits	16
4.5.3.4	Conformance	16
4.6	Antenna Requirements	16
4.6.1	Unwanted vertical plane transmitter emissions in the 23,6 GHz to 24,0 GHz band	16
4.6.1.1	Applicability	16
4.6.1.2	Description	16
4.6.1.3	Limits	17
4.6.1.4	Conformance	17
4.7	Other Requirements and Mitigation techniques	17
4.7.1	Installation requirements	17
4.7.1.1	Applicability	17
4.7.1.2	Description	17
4.7.1.3	Requirements	17
4.7.1.4	Conformance	17
5	Testing for compliance with technical requirements	17
5.1	General	17
5.2	Product information	17
6	Test setup and procedures	17
7	Conformance methods of measurement	18
7.1	General	18
7.2	Conformance test suites for antenna requirements	18
7.2.1	Unwanted vertical plane transmitter emissions in the 23,6 GHz to 24,0 GHz band	18
Annex A (normative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU	19
Annex B (informative):	Change History	21
History		22

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 (<https://ipr.etsi.org/>).

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 Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.9] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.3].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

National transposition dates	
Date of adoption of this EN:	5 December 2016
Date of latest announcement of this EN (doa):	31 March 2017
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 September 2017
Date of withdrawal of any conflicting National Standard (dow):	30 September 2018

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**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.

1 Scope

The present document applies to the following equipment types:

- automotive radar equipment operating in the 24,05 GHz to 24,25 GHz frequency range (narrowband radar equipment);
- automotive radar equipment operating in the 24,05 GHz to 24,50 GHz frequency range (WLAM wideband low activity mode radar equipment). The WLAM mode can be activated and operated in three different sub-modes (SM) as defined in CEPT/ECC Report 164 [i.8]:
 - SM1: Forward facing Radars, Front-permanent Calibration sub-mode.
 - SM2: Forward facing Radars, Front Emergency APPS sub-mode, activated for emergency braking support in case of a crash event monitored by a camera, for a vehicle speed above 20 km/h.
 - SM3: Rear facing Radars, Rear-parking sub-mode, activated only when the vehicle moves back to better discriminate pedestrians, $v < 30$ km/h.
 A radar EUT can work in one, two, or three of these sub-modes. The radar sensor manufacturer has to declare in which sub-modes the EUT operates and how to switch between the sub-modes.

The present document contains the technical characteristics and test methods for narrowband radar equipment fitted with integral antennas operating in the frequency range from 24,05 GHz to 24,25 GHz or from 24,05 GHz to 24,50 GHz and references CEPT/ERC Recommendation 70-03 [i.1] and EC Decision 2013/752/EU [i.2].

Table 1 shows the frequency bands as designated to narrowband radar and WLAM radar devices.

Table 1: Narrowband and WLAM radar devices frequency of operation

	Frequency bands / frequencies
Transmit 1	24,05 GHz to 24,25 GHz
Receive 1	24,05 GHz to 24,25 GHz
Transmit 2	24,05 GHz to 24,50 GHz (see note)
Receive 2	24,05 GHz to 24,50 GHz (see note)
NOTE: For WLAM operation mode only.	

The present document contains requirements to demonstrate that radio equipment both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference.

In case of differences (for instance concerning special conditions, definitions, abbreviations) between the present document and ETSI EN 303 396 [1], the provisions of the present document take precedence.

2 References

2.1 Normative 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 referenced 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.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 303 396 (V1.1.1) (12-2016): "Short Range Devices; Measurement Techniques for Automotive and Surveillance Radar Equipment".

2.2 Informative 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 referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

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] CEPT/ERC Recommendation 70-03: "Relating to the use of Short Range Devices (SRD)".
- [i.2] EC Decision 2013/752/EU: "Commission implementing Decision of 11 December 2013 amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices and repealing Decision 2005/928/EC".
- [i.3] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.4] CEPT/ERC/REC 74-01: "Unwanted emissions in the spurious domain".
- [i.5] ETSI EG 203 336: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
- [i.6] 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.7] CEPT/ECC Report 134: "Analysis of potential impact of mobile vehicle Radars (VR) on Radar Speed Meters (RSM) operating at 24 GHz".
- [i.8] CEPT/ECC Report 164: "Compatibility between wide band low activity mode (WLAM) automotive radars in the frequency range 24.25 GHz to 24.5 GHz and other radiocommunication systems/services".
- [i.9] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

koniec náhľadu – text ďalej pokračuje v platenej verzii STN