

ETSI EN 301 489-33 V2.1.1 (2017-02)



**ElectroMagnetic Compatibility (EMC)
standard for radio equipment and services;
Part 33: Specific conditions for ~~Ultra Wide Band (UWB)~~
~~communications~~ Ultra-WideBand (UWB) devices;
Harmonised Standard covering the essential requirements
of article 3.1(b) of Directive 2014/53/EU**

Reference

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Contents

Intellectual Property Rights	5
Foreword.....	5
Modal verbs terminology	5
1 Scope	7
2 References	8
2.1 Normative references	8
2.2 Informative references	9
3 Definitions and abbreviations.....	10
3.1 Definitions	10
3.2 Abbreviations.....	10
4 Test conditions	10
4.1 General.....	10
4.2 Arrangements for test signals.....	10
4.2.1 General	11
4.2.2 Arrangements for test signals at the RF input of transmitters	11
4.2.3 Arrangements for test signals at the RF output of transmitters	11
4.2.4 Arrangements for test signals at the RF input of receivers.....	11
4.2.5 Arrangements for test signals at the RF output of receivers.....	11
4.2.6 Arrangements for testing transmitter and receiver together (as a system).....	12
4.3 Exclusion bands	12
4.3.1 for EMC emission test.....	12
4.3.2 for EMC immunity test	12
4.4 Narrow band responses of receivers	12
4.5 Normal test modulation	13
5 Performance assessment.....	13
5.1 General.....	13
5.2 Equipment which can provide an UWB communications link	14
5.3 Equipment which does not provide an UWB communications link	14
5.4 Ancillary equipment	14
5.5 Equipment classification.....	14
6 Performance criteria	15
6.0 Introduction.....	15
6.1 Performance criteria for continuous phenomena applied to transmitters and receivers	15
6.2 Performance criteria for transient phenomena applied to transmitters and receivers.....	16
6.3 Performance criteria for equipment which does not provide an UWB communication link	16
6.4 Performance criteria for ancillary equipment tested on a stand alone basis.....	17
7 Applicability overview	17
7.1 Emission	17
7.2 Immunity	17
8 Methods of measurement and limits for EMC emissions	17
8.1 Test configuration.....	20
8.2 Enclosure port of ancillary equipment measured on a stand alone basis	20
8.2.1 General	20
8.2.2 Test method.....	20
8.2.3 Limits	20
8.3 DC power input/output ports	21
8.3.1 General.....	21
8.3.2 Test method.....	21
8.3.3 Limits	21
8.4 AC mains power input/output ports.....	21
8.4.1 General.....	21
8.4.2 Test method.....	21

8.4.3	Limits	22
8.4.3.1	General	22
8.4.3.2	AC Power port used for power supply only	22
8.4.3.3	AC power input port also used for PLC Communications	22
8.5	Harmonic current emissions (AC mains input port)	22
8.6	Voltage fluctuations and flicker (AC mains input port).....	22
8.7	Wired network ports	23
8.7.1	General	23
8.7.2	Test method.....	23
8.7.3	Limits	23
9	Test methods and levels for immunity tests	23
9.1	Test configuration	23
9.2	Radio frequency electromagnetic field (80 MHz to 6 000 MHz)	23
9.2.1	General	23
9.2.2	Test method	24
9.2.3	Performance criteria	24
9.3	Electrostatic discharge	24
9.3.1	General	24
9.3.2	Test method.....	24
9.3.3	Performance criteria	24
9.4	Fast transients, common mode.....	25
9.4.1	General	25
9.4.2	Test method.....	25
9.4.3	Performance criteria	25
9.5	Radio frequency, common mode	25
9.5.1	General	25
9.5.2	Test method.....	25
9.5.3	Performance criteria	26
9.6	Transients and surges in the vehicular environment	26
9.6.1	General	26
9.6.2	Test method.....	26
9.6.3	Performance criteria	26
9.7	Voltage dips and interruptions	26
9.7.1	General	26
9.7.2	Test method.....	27
9.7.3	Performance criteria	27
9.8	Surges	27
9.8.1	General	27
9.8.2	Test method.....	27
9.8.2.0	General	27
9.8.2.1	Test method for wired network ports directly connected to outdoor cables	27
9.8.2.2	Test method for wired network ports connected to indoor cables	28
9.8.2.3	Test method for mains ports	28
9.8.3	Performance criteria	28
Annex A (informative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU	29
Annex B (informative):	Change history	31
History		32

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Foreword

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

The present document has been ~~produced by ETSI in response to a mandate from the European Commission issued~~prepared under ~~Council Directive 98/34/EC~~the Commission's standardisation request C(2015) 5376 final [i.2] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

~~The~~ 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.1].

~~Once the present document is intended to become a Harmonized Standard, the reference of which will be published~~cited in the Official Journal of the European Communities referencing the ~~Directive 1999/5/EC [i.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 Union under that Directive")~~.

~~The~~ 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.

The present document is part_33 of a multi-part deliverable. Full details of the entire series can be found in part_1_[1].

National transposition dates	
Date of adoption of this EN:	27 January 2017
Date of latest announcement of this EN (doa):	30 April 2017
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 October 2017
Date of withdrawal of any conflicting National Standard (dow):	31 October 2018

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. The modular structure is shown in EG-201-399 [i.4].~~

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, together with ETSI EN 301 489-1 [1] covers EMC requirements of transceivers, transmitters], specifies technical characteristics and receivers utilizing Ultra Wide Band (UWB) technologies and used methods of measurements for short range communication purposes.

The present document applies to impulse, modified impulse and RF carrier radio devices based UWB communication technologies on UWB technology in respect of ElectroMagnetic Compatibility (EMC).

The present document applies to fixed ~~(indoor only)~~, mobile or portable applications UWB devices, e.g.:

- stand-alone radio equipment with or without its own control provisions;
- plug-in radio devices intended for use with, or within, a variety of host systems, e.g. personal computers, hand-held terminals, etc.;
- plug-in radio devices intended for use within combined equipment, e.g. cable modems, set-top boxes, access points, etc.;
- combined equipment or a combination of a plug-in radio device and a specific type of host equipment;
- equipment for use in road and rail vehicles;
- ground and wall probing radar equipment;
- (tank) level probing radar equipment;
- material sensing devices.

NOTE: If a system includes transponders, these are measured together with the transmitter and examples of Ultra-WideBand equipment are given in the related harmonised standards of article 3.2 of Directive 2014/53/EU [i.1].

Technical specifications related to the antenna port and emissions from the enclosure port of Ultra-WideBand (UWB) equipment are not included in the present document. Such technical specifications are found in the relevant product standards for the effective use of the radio spectrum.

The present document specifies the applicable test conditions, performance assessment and performance criteria for Ultra-WideBand (UWB) equipment and associated ancillary equipment.

Examples of Ultra-WideBand equipment are given in the related harmonised standards.

In case of differences (for instance concerning special conditions, definitions, abbreviations) between the present document and ETSI EN 301 489-1-[1], the provisions of the present document take precedence.

The environmental classification and the emission and immunity requirements used in the present document are as stated in ETSI EN 301 489-1-[1], except for any special conditions included in the present document.

The present document does not cover UWB transmitter equipment to be installed at a fixed outdoor location or for use in flying models, aircraft and other forms of aviation as per covers the ECC/DEC/(06)04 [i.5].

The present document applies to UWB equipment with an output connection used with a dedicated antenna or UWB equipment with an integral antenna.

These radio equipment types are capable of operating in all or part of the frequency bands given in table 1.

Table 1: Radiocommunications frequency bands

Radiocommunications frequency bands	
Transmit	3,4 GHz to 4,8 GHz
Receive	3,4 GHz to 4,8 GHz
Transmit	6,0 GHz to 8,5 GHz
Receive	6,0 GHz to 8,5 GHz

The present document is intended to cover the provisions of Directive 1999/5/EC [i.1] (R&TTE Directive), article 3.1(b).

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements of article 3.1b of Directive 2014/53/EU [i.1] under other parts of article 3 of the R&TTE Directive may apply to equipment within the scope of the present document.

NOTE: —the conditions identified in annex A list of such ENs is included on the web site <http://www.newapproach.org>.

2 References

2.1 Normative references

References are specific, identified by date of publication and/or edition number or version number. Only the cited version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://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 301 489-1 (V1.8V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); (02-2017): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU".
- [2] ETSI EN 302 065-1 (V2.1.1) (11-2016): "Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 1: Requirements for Generic UWB applications".
- [3] ETSI EN 302 065-2 (V2.1.1) (11-2016): "Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 2: Requirements for UWB location tracking".
- [4] ETSI EN 302 065-3 (V2.1.1) (11-2016): "Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 3: Requirements for UWB devices for ground based vehicular applications".
- [5] ETSI EN 302 065-4 (V1.1.1) (11-2016): "Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 4: Material Sensing devices using UWB technology below 10,6 GHz".
- [6] ETSI EN 302 066 (V2.1.1) (01-2017): "Short Range Devices (SRD); Ground- and Wall- Probing Radar applications (GPR/WPR) imaging systems; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [7] ETSI EN 302 372 (V2.1.1) (12-2016): "Short Range Devices (SRD); Tank Level Probing Radar (TLPR) equipment operating in the frequency ranges 4,5 GHz to 7 GHz, 8,5 GHz to 10,6 GHz, 24,05 GHz to 27 GHz, 57 GHz to 64 GHz, 75 GHz to 85 GHz; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".

- [8] ETSI EN 302 729 (V2.1.1) (12-2016): "Short Range Devices (SRD); Level Probing Radar (LPR) equipment operating in the frequency ranges 6 GHz to 8,5 GHz, 24,05 GHz to 26,5 GHz, 57 GHz to 64 GHz, 75 GHz to 85 GHz; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [9] CENELEC EN 55032:2015: "Electromagnetic compatibility of multimedia equipment - Emission Requirements".
- [10] CENELEC EN 61326-1:2013: "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements".
- [11] CENELEC EN 61326-2-3:2013: "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning".
- [12] CENELEC EN 61326-2-5:2013: "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-5: Particular requirements - Test configurations, operational conditions and performance criteria for field devices with interfaces according to IEC 61748-1, CP 3/2".
- [13] CENELEC EN 61000-6-2:2005: "Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments".
- [14] CENELEC EN 61000-6-3:2007 "Electromagnetic compatibility (EMC) - Part 6-3: Generic standards -Emission standard for residential, commercial and light-industrial environments".
- [15] ETSI EN 303 883 (V1.1.1) (09-2016): "Short Range Devices (SRD) using Ultra Wide Band (UWB);Measurement Techniques".

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.~~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.

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- [i.1] ~~Directive 1999/5/EC~~2014/53/EU of the European Parliament and of the ~~Council~~council of 9 ~~March 1999~~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 telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE repealing Directive): 1999/5/EC.
- [i.2] 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 98/34/EC 2014/53/EU 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 and of rules on information society services.
- [i.3] ~~Void.~~
- [i.4] ~~ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".~~
- [i.5] ~~ECC Decision ECC/DEC/(06)04 of 24 March 2006 amended 6 July 2007 at Constanta on the harmonised conditions for devices using UWB technology in bands below 10,6 GHz.~~

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI EN 301 489-1, clause 3 [1] ~~and the following apply:~~

Equipment Under Test (EUT): equipment under test and subject to the performance requirements of the present document

fixed station: equipment intended for use in a fixed location and fitted with one or more antennas

NOTE: ~~The equipment may be fitted with either antenna socket(s) or integral antenna(s) or both.~~

host: any equipment which has complete user functionality when not connected to the radio equipment part and to which the radio equipment part provides additional functionality and to which connection is necessary for the radio equipment part to offer functionality

plug-in radio device: equipment, including slide-in radio cards, intended to be used with or within a variety of host systems, using their control functions and power supply

stand-alone radio equipment: equipment that is intended primarily as communications equipment and that is normally used on a stand-alone basis

3.2 Abbreviations

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

ACK	ACKnowledgement
ARQ	Automatic Retransmission reQuest
CR	Continuous phenomena applied to Receivers
CT	Continuous phenomena applied to Transmitters
EMC	ElectroMagnetic Compatibility
EUT	Equipment Under Test
NACK	Not ACKnowledgement
RF	Radio Frequency
TR	Transient phenomena applied to Receivers
TT	Transient phenomena applied to Transmitters
UWB	Ultra Wide Band

For the purposes of the present document, the abbreviations given in ETSI EN 301 489-1, clause 3 [1] and in specific UWB standards ETSI EN 302 065 parts 1 [2], 2 [3], 3 [4] and 4 [5], ETSI EN 302 066 [6], ETSI EN 302 372 [7] and ETSI EN 302 729 [8] apply.

4 Test conditions

4.1 General

For the purposes of the present document, the test conditions of ETSI EN 301 489-1 [1], clause 4, [1] shall apply as appropriate. Further product related test conditions for UWB communications systems equipment are specified in the present document.

For emission and immunity tests the test modulation, test arrangements, etc., as specified in the present document, clauses 4.21 to 4.5, shall apply.

The radio equipment may take forms which may require special software and/or test fixtures. Equipment which requires connection to a host equipment to function shall use the test configuration as defined by the manufacturer. In all cases the EUT shall be exercised in a manner representative of normal intended use.

4.2 Arrangements for test signals

4.2.1 General

The provisions of ETSI EN 301 489-1 ~~[H]₂~~, clause 4.2 [1] shall apply.

4.2.4~~2~~ Arrangements for test signals at the RF input of transmitters

The provisions of ETSI EN 301 489-1 ~~[H]₂~~, clause 4.2.1 [1] shall apply.

4.2.3 Arrangements for test signals at the RF output of transmitters

The provisions of ETSI EN 301 489-1, clause 4.2.2 [1] shall apply with the following ~~modifications~~ modification.

~~The wanted signals and/or controls required to establish a communications link shall be defined by the manufacturer. The transmitter shall be operated at its maximum rated RF output power.~~

4.2.2 ~~Arrangements for test signals at the output of transmitters~~

~~The provisions of EN 301 489-1 [1], clause 4.2.2 shall apply, modulated with the following modifications: normal test modulation (see clause 4.5).~~

~~The manufacturer may provide a suitable companion receiver that can be used to receive messages or to set up a communication link.~~

4.2.3~~4~~ Arrangements for test signals at the RF input of receivers

The provisions of ETSI EN 301 489-1 ~~[H]₂~~, clause 4.2.3 [1] shall apply with the following ~~modifications~~ modification.

~~The provider shall provide a suitable transmitter that can be used to set up the UWB communications link representing intended use. A communication link shall be established if appropriate at the start of the equipment.~~

~~The wanted signals required to establish a communications link shall be defined by the manufacturer.~~

~~The distance between the transmitter and the receiver shall be one meter, except in cases where the intended communications range is shorter than 1,5 meter. In such cases, a shorter distance may be used and shall be defined by the manufacturer.~~

4.2.4 ~~Arrangements for test signals at the output of receivers~~

~~The measuring equipment for the output signal from the receiver under test shall be located outside and maintained during the test environment.~~

~~It shall be possible to assess~~ For all radio determination devices, the performance of the equipment by appropriately monitoring the receiver output.

~~If the receiver has an output connector or port providing the wanted output signal, then this port shall be used via a cable, consistent with the standard cable used in normal operation, connected to the external measuring equipment outside the test environment. The measuring equipment may be supplied by the manufacturer.~~

~~Precautions shall be taken to ensure that any effect on the test due to the coupling means is minimized.~~

~~The manufacturer may provide a suitable companion transmitter that can be used to transmit messages or to set up a communication link mode shall be applied.~~

4.2.5 Arrangements for test signals at the RF output of receivers

The provisions of ETSI EN 301 489-1, clause 4.2.4 [1] shall apply.

4.2.6 Arrangements for testing transmitter and receiver together (as a system)

The provisions of ETSI EN 301 489-1, clause 4.2.5 [1], clause 4.2.5 shall apply with the following modification.

~~The manufacturer may provide a suitable companion transceiver or transmitter and receiver that can be used to send and receive messages or to set up a communication link.~~

~~Both the EUT and the companion equipment shall transmit the normal test modulation. Further, the output of the radio equipment under test shall be monitored by the test system.~~

For the immunity tests of duplex transceivers, the EUT may be configured in the repeater mode, consistent with the conditions given above.

4.3 Exclusion bands

4.3.1 for EMC emission test

~~The frequencies on which the transmitter part of the EUT is intended to operate shall be excluded from conducted and radiated immunity measurements when performed in transmit mode of operation.~~

~~There shall be no frequency exclusion band applied to immunity measurements of the receiver part of transceivers or the stand alone receiver under test, and/or associated ancillary for UWB equipment.~~

The immunity test exclusions are referred to as "exclusion bands" and are defined in under EMC emission testing is the operating bandwidth(s), see related harmonised standards ETSI EN 301 489-302 065 parts 1 [2], clause 4.3.

1, 2 [3], 3 [4] and 4 [5], ETSI EN 302 066 [6], ETSI EN 302 372 [7] and ETSI EN 302 729, clause 4.3.1 [8] and using the definition in ETSI EN 303 883, clause 7.2.2 [15]:

- The lower frequency of the exclusion band (EXband(lower) in ETSI EN 301 489-1, clause 4.3 [1]) is the lower frequency of the operating bandwidth(s) (see ETSI EN 303 883, clause 7.2.2 [15]).
- The upper frequency of the exclusion band (EXband(upper) in ETSI EN 301 489-1, clause 4.3 [1]) is the upper frequency of the operating bandwidth(s) (see ETSI EN 303 883, clause 7.2.2 [15]).

4.3.2 for EMC immunity test

The exclusion band for UWB equipment under EMC immunity testing is calculated according to ETSI EN 301 489-1, clause 4.3.3.3 [1] with parameter $n = 1$, where:

- BWRX corresponds to the operating bandwidth of the UWB device (see ETSI EN 303 883, clause 7.2.2 [15]).
- BandRX(lower) corresponds to the lower edge of the operating bandwidth (see ETSI EN 303 883, clause 7.2.2 [15]).
- BandRX(upper) corresponds to the upper edge of the operating bandwidth (see ETSI EN 303 883, clause 7.2.2 [15]).

4.4 Narrow band responses ~~on~~ of receivers or receivers which are part of transceivers

~~The provision of EN 301 489-1 [This clause does not apply for TLPR [Error! Reference source not found.], clause 4.4 shall apply.~~

and LPR [8].

The provision of ETSI EN 301 489-1, clause 4.4 [1] shall apply with the exception of those GPR/WPR equipment [6] that do not permit a narrow band response of the receivers.

4.5 Normal test modulation

The ~~modulated~~ manufacturer may have to supply the test modulation/demodulation equipment.

The test signal generator (modulation) shall ~~represent normal intended use, and may contain~~ be able to produce a continuous stream of data ~~formatting, error detection and correction information or a repetitive message.~~

The test signal receiver (de-modulator) shall be, where appropriate, able to produce a readout of Bit Error Ratio (BER) of a continuous data stream or a repetitive readout of message acceptance.

This requirement does not apply for GPR/WPR [6], (T)LPR [7], [8] and Material Sensing Devices [5].

5 Performance assessment

5.1 General

The provision of ~~ETSI EN 301 489-1 [4]~~, clause 5.1 [1] shall apply with the following ~~modification~~ modifications.

The manufacturer shall supply at ~~For GPR/WPR [6] the time of submission of the equipment for test, the information required in EN 301 489-1 [1], clause 5.1 and the following which shall be recorded in the test report:~~

- ~~the operating frequency range(s) of the equipment and, where applicable, band(s) of operation;~~
- ~~the type of the equipment, for example: stand alone or plug in radio device;~~
- ~~the host equipment to be combined with the radio equipment for testing;~~
- ~~the minimum performance level under the application of EMC stress (see clause 6.2);~~
- ~~the normal test modulation, the format, the type of error correction and any control signals e.g. ACKnowledgement (ACK)/Not ACKnowledgement (NACK) or Automatic Retransmission reQuest (ARQ).~~

5.2 Arrangements for the assessment of host dependant equipment and plug-in cards

For equipment parts for which integration with a host equipment is necessary in order to offer functionality, two alternative approaches defined in clauses 5.2.1 and 5.2.2 may be used. ~~The manufacturer shall declare which alternative shall be used.~~

5.2.1 Alternative A: composite equipment

A combination of the radio equipment part and a specific type of host equipment may be used for assessment according to the present document.

~~Where a specific combination of host equipment and a radio equipment part is tested as a composite system for compliance, repeat testing shall not be required for:~~

~~those other combinations of hosts and radio equipment parts which are weather the DUT performance assessment is based on substantially similar host models in the circumstance that the variations in mechanical and electrical properties between such host models are unlikely to significantly influence the intrinsic immunity and unwanted emissions of the radio equipment part;~~

- ~~the radio equipment part which cannot be used without mechanical, electrical, or software modification in variations of host equipment different from those represented by the units for which compliance to the present document has been demonstrated.~~

For all other combinations, each combination shall be tested separately.

~~5.2.2~~ — ~~Alternative B: use of a test jig or host~~

~~Where the radio equipment part is intended for use with a variety of host systems, the manufacturer shall supply a suitable test configuration consisting of either a host system intended for normal use or a test jig that is representative of the range of host systems in which the device may be used. The test jig shall allow the radio equipment part to be powered and stimulated in a way similar to the way it would be powered and stimulated when connected to or inserted into host equipment.~~

~~5.3~~ — ~~Assessment procedures~~

~~The performance assessment shall be based upon:~~

- ~~• the maintenance of function(s); or~~
- ~~• the way the eventual loss of function(s) can be recovered; or~~
- ~~• unintentional behaviour of the EUT/DUT.~~

~~The test system shall set up a~~ 5.2 Equipment which can provide an UWB communications link in the same manner as the Equipment Under Test's (EUT) normal intended use.

~~Any user defined data fields in the memory or storage of the EUT shall be filled in a way representative of normal intended use.~~

~~The assessment procedure shall verify that the~~ The provision of ETSI EN 301 489-1, clause 5.2 [1] shall apply.

5.3 Equipment which does not provide an UWB communications link is maintained

The provision of ETSI EN 301 489-1, clause 5.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and that there is no loss of user control functions[8] requirements the following standards shall apply as declared by the manufacturer listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6.4 [10], with CENELEC EN 61326-2-3, clause 6.4 [11] or loss of the stored user defined data, with CENELEC EN 61326-2-5, clause 6.4 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14] or CENELEC EN 61000-6-2, clause 8 [13].

5.4 Ancillary equipment

The provision of ~~ETSI EN-301-489-1 [4]~~, clause-5.4 [1] shall apply.

5.5 Equipment classification

~~Hand portable equipment, or combinations of equipment, declared as capable of being powered by the main battery of a vehicle, shall additionally be considered as vehicular mobile equipment.~~

~~Hand portable or mobile equipment, or combinations of equipment, declared as capable of being powered by ac mains shall additionally be considered as fixed station equipment.~~

The provision of ETSI EN 301 489-1, clause 5.5 [1] shall apply.

6 Performance criteria

6.1 General performance criteria

6.0 Introduction

The performance criteria are:

~~performance criteria A for used to take a decision on whether a radio equipment passes or fails immunity tests with phenomena of a continuous nature;~~

For the purpose of the present document four categories of performance criteria apply:

- ~~performance criteria for continuous phenomena applied to transmitters and receivers;~~
- ~~performance criteria B for immunity tests with phenomena of a transient nature~~ phenomena applied to transmitters;
- ~~performance criteria C for immunity tests with power interruptions exceeding a certain time~~ transient phenomena applied to receivers.

~~The equipment shall meet the minimum performance~~ 6.1 Performance criteria as specified in the following clauses.

6.2 Performance table

Table 2: Performance criteria

Criteria	During test	After test
A	Shall operate as intended with a permissible degradation of performance (see note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (see notes 1 and 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (see note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (see notes 1 and 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (see notes 1 and 2)
NOTE 1: Degradation of performance during or after the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.		
NOTE 2: After the test no change of actual operating data or user retrievable data is allowed.		

6.3 ~~Performance criteria for Continuous~~ Performance criteria for continuous phenomena applied to Transmitters (CT) transmitters and receivers

~~The performance criteria A~~ The provision of ETSI EN 301 489-1, clause 6.1 [1] shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

6.42 Performance criteria for ~~Transient phenomena applied to Transmitters (TT)~~

~~The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.~~

~~Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.~~

~~6.5 Performance criteria for Continuous transient phenomena applied to Receivers (CR) transmitters and receivers~~

~~The performance criteria A~~The provision of ETSI EN 301 489-1, clause 6.2 [1] shall apply.

~~Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.~~

6.63 Performance criteria for ~~Transient phenomena applied to Receivers (TR)~~

~~The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration for equipment which performance criteria C shall apply. does not provide an UWB communication link~~

~~Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.~~

~~For radio equipment which does not provide an UWB communication link, the performance criteria described in clauses 6.1 and 6.2 are not appropriate, in these cases the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation.~~

~~The manufacturer shall furthermore define the test method(s) for the assessment of the actual level of performance or degradation of performance during and/or after the EMC exposure. Under these circumstances the manufacturer shall additionally provide the following information also for inclusion in the test report:~~

- ~~• the functions of the EUT during and after EMC stress;~~
- ~~• the intended functions of the EUT which shall be in accordance with the documentation accompanying the equipment;~~
- ~~• suitable pass/fail criteria for the EUT;~~
- ~~• the method of monitoring the actual level of performance and/or the actual degradation of performance of the EUT.~~

The assessment of the actual performance or its degradation which is carried out during and/or after the EMC exposure, shall be simple, but at the same time give adequate proof that the primary functions of the equipment fulfil the manufacturer defined acceptable level of performance or degradation of performance.

6.4 Performance criteria for ancillary equipment tested on a stand alone basis

If ancillary equipment is intended to be tested on a stand alone basis, the performance criteria described in clauses 6.1 and 6.2 are not appropriate, in these cases the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 have also to be taken into account.

7 Applicability overview

7.1 Emission

~~7.1.1 General~~

~~in ETSI EN 301 489-1 [1], table 1] contains the applicability of EMC emission measurements to the relevant ports of radio and/or associated ancillary equipment.~~

~~7.1.2 Special conditions~~

~~No special conditions shall apply to radio equipment in the scope of the present document.~~

7.2 Immunity

~~7.2.1 General~~

~~Table 2 of ETSI EN 301 489-1 [1], table 2,] contains the applicability of EMC immunity measurements to the relevant ports of radio and/or associated ancillary equipment.~~

~~7.2.2 Special conditions~~

~~No special conditions are relevant for products covered in the present document.~~

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

~~The enlargement of the European Union (EU) resulted in a requirement from the EU for a larger number of languages for the translation of the titles of Harmonized Standards and mandated ENs that are to be listed in the Official Journal to support the implementation of this legislation.~~

~~For this reason the title translation concerning the present document can be consulted via the e approval application.~~

~~Annex B (informative):~~ Bibliography

- ~~Council Directive 72/245/EEC of 20 June 1972 on the approximation of the laws of the Member States relating to the suppression of radio interference produced by spark ignition engines fitted to motor vehicles (contains amendments and corrections up to and including 2006/96/EC).~~
- ~~Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC (EMC Directive).~~
- ~~Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to Electrical Equipment designed for use within certain voltage limits (LV Directive).~~

8 Methods of measurement and limits for EMC emissions

8.1 Test configuration

The provision of ETSI EN 301 489-1, clause 8.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.2 Enclosure port of ancillary equipment measured on a stand alone basis

8.2.1 General

The provision of ETSI EN 301 489-1, clause 8.2.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.2.2 Test method

The test method shall be in accordance with CENELEC EN 55032 [9] with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.2.3 Limits

The ancillary equipment shall meet the class B limits given in CENELEC EN 55032 [9] or for ancillary equipment intended to be used in and industrial environment or telecommunication centers, the class A limits given in CENELEC EN 55032 [9] may be used, with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.3 DC power input/output ports

8.3.1 General

The provision of ETSI EN 301 489-1, clause 8.3.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.3.2 Test method

The provision of ETSI EN 301 489-1, clause 8.3.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.3.3 Limits

The provision of ETSI EN 301 489-1, clause 8.3.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.4 AC mains power input/output ports

8.4.1 General

The provision of ETSI EN 301 489-1, clause 8.4.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.4.2 Test method

The provision of ETSI EN 301 489-1, clause 8.4.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.4.3 Limits

8.4.3.1 General

The provision of ETSI EN 301 489-1, clause 8.4.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.4.3.2 AC Power port used for power supply only

The provision of ETSI EN 301 489-1, clause 8.4.3.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.4.3.3 AC power input port also used for PLC Communications

The provision of ETSI EN 301 489-1, clause 8.4.3.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.5 Harmonic current emissions (AC mains input port)

The provision of ETSI EN 301 489-1, clause 8.5 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.6 Voltage fluctuations and flicker (AC mains input port)

The provision of ETSI EN 301 489-1, clause 8.6 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.7 Wired network ports

8.7.1 General

The provision of ETSI EN 301 489-1, clause 8.7.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.7.2 Test method

The provision of ETSI EN 301 489-1, clause 8.7.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

8.7.3 Limits

The provision of ETSI EN 301 489-1, clause 8.7.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 7 [10], with CENELEC EN 61326-2-3, clause 7 [11] or with CENELEC EN 61326-2-5, clause 7 [12] as applicable.
- 2) CENELEC EN 61000-6-3, clause 7 [14].

9 Test methods and levels for immunity tests

9.1 Test configuration

The provision of ETSI EN 301 489-1, clause 9.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.2 Radio frequency electromagnetic field (80 MHz to 6 000 MHz)

9.2.1 General

The provision of ETSI EN 301 489-1, clause 9.2.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.2.2 Test method

The provision of ETSI EN 301 489-1, clause 9.2.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.2.3 Performance criteria

The provision of ETSI EN 301 489-1, clause 9.2.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.3 Electrostatic discharge

9.3.1 General

The provision of ETSI EN 301 489-1, clause 9.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.3.2 Test method

The provision of ETSI EN 301 489-1, clause 9.3.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.3.3 Performance criteria

The provision of ETSI EN 301 489-1, clause 9.3.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.4 Fast transients, common mode

9.4.1 General

The provision of ETSI EN 301 489-1, clause 9.4.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.4.2 Test method

The provision of ETSI EN 301 489-1, clause 9.4.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.4.3 Performance criteria

The provision of ETSI EN 301 489-1, clause 9.4.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.5 Radio frequency, common mode

9.5.1 General

The provision of ETSI EN 301 489-1, clause 9.5.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.5.2 Test method

The provision of ETSI EN 301 489-1, clause 9.5.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.5.3 Performance criteria

The provision of ETSI EN 301 489-1, clause 9.5.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.6 Transients and surges in the vehicular environment

9.6.1 General

The provision of ETSI EN 301 489-1, clause 9.6.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.6.2 Test method

The provision of ETSI EN 301 489-1, clause 9.6.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.6.3 Performance criteria

The provision of ETSI EN 301 489-1, clause 9.6.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.7 Voltage dips and interruptions

9.7.1 General

The provision of ETSI EN 301 489-1, clause 9.7.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.7.2 Test method

The provision of ETSI EN 301 489-1, clause 9.7.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.7.3 Performance criteria

The provision of ETSI EN 301 489-1, clause 9.7.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.8 Surges

9.8.1 General

The provision of ETSI EN 301 489-1, clause 9.8.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.8.2 Test method

9.8.2.0 General

The provision of ETSI EN 301 489-1, clause 9.8.2.0 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.8.2.1 Test method for wired network ports directly connected to outdoor cables

The provision of ETSI EN 301 489-1, clause 9.8.2.1 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.8.2.2 Test method for wired network ports connected to indoor cables

The provision of ETSI EN 301 489-1, clause 9.8.2.2 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.8.2.3 Test method for mains ports

The provision of ETSI EN 301 489-1, clause 9.8.2.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

9.8.3 Performance criteria

The provision of ETSI EN 301 489-1, clause 9.8.3 [1] shall apply with the following exclusions.

For (T)LPR [7] and [8] requirements, the following standards shall apply as listed in either 1 or 2:

- 1) CENELEC EN 61326-1, clause 6 [10], with CENELEC EN 61326-2-3, clause 6 [11] or with CENELEC EN 61326-2-5, clause 6 [12] as applicable.
- 2) CENELEC EN 61000-6-2, clause 8 [13].

Annex A (informative): Relationship between the present document and the essential requirements of Directive 2014/53/EU

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.2] 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.1].

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.

Table A.1: Relationship between the present document and the essential requirements of Directive 2014/53/EU

Harmonised Standard ETSI EN 301 489-33				
Requirement			Requirement Conditionality	
No	Description	Reference: Clause No	U/C	Condition
1	Enclosure of ancillary equipment measured on a stand alone basis	8.2	U	
2	DC power input/output ports	8.3	C	Only where equipment has DC power input and/or output ports with a cable length greater than 3 m or from a vehicle power supply
3	AC mains power input/output ports	8.4	C	Only where equipment has AC mains power input and/or output ports
4	Harmonic current emission (AC mains input port)	8.5	C	Only where equipment has AC mains power input ports
5	Voltage fluctuations and flicker (AC mains input ports)	8.6	C	Only where equipment has AC mains power input ports
6	Wired network ports	8.7	C	Only where equipment has wired network ports
7	Radio frequency electromagnetic field (80 MHz to 6 000 MHz)	9.2	U	
8	Electrostatic discharge	9.3	U	
9	Fast transients common mode	9.4	C	Only where equipment has AC mains power input ports or DC power ports or wired network ports with cables longer than 3 m
10	Radio frequency common mode	9.5	C	Only where equipment has AC mains power input ports or DC power ports or wired network ports with cables longer than 3 m
11	Transients and surges in the vehicular environment	9.6	C	Only where equipment is connected to vehicle power supply
12	Voltage dips and interruptions	9.7	C	Only where equipment has AC mains power input ports
13	Surges	9.8	C	Only where equipment has AC mains power input ports and/or wired network ports

Key to columns:

Requirement:

No A unique identifier for one row of the table which may be used to identify a requirement.

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 unconditionally applicable (U) or is conditional upon the manufacturer's claimed functionality of the equipment (C).

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

Presumption of conformity stays valid only as long as a reference to the present document is maintained in the list published in the Official Journal of the European Union. Users of the present document should consult frequently the latest list published in the Official Journal of the European Union.

Other Union legislation may be applicable to the product(s) falling within the scope of the present document.

Annex B (informative): Change history

<u>Version</u>	<u>Information about changes</u>
<u>1.1.1</u>	<u>Last publication as HS under R&TTE</u>
<u>2.1.1</u>	<ul style="list-style-type: none">• <u>Revision for compliance with Directive 2014/53/EU</u>• <u>Part will cover now the EMC requirements under article 3.1b for all UWB devices, including</u><ul style="list-style-type: none">○ <u>Generic UWB</u>○ <u>UWB for location tracking applications</u>○ <u>For vehicular use</u>○ <u>Material sensing and object discrimination</u>○ <u>GPR/WPR</u>○ <u>(T)LPR</u>• <u>Merged with ETSI EN 301 489-32</u>

History

Document history		
V1.1.1	April 2008	Public Enquiry PE 20080815: 2008-04-16 to 2008-08-15
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<u>V2.1.1</u>	<u>November 2016</u>	<u>Vote V 20170127: 2016-11-28 to 2017-01-27</u>
<u>V2.1.1</u>	<u>February 2017</u>	<u>Publication</u>