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Candidate Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
VHF air-ground Digital Link (VDL) Mode 4 radio equipment;
Technical characteristics and methods of measurement
for ground-based equipment;
Part 6: Harmonized EN covering essential requirements
of article 3.2 of the R&TTE Directive**



Reference

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Foreword

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

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (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 [11] 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 provides the technical procedures and limits for compliance with the R&TTE directive. For use in civil ground to air communications the full requirements of the latest version of EN 301 842 parts 1 to 5 and such requirements as defined by the Single European Sky regulations are required to be met before the equipment can be brought into operation.

The present document is part 6 of a multi-part deliverable covering the VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment, as identified below:

- Part 1: "EN for ground equipment";
- Part 2: "General description and data link layer";
- Part 3: "Additional broadcast aspects";
- Part 4: "Point-to-point functions";
- Part 5: "VDL 4 ground based equipment compliance with the SES 552/2004 interoperability Regulation";
- Part 6: "Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive".**

The present document is accompanied by an equivalent airborne standard, EN 302 842 [10] parts 1 to 5, covering the VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for airborne equipment.

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

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive [11]. The modular structure is shown in EG 201 399 [13].

The present document states the essential requirements for Very High Frequency (VHF) Digital Link (VDL) Mode 4 ground-based radio transmitters, transceivers and receivers for air-ground communications operating in the VHF band, using Gaussian-filtered Frequency Shift Keying (GFSK) Modulation with 25 kHz channel spacing and capable of tuning to any of the 25 kHz channels from 118,000 MHz to 136,975 MHz as defined in ICAO VHF Digital Link (VDL) Standards and Recommended Practices (SARPs) [2].

The present document may be used to produce tests for the assessment of the performance of the equipment. The performance of the equipment submitted for type testing should be representative of the performance of the corresponding production model.

The present document has been written on the assumption that:

- the type test measurements will be performed only once, in an accredited test laboratory, and the measurements will be accepted by the various authorities in order to grant type approval;
- if equipment available on the market is required to be checked it may be tested in accordance with the methods of measurement specified in the present document or a documented alternative approved by the certifying authority;
- equipment comply with EN 301 489-22 [6].

The present document also indicates VDL Mode 4 compliance with the SES 552/2004 Regulation [12].

1 Scope

The present document applies to the following radio equipment types:

- 1) Very High Frequency (VHF) Digital Link (VDL) Mode 4 ground-based radio transmitters and receivers for air-ground communications operating in the VHF band, using Gaussian-filtered Frequency Shift Keying (GFSK) Modulation with 25 kHz channel spacing and capable of tuning to any of the 25 kHz channels from 118,000 MHz to 136,975 MHz as defined in ICAO VHF Digital Link (VDL) Standards and Recommended Practices (SARPs) [2].

The present document provides part 6 of the technical specifications.

Manufacturers should note that in future the tuning range for the ground transceivers may also cover any 25 kHz channel from 108,000 MHz to 117,975 MHz.

The scope of the present document is limited to ground stations. The equivalent specification for airborne stations is EN 302 842 [10].

The VDL Mode 4 system provides digital communication exchanges between aircraft and ground-based systems and other aircraft supporting surveillance and communication applications. The supported modes of communication include:

- broadcast and point-to-point communication;
- broadcast services including Automatic Dependent Surveillance - Broadcast (ADS-B), Traffic Information Service - Broadcast (TIS-B) and Flight Information Service - Broadcast (FIS-B) capabilities;
- air-air, air-to-ground, and ground-to-air services;
- operation without ground infrastructure.

The present document is derived from the specifications:

- VDL Mode 4 standards produced under the auspices of the International Civil Aviation Organization (ICAO) [1] and [2].
- Other relevant standards as defined in clause 2.

It is envisaged that manufacturers may provide equipment supporting:

- broadcast services only;
- point-to-point services only;
- both broadcast and point-to-point services.

The present document is intended to cover the provisions of Directive 1999/5/EC [11] (R&TTE Directive):

Article 3.2, which states that "..... radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

The present document includes:

- clause 2 provides references to relevant documents;
- clause 3 provides general definitions, abbreviations and symbols used;
- clause 4 refers to a general description and architecture of VDL Mode 4 contained in EN 301 842-2 [8];
- clause 5 provides technical requirements specifications applicable to Article 3.2;
- clause 6 provides a description of testing for compliance with the technical requirements;
- annex A provides the HS Requirement & conformance Test specifications Table (HS-RTT);

- annex B provides the EN title in the official languages;
- annex C provides a Bibliography;
- a document history.

Mandating and Recommendation Phrases

- a) **"Shall"**
The use of the word "Shall" indicates a mandated criterion; i.e. compliance with the particular procedure or specification is mandatory and no alternative may be applied.
- b) **"Should"**
The use of the word "Should" (and phrases such as "It is recommended that...", etc.) indicate that though the procedure or criterion is regarded as the preferred option, alternative procedures, specifications or criteria may be applied, provided that the manufacturer, installer or tester can provide information or data to adequately support and justify the alternative.

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] ICAO Doc 9816 (First Edition 2004): "Manual on VHF Digital Link (VDL) Mode 4".
- [2] ICAO Annex 10 to the Convention on International Civil Aviation: "Aeronautical Telecommunications, Volume III: Communication Systems, Part I: Digital Data Communication Systems, Chapter 6".
- [3] ISO/IEC 7498-1 (1994): "Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model".
- [4] ISO/IEC 10731 (1994): "Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services".
- [5] ETSI EN 300 113-1 (V1.5.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 1: Technical characteristics and methods of measurement".
- [6] ETSI EN 301 489-22 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 22: Specific conditions for ground based VHF aeronautical mobile and fixed radio equipment".
- [7] ETSI EN 301 842-1 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment; Part 1: EN for ground equipment".
- [8] ETSI EN 301 842-2 (V1.5.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment Part 2: General description and data link layer".

- [9] ETSI EN 301 842-4 (V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment Part 4: Point to point functions".
- [10] ETSI EN 302 842 (all parts V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground and air-air Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for aeronautical mobile (airborne) equipment".
- [11] 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).
- [12] Regulation (EC) No 552/2004 of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation).
- [13] 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".

3 Definitions and abbreviations

3.1 Definitions

3.1.1 Basic reference model definitions

The present document is based on the concepts developed in the open systems interconnect basic reference model and makes use of the following terms defined in ISO/IEC 7498-1 [3]:

- layer,
- sublayer,
- entity,
- service,
- service access point,
- service data unit,
- physical layer,
- data link layer.

3.1.2 Service conventions definitions

The present document makes use of the following terms defined in ISO/IEC 10731 [4]:

- service provider,
- service user,
- service primitive,
- request,
- indication,
- confirm.

3.1.3 General definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [11] and the following apply:

adjacent channel power: amount of the modulated RF signal power which falls within a given adjacent channel

NOTE: Adjacent channel power includes discrete spurious, signal sidebands, and noise density (including phase noise) at the transmitter output.

Automatic Dependent Surveillance-Broadcast (ADS-B): surveillance application transmitting parameters, such as position, track and ground speed, via a broadcast mode data link for use by any air and ground users requiring it

NOTE: ADS-B is a surveillance service based on aircraft self-determination of position/velocity/time and automatic, periodic or random, broadcast of this information along with auxiliary data such as aircraft identity (ID), communications control parameters, etc. ADS-B is intended to support multiple high-level applications and associated services such as cockpit display of traffic information, traffic alert and collision avoidance functionality, enhanced traffic management in the air and on the ground, search and rescue support and others.

Bit Error Rate (BER): expressed as the ratio between the number of erroneous bits received and the total number of bits received

data rate: Mode 4 nominal data rate is 19 200 bits/s

environmental profile: range of environmental conditions under which equipment within the scope of EN 301 842-6 is required to comply with the provisions of EN 301 842-6

ground base station: aeronautical station equipment, in the aeronautical mobile service, for use with an external antenna and intended for use at a fixed location

integral antenna equipment: radio communications equipment with an antenna integrated into the equipment without the use of an external connector and considered to be part of the equipment

NOTE: An integral antenna may be internal or external to the equipment. In equipment of this type, a 50 Ω RF connection point shall be provided for test purposes.

non-integral antenna equipment: radio communications equipment with a connector intended for connection to an antenna

reference signal level: signal level used in the receiver performance specifications except otherwise stated

station: VDL Mode 4 Specific Services (VSS)-capable entity

NOTE: A station may be either a mobile station or a ground station. A station is a physical entity that transmits and receives bursts over the RF interface (either A/G or air-to-air (A/A)) and comprises, at a minimum: a physical layer, media access control sublayer, and a unique VSS address. A station which is also a DLS station has the same address.

VDL Mode 4: VHF data link using a Gaussian Filtered Frequency Shift Keying modulation scheme and self-organizing time division multiple access

VDL Mode 4 station: physical entity that transmits and receives VDL Mode 4 bursts over the RF interface (either A/G or air-to-air (A/A)) and comprises, as a minimum: a physical layer, Media Access Control sublayer and a VSS sublayer

NOTE: A VDL Mode 4 station may either be a mobile VDL Mode 4 station or a ground VDL Mode 4 station.

VDL Station: VDL-capable entity

NOTE: A station may either be a mobile station or a ground station. A station is a physical entity that transmits and receives frames over the air/ground (A/G) interface and comprises, at a minimum: a physical layer, media access control sublayer, and a unique DLS address. The particular initiating process (i.e. DLE or LME) in the station cannot be determined by the source DLS address. The particular destination process cannot be determined by the destination DLS address. These can be determined only by the context of these frames as well as the current operational state of the DLEs.

VDL System: VDL-capable entity

NOTE: A system comprises one or more stations and the associated VDL management entity. A system may either be a mobile system or a ground system.

3.2 Abbreviations

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

A/A	Air-to-Air
A/G	Air/Ground
ADS-B	Automatic Dependent Surveillance-Broadcast
BER	Bit Error Rate
FIS-B	Flight Information Service-Broadcast
FM	Frequency Modulation
GFSK	Gaussian Filtered Frequency Shift Keying
ICAO	International Civil Aviation Organization
ID	IDentity
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
kHz	kiloHertz
R&TTE	Radio equipment and Telecommunications Terminal Equipment
RF	Radio Frequency
SARPs	Standards And Recommended Practices
TIS-B	Traffic Information Service-Broadcast
VDL	VHF Digital Link
VHF	Very High Frequency
VSS	VDL Mode 4 Specific Services
VSWR	Voltage Standing Wave Ratio

4 General description and architecture of VDL Mode 4

An informative description of VDL Mode 4, the communication services provided, equipment classes, the structure of the standards material and guidance on equipment performance verification is provided in EN 301 842-2 [8], clause 4.

In most respects, the VDL Mode 4 ground station follows the provisions of the ICAO standards material for VDL Mode 4. Within the ICAO standard, there are some requirements that apply explicitly only to airborne stations. A number of other requirements will also not apply because of the assumed services provided by the ground station.

The scope of the present document is for a ground station supporting broadcast applications. Hence the ability to support point-to-point communication is not included in the present document. Those requirements are presented in EN 301 842-4 [9].

5 Technical requirements specifications

5.1 Environmental profile

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

5.2 Conformance requirements

5.2.1 Receiver requirements

5.2.1.1 Conducted spurious emission

This is specified in EN 301 842-1 [7], clause 6.1.12.

5.2.1.2 FM Broadcast Intermodulation

This is specified in EN 301 842-1 [7], clause 6.1.13.1.

5.2.1.3 In-band Intermodulation

This is specified in EN 301 842-1 [7], clause 6.1.14.

5.2.1.4 Cabinet radiation

This is specified in EN 301 842-1 [7], clause 6.1.15. See EN 300 113-1 [5] for details.

5.2.2 Transmitter requirements

5.2.2.1 Transmitter operating range

This is specified in EN 301 842-1 [7], clause 6.2.1.

5.2.2.2 Channel Bit Rate

This is specified in EN 301 842-1 [7], clause 6.2.2.

5.2.2.3 Manufacturer's declared output power

This is specified in EN 301 842-1 [7], clause 6.2.4.

5.2.2.4 RF power rise time

This is specified in EN 301 842-1 [7], clause 6.2.5.

5.2.2.5 RF power release time

This is specified in EN 301 842-1 [7], clause 6.2.6.

5.2.2.6 Conducted Spurious emissions

This is specified in EN 301 842-1 [7], clause 6.2.7.

5.2.2.7 Adjacent channel power

This is specified in EN 301 842-1 [7], clause 6.2.8.

5.2.2.8 Wide-band noise

This is specified in EN 301 842-1 [7], clause 6.2.9.

5.2.2.9 Frequency Tolerance

This is specified in EN 301 842-1 [7], clause 6.2.10.

5.2.2.10 Load VSWR capability

This is specified in EN 301 842-1 [7], clause 6.2.11.

5.2.2.11 Cabinet radiation

This is specified in EN 301 842-1 [7], clause 6.2.12. See EN 300 113-1 [5] for details.

5.2.3 Transceiver requirements

5.2.3.1 Start of transmission

This is specified in EN 301 842-1 [7], clause 6.3.1.

5.2.3.2 Automatic transmitter shutdown

This is specified in EN 301 842-1 [7], clause 6.3.2. Conformance to this requirement may be shown by written evidence in the Technical Construction File.

5.2.3.3 System timing requirements

This is specified in EN 301 842-1 [7], clause 6.3.2. Conformance to this requirement may be shown by written evidence in the Technical Construction File.

6 Testing for compliance with technical requirements

6.1 Environmental conditions for testing

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

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

The test conditions described within EN 301 842-1 [7], clause 8 shall apply, as appropriate, except for test number 13, where the test conditions described within EN 301 842-2 [8], clause 7 shall apply.

6.2 Interpretation of the measurement results

The interpretation of the results is described in the test sections.

6.3 Essential radio test suites

The test descriptions for the above conformance requirements are described in EN 301 842-1 [7], clause 9. These tests are essential for assessment of conformity in accordance with the Directive 1999/5/EC [11] (R&TTE Directive).

6.3.1 Receiver requirements

6.3.1.1 Conducted spurious emission

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.1.10.

6.3.1.2 FM Broadcast Intermodulation

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.1.1.

6.3.1.3 In-band Intermodulation

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.1.11.

6.3.2 Transmitter requirements

6.3.2.1 Channel Bit Rate

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.1.

6.3.2.2 Manufacturer's declared output power

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.2.

6.3.2.3 RF power rise time

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.3.

6.3.2.4 RF power release time

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.4.

6.3.2.5 Conducted Spurious emissions

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.5.

6.3.2.6 Adjacent channel power

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.6.

6.3.2.7 Wide-band noise

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.7.

6.3.2.8 Frequency Tolerance

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.8.

6.3.2.9 Load VSWR capability

To demonstrate conformance, the equipment shall pass the test procedure described in EN 301 842-1 [7], clause 9.2.9.

6.4 Other test suites

The test descriptions will be provided by the manufacturer, as the tests either are not exactly specified or are equipment-dependent. These tests are essential for assessment of conformity in accordance with the Directive 1999/5/EC [11] (R&TTE Directive).

6.4.1 Transmitter requirements

6.4.1.1 Transmitter operating range

Conformance to this requirement is taken to be implicit in the successful performance of the following transmission tests over the full operating range, in that non-conformance would prevent successful testing.

6.4.2 Transceiver requirements

6.4.2.1 Start of transmission

Conformance to this requirement is taken to be implicit in the successful performance of the following transmission tests over the full operating range, in that non-conformance would prevent successful testing.

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

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 HS-RTT proforma in this annex so that it can be used for its intended purposes and may further publish the completed HS-RTT.
--

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

- it provides a statement of all the essential requirements in words and by cross reference to a specific clause in the present document or to a specific clause in a specific referenced document;
- it provides a statement of all the test procedures corresponding to those essential requirements by cross reference to specific clause(s) in the present document or to a specific clause(s) in specific referenced document(s);
- it qualifies each requirement to be either:
 - unconditional: meaning that the requirement applies in all circumstances; or
 - conditional: meaning that the requirement is dependent on the manufacturer having chosen to support optional functionality defined within the schedule;
- in the case of Conditional requirements, it associates the requirement with the particular optional service or functionality;
- it qualifies each test procedure to be:
 - essential: meaning that it is included with the Essential Radio Test Suite and therefore the requirement shall be demonstrated to be met in accordance with the referenced procedures;
 - other: meaning that the test procedure is illustrative but other means of demonstrating compliance with the requirement are permitted;
 - eXcluded: meaning that no specific test is available for this requirement.

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

Harmonized Standard EN 301 842-6						
The following essential requirements and test specifications are relevant to the presumption of conformity under Article 3.2 of the R&TTE Directive						
Essential Requirement			Requirement Conditionality		Test Specification	
No	Description	Reference: Clause No	U/C	Condition	E/O/X	Reference: Clause No
1	Receiver Conducted spurious emission	5.2.1.1	C	Note 1	E	EN 301 842-1 [7] 9.1.10
2	FM Broadcast Intermodulation	5.2.1.2	C	Note 1	E	EN 301 842-1 [7] 9.1.1
3	In-band Intermodulation	5.2.1.3	C	Note 1	E	EN 301 842-1 [7] 9.1.11
4	Receiver Cabinet radiation	5.2.1.4	C	Note 1	O	EN 300 113-1 [5]
5	Transmitter operating range	5.2.2.1	C	Note 2	X	
6	Channel Bit Rate	5.2.2.2	C	Note 2	E	EN 301 842-1 [7] 9.2.1
7	Manufacturer's declared power output	5.2.2.3	C	Note 2	E	EN 301 842-1 [7] 9.2.2
8	RF power rise time	5.2.2.4	C	Note 2	E	EN 301 842-1 [7] 9.2.3
9	RF power release time	5.2.2.5	C	Note 2	E	EN 301 842-1 [7] 9.2.4
10	Transmitter Conducted spurious emissions	5.2.2.6	C	Note 2	E	EN 301 842-1 [7] 9.2.5
11	Adjacent channel power	5.2.2.7	C	Note 2	E	EN 301 842-1 [7] 9.2.6
12	Wide-band noise	5.2.2.8	C	Note 2	E	EN 301 842-1 [7] 9.2.7
13	Frequency tolerance	5.2.2.9	C	Note 2	E	EN 301 842-1 [7] 9.2.8
14	Load VSWR capability	5.2.2.10	C	Note 2	E	EN 301 842-1 [7] 9.2.9
15	Transmitter Cabinet radiation	5.2.2.11	C	Note 2	O	EN 300 113-1 [5]
16	Start of transmission	5.2.3.1	C	Note 2	X	
17	Automatic transmitter shutdown	5.2.3.2	C	Note 2	O	Written evidence
18	System timing requirements	5.2.3.3	C	Note 2	O	Written evidence

NOTE 1: This requirement applies only to equipment with a receive capability.
NOTE 2: This requirement applies only to equipment with a transmit capability.

Key to columns:**Essential Requirement: No**

A unique identifier for one row of the table which may be used to identify a requirement or its test specification.

Essential Requirement: Description

A textual reference to the requirement.

Essential Requirement: Clause Number

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

Conditionality: U/C

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

Conditionality: Condition

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

Test Specification: E/O/X

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

NOTE: All tests whether "E" or "O" are relevant to the requirements. Rows designated "E" collectively make up the Essential Radio Test Suite; those designated "O" make up the Other Test Suite; for those designated "X" there is no test specified corresponding to the requirement. All tests classified "E" shall be performed as specified with satisfactory outcomes as a necessary condition for a presumption of conformity. Requirements associated with tests classified "O" or "X" must be complied with as a necessary condition for presumption of conformity, although conformance with the requirement may be claimed by an equivalent test or by manufacturer's assertion supported by appropriate entries in the technical construction file.

Test Specification: Clause Number

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

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

Language	EN title
Czech	
Danish	
Dutch	
English	Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment; Part 6: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive
Estonian	
Finnish	
French	
German	
Greek	
Hungarian	
Icelandic	
Italian	
Latvian	
Lithuanian	
Maltese	
Norwegian	
Polish	
Portuguese	
Slovak	
Slovenian	
Spanish	
Swedish	

Annex C (informative): Bibliography

- EUROCAE ED-108A: "MOPS for VDL Mode 4 Aircraft Transceiver for ADS-B".

List of tables

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History

Document history			
V1.1.1	July 2006	Public Enquiry	PE 20061124: 2006-07-26 to 2006-11-24