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EUROPEAN STANDARD

**VHF air-ground Digital Link (VDL) Mode 2;
Technical characteristics and
methods of measurement
for ground-based equipment;
Part 2: Upper layers**

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Foreword

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

The present document is part 2 of a multi-part deliverable covering VHF air-ground Digital Link (VDL) Mode 2; Technical characteristics and methods of measurement for ground-based equipment, as identified below:

Part 1: "Physical layer and MAC sub-layer";

Part 2: "Upper layers";

Part 3: "Harmonised Standard for access to radio spectrum."

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):	6 months after doa

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.

Introduction

The VDL Mode 2 system provides data communication exchanges between aircraft and ground-based systems.

The VDL Mode 2 system is designed to be a Ground/Air sub-system of the Aeronautical Telecommunication Network (ATN) using the AM(R)S band and it is organized according to the Open Systems Interconnection (OSI) model (defined by ISO). It will provide reliable subnetwork services to the ATN system.

The present document together with ETSI EN 301 841-1 [i.3] state the technical specifications for ground-based equipment implementing Very High Frequency (VHF) Digital Link (VDL) Mode 2 air interface, operating in the VHF band (117,975 MHz to 137,000 MHz) with 25 kHz channel spacing.

The present document may be used to produce tests for the assessment of the performance of the equipment.

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1 Scope

The present document covers the link and sub-network access layers of Very High Frequency (VHF) Digital Link. The present document applies to VDL Mode 2 ground-based stations operating in the VHF band (117,975 MHz to 137,000 MHz) with 25 kHz channel spacing and using Differential Eight Phase Shift Keying (D8PSK).

The present document provides functional specifications for ground-based radio transmitters, receivers, and transceivers intended to be used for ground-air data communications. The present document is derived from the following documents:

- VDL Mode 2 SARPs. ICAO, annex 10 Volume III part I [1] second edition, July 2007;
- ICAO Doc 9776: "Manual on VHF Digital Link (VDL) Mode 2" [10].

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 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.

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[1] ICAO Annex 10 to the Convention on International Civil Aviation, International Civil Aviation Organization.

[2] Void.

[3] Void.

[4] Void.

[5] ISO/IEC 8208:2000: "Information technology - Data communications - X.25 Packet Layer Protocol for Data Terminal Equipment".

[6] Void.

[7] ISO/IEC 13239:2002: "Information technology - Telecommunications and information exchange between systems - High-level data link control (HDLC) procedures".

[8] Void.

[9] Recommendation ITU-T X.25: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[10] ICAO Doc 9776: "Manual on VHF Digital Link (VDL) Mode 2" 2nd Edition (2015).

[11] ICAO Doc 9880: "Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols".