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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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**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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Contents

Intellectual Property Rights	11
Foreword.....	11
Modal verbs terminology.....	11
Introduction	12
1 Scope	13
2 References	13
2.1 Normative references	13
2.2 Informative references.....	14
3 Definition of terms, symbols and abbreviations.....	14
3.1 Terms.....	14
3.1.1 Basic reference model terms.....	14
3.1.2 Service conventions terms	15
3.1.3 General terms.....	15
3.2 Symbols.....	15
3.3 Abbreviations	15
4 General architecture of VDL Mode 2.....	17
5 Link layer protocols and services functional specifications.....	18
5.0 Overview	18
5.1 MAC sublayer specifications.....	19
5.1.0 MAC General Requirements.....	19
5.1.1 MAC services	19
5.1.1.1 Multiple access.....	19
5.1.1.2 Channel congestion	19
5.1.2 MAC service system parameters.....	20
5.1.2.0 General Requirements.....	20
5.1.2.1 Timer TM1 (inter-access delay timer).....	20
5.1.2.2 Timer TM2 (channel busy timer).....	20
5.1.2.3 Parameter p (persistence).....	20
5.1.2.4 Counter M1 (maximum number of access attempts)	20
5.1.3 Description of procedures.....	20
5.1.3.1 Channel sensing	20
5.1.3.2 P-persistent CSMA access times.....	20
5.1.3.3 Inter-access interval	21
5.1.3.4 Channel access procedure	21
5.1.3.4.1 Purpose	21
5.1.3.4.2 Use.....	21
5.1.3.4.3 Procedure.....	21
5.1.3.5 AVLC frame reception.....	21
5.1.3.5.1 Purpose	21
5.1.3.5.2 Use.....	21
5.1.3.5.3 Procedure.....	21
5.2 Data link layer service protocol specifications.....	22
5.2.1 Interface with MAC sub layer.....	22
5.2.1.0 General considerations	22
5.2.1.1 Sequence of primitives	22
5.2.2 Data Link State Machines.....	23
5.2.2.0 Introduction.....	23
5.2.2.1 LME state machine	24
5.2.2.2 DLE top state machine	25
5.2.2.3 DLE data transfer state diagram.....	25
5.2.2.4 DLE selective reject state machines.....	26
5.2.2.4.1 SRM mode Sending SREJ.....	26
5.2.2.4.2 SRM mode Receiving SREJ.....	27

5.2.2.4.3	FRM mode.....	28
5.2.2.5	DLE termination state machine.....	28
5.2.3	Services.....	29
5.2.3.1	Received frame sequencing procedure.....	29
5.2.3.1.0	General requirements.....	29
5.2.3.1.1	Purpose.....	29
5.2.3.1.2	Use.....	29
5.2.3.1.3	Procedure.....	29
5.2.3.2	Error detection procedure.....	29
5.2.3.2.1	Purpose.....	29
5.2.3.2.2	Use.....	29
5.2.3.2.3	Procedure.....	30
5.2.3.3	Station identification.....	30
5.2.3.4	Broadcast addressing.....	30
5.2.3.5	Data transfer.....	30
5.2.4	Frame format.....	30
5.2.4.0	General.....	30
5.2.4.1	Address structure.....	30
5.2.4.2	Address fields.....	31
5.2.4.2.0	General requirements.....	31
5.2.4.2.1	Air-ground status bit.....	31
5.2.4.2.2	Command/response status bit.....	31
5.2.4.2.3	Data link service addresses.....	31
5.2.4.2.4	Address type.....	31
5.2.4.2.5	Aircraft specific addresses.....	31
5.2.4.2.6	ICAO-administered ground station specific addresses.....	31
5.2.4.2.7	ICAO-delegated ground station specific addresses.....	32
5.2.4.3	Broadcast address.....	32
5.2.4.3.0	General Requirements.....	32
5.2.4.3.1	Encoding.....	32
5.2.4.4	Link control field.....	32
5.2.4.5	Information field.....	32
5.2.5	Transmit queues management.....	33
5.2.6	Data link service system parameters.....	33
5.2.6.0	General requirements.....	33
5.2.6.1	Parameter T1 (delay before non acknowledged retransmission).....	34
5.2.6.2	Parameter T2 (delay before acknowledgment).....	34
5.2.6.3	Parameter T3 (link initialization time).....	34
5.2.6.4	Parameter T4 (maximum delay between transmissions).....	34
5.2.6.4.0	General requirements.....	34
5.2.6.4.1	Recommendation.....	34
5.2.6.5	Parameter N1 (maximum number of bits of any frame).....	35
5.2.6.6	Counter N2 (maximum number of transmissions).....	35
5.2.6.7	Parameter k (window size).....	35
5.2.6.8	Parameter G (Maximum number of frames in a burst).....	35
5.2.7	DLE retransmission timers.....	35
5.2.8	Description of procedures.....	35
5.2.8.0	General Requirements.....	35
5.2.8.1	Procedure retransmission schedule.....	35
5.2.8.1.1	Purpose.....	35
5.2.8.1.2	Use.....	35
5.2.8.1.3	Procedure.....	36
5.2.8.2	Procedure frame retransmission.....	36
5.2.8.2.1	Purpose.....	36
5.2.8.2.2	Use.....	36
5.2.8.2.3	Procedure.....	36
5.2.8.3	Procedure XID frame retransmission.....	36
5.2.8.3.1	Purpose.....	36
5.2.8.3.2	Use.....	36
5.2.8.3.3	Procedure.....	36
5.2.8.4	Procedure link monitoring.....	36
5.2.8.4.1	Purpose.....	36

5.2.8.4.2	Use.....	36
5.2.8.4.3	Procedure.....	37
5.2.8.5	Procedure link recovery	37
5.2.8.5.1	Purpose	37
5.2.8.5.2	Use.....	37
5.2.8.5.3	Procedure.....	37
5.2.9	Modes of operation to be supported.....	37
5.2.9.1	Operational mode.....	37
5.2.9.2	Non-operational mode.....	37
5.2.9.2.0	General	37
5.2.9.2.1	DISC frame.....	37
5.2.9.2.2	DM frame	37
5.2.9.3	Frame reject mode.....	38
5.2.9.4	Sent selective reject mode	38
5.2.10	Use of the P/F bit	38
5.2.10.1	General	38
5.2.10.2	INFO frames	38
5.2.10.3	Recommendation	38
5.2.10.4	Unnumbered frames	38
5.2.11	Unnumbered command frame collisions	38
5.2.11.0	General Requirements.....	38
5.2.11.1	DLE procedures	38
5.2.11.2	LME procedures.....	39
5.2.12	XID frame.....	39
5.2.13	Broadcast	39
5.2.14	Information transfer	39
5.2.14.1	General Requirements and Recommendation	39
5.2.14.1.0	Procedures for information transfer.....	39
5.2.14.1.1	Eliminate redundant frames.....	39
5.2.14.1.2	Recommendation.....	39
5.2.14.1.3	Recommendation.....	39
5.2.14.1.4	Recommendation.....	39
5.2.14.1.5	Procedures for transmission.....	39
5.2.14.1.6	Recommendation.....	39
5.2.14.1.7	Recommendation.....	40
5.2.14.1.8	Recommendation.....	40
5.2.14.2	SREJ frame	40
5.2.14.3	FRMR frame	40
5.2.14.4	UA frame	40
5.2.14.5	UI frame	40
5.2.14.6	TEST frame.....	40
5.3	VDL management entity	41
5.3.1	Services.....	41
5.3.1.1	Link provision.....	41
5.3.1.2	Link change notifications	41
5.3.2	Exchange identity (XID) parameter.....	41
5.3.2.0	Overview.....	41
5.3.2.1	Encoding	41
5.3.2.2	Public parameters.....	41
5.3.2.2.0	General requirements.....	41
5.3.2.2.1	HDLC public parameter set identifier	42
5.3.2.2.2	Timer T1 parameter	42
5.3.2.3	VDL private parameters	42
5.3.2.4	General purpose information private parameters	43
5.3.2.4.0	General requirements.....	43
5.3.2.4.1	VDL private parameter set identifier.....	43
5.3.2.4.2	Connection management parameter	43
5.3.2.4.3	Signal Quality Parameter (SQP).....	44
5.3.2.4.4	XID sequencing parameter	44
5.3.2.4.5	AVLC specific options parameter	45
5.3.2.4.6	Expedited subnetwork connection parameter	45
5.3.2.4.7	LCR cause parameter	45

5.3.2.5	Aircraft-initiated information private parameters	47
5.3.2.5.0	General requirements.....	47
5.3.2.5.1	Modulation support parameter.....	47
5.3.2.5.2	Acceptable alternate ground station parameter.....	47
5.3.2.5.3	Destination airport parameter	48
5.3.2.5.4	Aircraft location parameter.....	48
5.3.2.6	Ground-based initiated modification private parameters	48
5.3.2.6.0	General requirements.....	48
5.3.2.6.1	Autotune frequency parameter	48
5.3.2.6.2	Replacement ground station list	49
5.3.2.6.3	Timer T4 parameter	49
5.3.2.6.4	MAC persistence parameter	49
5.3.2.6.5	Counter M1 parameter.....	50
5.3.2.6.6	Timer TM2 parameter	50
5.3.2.6.7	Timer TG5 parameter	50
5.3.2.6.8	T3min parameter	50
5.3.2.6.9	Ground station address filter parameter.....	50
5.3.2.6.10	Broadcast connection parameter.....	51
5.3.2.7	Ground-based initiated information private parameters	52
5.3.2.7.0	General requirements.....	52
5.3.2.7.1	Frequency support list	52
5.3.2.7.2	Airport coverage indication parameter	52
5.3.2.7.3	Nearest airport parameter	52
5.3.2.7.4	ATN router NETs parameter	53
5.3.2.7.5	Ground-based system mask parameter	53
5.3.2.7.6	Timer TG3 parameter	53
5.3.2.7.7	Timer TG4 parameter	54
5.3.2.7.8	Ground station location parameter.....	54
5.3.3	VME service system parameters.....	54
5.3.4	VME procedures.....	54
5.3.4.1	Minimum frequency dwell time procedure	54
5.3.4.1.1	Purpose	54
5.3.4.1.2	Use..... https://standards.iteh.ai/catalog/standards/sist/bdc4b177-1b34-4656-	55
5.3.4.1.3	Procedure..... bb94-f17618bb6732/sist-en-301-841-2-v1-2-1-2019	55
5.3.4.1.4	Recommendation.....	55
5.3.4.2	Maximum idle activity time procedure	55
5.3.4.2.1	Purpose	55
5.3.4.2.2	Use.....	55
5.3.4.2.3	Procedure.....	55
5.3.4.3	Maximum time between transmissions procedure	55
5.3.4.3.1	Purpose	55
5.3.4.3.2	Use.....	55
5.3.4.3.3	Procedure.....	55
5.3.4.4	Maximum time between GSIFs.....	56
5.3.4.4.1	Purpose	56
5.3.4.4.2	Use.....	56
5.3.4.4.3	Procedure.....	56
5.3.4.5	Maximum link overlap time procedure	56
5.3.4.5.1	Purpose	56
5.3.4.5.2	Use.....	56
5.3.4.5.3	Procedure.....	56
5.3.5	Description of LME procedures.....	56
5.3.5.0	General requirements	56
5.3.5.1	Frequency management procedures	60
5.3.5.1.0	General	60
5.3.5.1.1	Frequency search	60
5.3.5.1.2	Frequency recovery	60
5.3.5.2	Link connectivity procedures.....	61
5.3.5.3	Ground station identification.....	61
5.3.5.3.0	General	61
5.3.5.3.1	Single-DSP ID ground station	61
5.3.5.3.2	Multi-DSP ID ground station	61

5.3.5.3.3	GSIF details	61
5.3.5.4	Link establishment	61
5.3.5.4.0	General requirements.....	61
5.3.5.4.1	Aircraft initiation	62
5.3.5.4.2	General ground response	62
5.3.5.4.3	Exceptional cases.....	62
5.3.5.5	Link parameter modification.....	62
5.3.5.5.1	Ground-based initiation	62
5.3.5.5.2	General aircraft response	62
5.3.5.5.3	Recommendation.....	62
5.3.5.6	Aircraft-initiated handoff	62
5.3.5.6.0	General requirements.....	62
5.3.5.6.1	Aircraft handoff.....	63
5.3.5.6.2	Site selection preference.....	63
5.3.5.6.3	Recommendation.....	63
5.3.5.6.4	Interaction of LMEs	63
5.3.5.6.5	General ground response	63
5.3.5.6.6	Disconnecting old link.....	63
5.3.5.6.7	Exceptional cases.....	63
5.3.5.7	Aircraft-requested ground-initiated handoff	64
5.3.5.7.0	Applicability	64
5.3.5.7.1	Aircraft action.....	64
5.3.5.7.2	General ground response	64
5.3.5.7.3	Exceptional cases.....	64
5.3.5.8	Ground-based initiated handoff.....	64
5.3.5.8.0	General Requirements	64
5.3.5.8.1	Ground action.....	64
5.3.5.8.2	General aircraft response	65
5.3.5.8.3	Disconnecting old link.....	65
5.3.5.8.4	Exceptional cases.....	65
5.3.5.8.5	Recommendation.....	65
5.3.5.9	Ground-based requested aircraft-initiated handoff	65
5.3.5.9.0	Applicability	65
5.3.5.9.1	Ground action.....	65
5.3.5.9.2	General aircraft response	65
5.3.5.9.3	Exceptional cases.....	65
5.3.5.9.4	Recommendation.....	65
5.3.5.10	Ground-based requested broadcast handoff	66
5.3.5.10.0	General	66
5.3.5.10.1	Ground action	66
5.3.5.10.2	Aircraft response	66
5.3.5.10.3	Exceptional cases.....	66
5.3.5.11	Ground-based commanded autotune	67
5.3.5.11.1	Ground action	67
5.3.5.11.2	General aircraft response	67
5.3.5.11.3	Exceptional cases.....	67
5.3.5.12	Expedited subnetwork connection management	67
5.3.5.12.0	Applicability and general requirements.....	67
5.3.5.12.1	Initiating station of subnetwork connection management	67
5.3.5.12.2	General responder action	67
5.3.5.12.3	Exceptional cases.....	67
6	Subnetwork layer protocols and services functional specifications	68
6.1	Architecture	68
6.1.0	General.....	68
6.1.1	Access points	68
6.2	Services	68
6.2.0	General.....	68
6.2.1	Subnetwork connection management	68
6.2.2	Packet fragmentation and reassembly.....	68
6.2.3	Error recovery	68
6.2.3.0	General requirements	68

6.2.3.1	Recommendation	68
6.2.4	Connection flow control	69
6.2.4.0	General requirements	69
6.2.4.1	Recommendation	69
6.3	Packet format.....	69
6.3.0	General requirements.....	69
6.3.1	General format identifier	69
6.3.2	Calling and called DTE addresses	69
6.3.2.0	General requirements	69
6.3.2.1	Encoding	69
6.3.2.1.0	General	69
6.3.2.1.1	Address field.....	69
6.3.2.2	Aircraft DTE address	69
6.3.2.3	Ground DTE address.....	70
6.3.2.4	Ground network DTE addresses	70
6.3.3	Call user data field	70
6.3.4	Packet types	70
6.4	Subnetwork layer service system parameters	70
6.4.0	General requirements.....	70
6.4.1	Packet size	71
6.4.2	Parameter W (transmit window size).....	71
6.4.3	Parameter A (acknowledgment window size)	71
6.5	Effects of layers 1 and 2 on the subnetwork layer.....	71
6.6	Description of procedures	71
6.6.0	General requirements.....	71
6.6.1	Supported facilities	71
6.6.2	Unsupported facilities	71
6.6.3	Subnetwork establishment and connection management.....	72
6.6.3.0	General requirements	72
6.6.3.1	Subnetwork entity initialization	72
6.6.3.2	Subnetwork connection establishment	72
6.6.3.2.0	General	72
6.6.3.2.1	Explicit subnetwork connection establishment	73
6.6.3.2.2	Expedited subnetwork connection establishment	73
6.6.3.3	Subnetwork connection maintenance	73
6.6.3.3.0	General requirements.....	73
6.6.3.3.1	Explicit subnetwork connection maintenance	73
6.6.3.3.2	Expedited subnetwork connection maintenance.....	73
6.6.3.3.3	Broadcast subnetwork connection maintenance	74
6.6.4	Error handling	74
6.6.5	Acknowledgements.....	74
7	The VDL mobile SubNetwork Dependent Convergence Function (SNDCEF)	74
7.1	Introduction	74
7.2	New function	74
7.3	Call user data encoding	74
7.3.0	General requirements.....	74
7.3.1	ISH PDU.....	74
7.3.2	Maintained/initialized status bit.....	75
7.3.3	Call request	75
7.3.4	Call confirmation	75
8	Link layer test cases	75
8.1	MAC sublayer test cases	75
8.1.1	Test of listen before talk MAC	75
8.1.1.1	Purpose.....	75
8.1.1.2	Test architecture	75
8.1.1.3	Test scenario	75
8.1.2	Test of minimal MAC performance	75
8.1.2.1	Purpose.....	75
8.1.2.2	Test architecture	75
8.1.2.3	Test scenarios	76

8.1.3	Test of p-persistent MAC performance on idle channel	76
8.1.3.1	Purpose.....	76
8.1.3.2	Test architecture	76
8.1.3.3	Test scenarios	76
8.1.4	Test of p-persistent MAC performance on busy channel.....	78
8.1.4.1	Purpose.....	78
8.1.4.2	Test architecture	78
8.1.4.3	Test scenarios	78
8.2	Data link sublayer test cases.....	80
8.2.1	Test of maximum time between GSIF transmissions	80
8.2.1.1	Test of maximum time between GSIF transmissions - single-DSP ID ground station	80
8.2.1.1.1	Purpose	80
8.2.1.1.2	Test architecture	80
8.2.1.1.3	Test scenario.....	80
8.2.1.2	Test of maximum time between GSIF transmissions - Multi-DSP ID ground station	80
8.2.1.2.1	Purpose	80
8.2.1.2.2	Test architecture	80
8.2.1.2.3	Test scenario.....	80
8.2.2	Test of link establishment	81
8.2.2.1	Purpose.....	81
8.2.2.2	Test architecture	81
8.2.2.3	Test scenario	81
8.2.3	Test of IUT link parameters recovery	81
8.2.3.1	Purpose.....	81
8.2.3.2	Test architecture	81
8.2.4	Test of received AVLC frame format	82
8.2.4.1	Purpose.....	82
8.2.4.2	Test architecture	82
8.2.4.3	Test scenario	82
8.2.5	Test of transmitted AVLC frames format	82
8.2.5.1	Purpose.....	82
8.2.5.2	Test architecture	82
8.2.5.3	Test scenario	82
8.2.6	Test of retransmission procedure of unacknowledged frames other than XID	82
8.2.6.1	Purpose.....	82
8.2.6.2	Test architecture	82
8.2.6.3	Test scenario	83
8.2.7	Test of maximum window size	94
8.2.7.1	Purpose.....	94
8.2.7.2	Test architecture	94
8.2.7.3	Test scenario	94
8.2.8	Test of window size	94
8.2.8.1	Purpose.....	94
8.2.8.2	Test architecture	95
8.2.8.3	Test scenario	95
8.2.9	Test of maximum acknowledgement delay	95
8.2.9.1	Purpose.....	95
8.2.9.2	Test architecture	95
8.2.9.3	Test scenario	95
8.2.10	Test of acknowledgement delay.....	95
8.2.10.1	Purpose.....	95
8.2.10.2	Test architecture	95
8.2.10.3	Test scenario	95
8.2.11	Test of retransmission procedure of unacknowledged XID	95
8.2.11.1	Purpose.....	95
8.2.11.2	Test architecture	95
8.2.11.3	Test scenario	96
8.2.12	Test of minimal link monitoring	101
8.2.12.1	Purpose.....	101
8.2.12.2	Test architecture	101
8.2.12.3	Test scenario	101
8.2.13	Test of link monitoring	101

8.2.13.1	Purpose.....	101
8.2.13.2	Test architecture	102
8.2.13.3	Test scenario	102
8.2.14	Test of illegal reception	102
8.2.14.1	Purpose.....	102
8.2.14.2	Test architecture	102
8.2.14.3	Test scenario	102
8.2.15	Test of time between GSIF transmissions.....	102
8.2.15.1	Test of time between GSIF transmissions - single DSP ID ground station.....	102
8.2.15.1.1	Purpose	102
8.2.15.1.2	Test architecture	102
8.2.15.1.3	Test scenario.....	102
8.2.15.2	Test of time between GSIF transmissions - multi-DSP ID ground station.....	103
8.2.15.2.1	Purpose	103
8.2.15.2.2	Test architecture	103
8.2.15.2.3	Test scenario.....	103
8.2.16	Test of maximal link overlap	104
8.2.16.1	Purpose.....	104
8.2.16.2	Test architecture	104
8.2.16.3	Test scenario	104
8.2.17	Test of link hand-off	104
8.2.17.1	Purpose.....	104
8.2.17.2	Test architecture	104
8.2.17.3	Test scenario	105
8.2.18	Frame collision with tester precedence test	105
8.2.18.1	Purpose.....	105
8.2.18.2	Test architecture	105
8.2.18.3	Test scenario	105
8.2.19	Frame collision with IUT precedence test	105
8.2.19.1	Purpose.....	105
8.2.19.2	Test architecture	105
8.2.19.3	Test scenario	105
8.2.20	Selective acknowledgement test	105
8.2.20.1	Purpose.....	105
8.2.20.2	Test architecture	105
8.2.20.3	Test scenario	106
8.3	Test summary	106
8.4	PCO summary	106
Annex A (informative): Bibliography.....		108
History		109

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Foreword

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

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".

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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.

- [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".