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Multi-Operation DSL Performance Requirements

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Contents

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM).

1 Scope

The present document specifies the European performance and functional requirements of multi-operation DSL equipment as defined in clause 3.1 and applied to Line Termination Units (such as an exchange-based or cabinet-based DSLAM) and Network Termination Units (such as a CPE) equipment. Auto-mode operation and autosensing are out of scope of the present document.

2 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 reference document (including any amendments) applies.

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2.1 Normative references

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

[1] Recommendation ITU-T G.992.5: "Asymmetric digital subscriber line 2 transceivers (ADSL2)-Extended bandwidth ADSL2 (ADSL2plus)".

[2] Recommendation ITU-T G.993.2: "Very high speed subscriber line transceivers 2 (VDSL2)".

[3] Recommendation ITU-T G.992.3: "Asymmetric digital subscriber line transceivers 2 (ADSL2)".

[4] Recommendation ITU-T G.997.1: "Physical layer management for digital subscriber line transceivers".

[5] Broadband Forum TR-100: "ADSL2/ADSL2plus performance test plan".

[6] Broadband Forum TR-105: "ADSL2/ADSL2plus functionality test plan".

[7] Broadband Forum TR-114: "VDSL2 performance test plan".

[8] Broadband Forum TR-115: "VDSL2 functionality test plan".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] Recommendation ITU-T G.994.1: "Handshake procedures for digital subscriber line transceivers".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

generic mode: operation mode of the DSL equipment (ADSL2plus or VDSL2) as defined in Recommendations ITU-T G.992.5 [1] and ITU-T G.993.2 [2]

multi-operation DSL equipment: equipment which is compliant with more than one DSL specification, e.g. [1], [2]

NOTE: The operational mode is set individually by the operator. The exchange of capabilities and the selection of a generic mode of operation (see Recommendation ITU-T G.994.1 [i.1]), applicable for the defined operational mode, are not affected by the present document.

operational mode: mode that is operated in a multi-operation DSL equipment and described by the generic mode and the specific mode

specific mode: description of the applied options of the DSL standard, e.g. annex, band plan, profile, spectrum

3.2 Abbreviations

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

ADSL Asymmetric Digital Subscriber Line
ATM Asynchronous Transfer Mode
ATU ADSL2plus Transceiver Unit

NOTE: According to [1].

CPE Customer Premises Equipment
DSL Digital Subscriber Line
DSLAM Digital Subscriber Line Access Multiplexer
LT Line Termination Unit
MIB Management Information Base

NOTE: According to [4].

NT Network Termination Unit
PTM Packet Transfer Mode
VDSL Very high speed Digital Subscriber Line
VTU VDSL2 Transceiver Unit

NOTE: According to [2].

XTSE xTU Transmission System Enabling

4 Operational modes

The operational mode is described by a generic mode, i.e. the standard, and the specific mode, e.g. annex and band plan. G.992.5/ADSL2plus [1] and G.993.2/VDSL2 [2] are examples of generic modes. The present document defines the following six operational modes. These are explained in tables 1 and 2:

1) **A_A2P_ATM** (ADSL2plus related);

2) **A_B2P_ATM** (ADSL2plus related);

3) **A_J2P60_ATM** (ADSL2plus related);

NOTE: All ADSL2plus modes use non-overlapped spectrum.

4) **V2_BB8b_PTM** (VDSL2 related);

5) **V2_BA17a_PTM** (VDSL2 related); and

6) **V2_BB17a_PTM** (VDSL2 related).

In principle, the list of operational modes can be extended.

Table 1: ADSL2plus-related operational modes

Operational Mode		A_A2P_ATM	A_B2P_ATM	A_J2P60_ATM
Generic Mode		G.992.5	G.992.5	G.992.5
Specific Mode	G.992.5 Annex	Annex A	Annex B	Annex J
	Type of xTU transmission system	G.992.5 operation over POTS with non-overlapped spectrum	G.992.5 operation over ISDN non-overlapped spectrum (XTSE,[4])	G.992.5 all digital mode operation with non-overlapped spectrum
	TPS-TC function	G.992.3 Annex K.2 (ATM), [3]	G.992.3 Annex K.2 (ATM), [3]	G.992.3 Annex K.2 (ATM), [3]
	Spectral mask settings	N/A	N/A	US mask ADLU-60 (Table J.3,[1])

Table 2: VDSL2-related operational modes

Operational Mode		V2_BB8b_PTM	V2_BA17a_PTM	V2_BB17a_PTM
Generic Mode		G.993.2	G.993.2	G.993.2
Specific mode	G.993.2 Annex	Annex B	Annex B	Annex B
	Type of xTU transmission system	G.993.2 Region B (Europe) (XTSE,[4])	G.993.2 Region B (Europe) (XTSE,[4])	G.993.2 Region B (Europe) (XTSE,[4])
	VDSL2 Profile	8b	17a	17a
	Limit PSD mask (short name)	998-M2x-B (B8-6), (Table B.3,[2])	998ADE17-M2x-A (B8-11), Table B.3,[2])	998ADE17-M2x-B (B8-12), (Table B.3,[2])
	TPS-TC function	G.993.2 Annex K.3 (PTM), [2]	G.993.2 Annex K.3 (PTM), [2]	G.993.2 Annex K.3 (PTM), [2]

5 Definitions of DSL multi-operation

The following types of DSL multi operation (**MO)** are defined:

1) **MO1**: V2_BB8b_PTM or V2_BB17a_PTM or A_B2P_ATM;

2) **MO2**: V2_BB8b_PTM or V2_BB17a_PTM or A_J2P60_ATM;

3) **MO3:** V2_BA17_PTM or A_A2P_ATM.

6 Performance and functional requirements

Performance and functional requirements of the multi-operation types MO1 and MOM2 are defined for each of the underlying VDSL2- or ADSL2plus-related operational modes, for which the following Broadband Forum test specifications shall apply:

- Broadband Forum TR-100: "ADSL2/ADSL2plus Performance Test Plan" [5];
- Broadband Forum TR-105: "ADSL2/ADSL2plus Functionality Test Plan" [6];
- Broadband Forum TR-114: "VDSL2 Performance Test Plan" [7];
- Broadband Forum TR-115: "VDSL2 Functionality Test Plan" [8].

For each of the underlying VDSL2- or ADSL2plus-related operational modes, all applicable tests defined in the corresponding Broadband Forum performance and functionality test plans shall be carried out and passed according to table 3.

TR-114 [7] Issue 2 and TR-115 [8] Issue 2 do not contain any requirements for band plan 998ADE17-M2x-A as defined in Annex B of [2]. Therefore, there are no performance and functional requirements defined in the present document for the multi-operation type MO3.

Table 3: Applied tests

Type of Multi-Operation	MO1			MO2		
Operational Mode	V2_BB8b_PTM	V2_BB17a_PTM	A_B2P_ATM	V2_BB8b_PTM	V2_BB17a_PTM	A_J2P60_ATM
Applied BBF TR	TR-114 [7] and TR-115 [8]	TR-114 [7] and TR-115 [8]	TR-100 [5] and TR-105 [6]	TR-114 [7] and TR-115 [8]	TR-114 [7] and TR-115 [8]	TR-100 [5] and TR-105 [6]
Tests to be carried out and passed	All tests with VDSL2 band-profile BB8b	All tests with VDSL2 band-profile BB17a	All ADSL2plus Annex B tests	All tests with VDSL2 band-profile BB8b	All tests with VDSL2 band-profile BB17a	All ADSL2plus Annex J (ADLU-60) tests

History

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