

Bilag 7: Tekniske krav

Dette bilag udgør bilag 7 til det mellem parterne tiltrådte Produkttillæg for Ethernet BSA eller Standardaftale for Ethernet BSA.

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1. Foreword

This document describes the requirements to CPE (customer premises equipment) under evaluation for being part of the TDC Wholesale access "whitelist".

The Operator must declare or specify compliance with the requirements of this document, by addressing every field of the requirement tables of section 6. The column named "Reference" in the tables of section 6 refers to the explicit description (if any) of the requirements in the subsequent sections.

Transition arrangements

A transition period of 1-month (the month of this edition plus 1) will permit compliance with the requirements of either this edition or the previous edition. After the transition period has expired the requirements of the present edition of the document applies exclusively.

History

Document history		
Date	Status	Comment
April 2001	1 st . edition	
May 2003	2 nd . Edition	
Sep 2006	3 rd . Edition	
Jan 2007	4 nd . Edition	
Nov 2007	5 nd . Edition	VDSL requirements added
March 2014	6 th . Edition	VDSL Vectoring requirements added

2. Scope

The present document is applicable to ADSL CPE, SHDSL CPE and VDSL CPE.

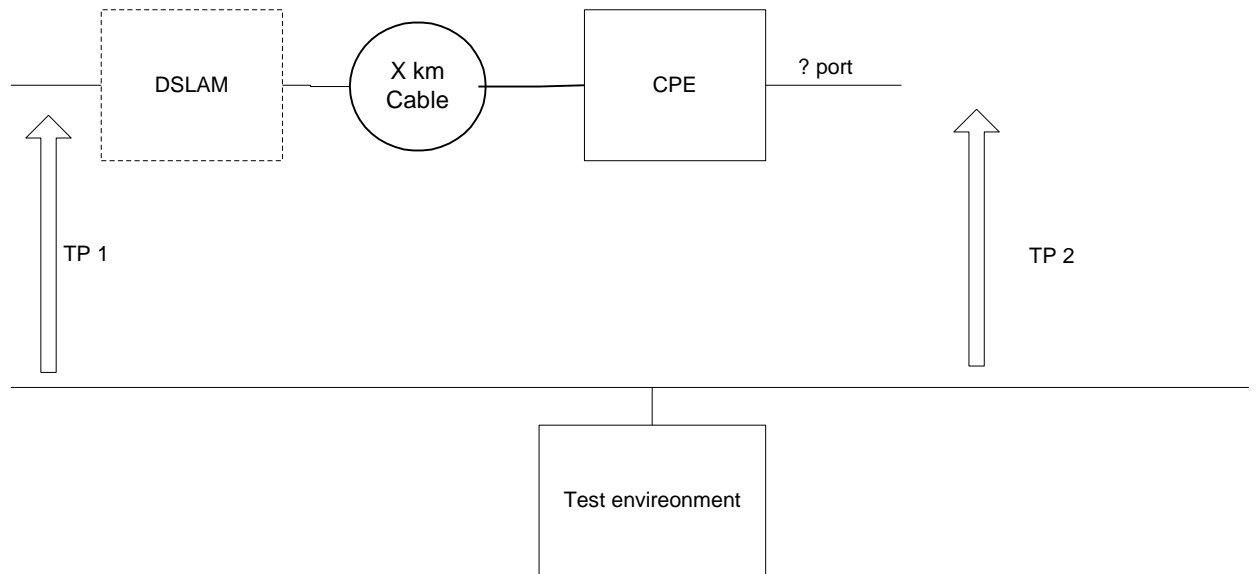
A CPE is customer premises equipment intended to connect data equipment, such as a PC to a broadband service, by means of ADSL/SHDSL/VDSL transmission technology on the subscriber line.

The document describes DSLAM compatibility and requirements for connection to TDC unbundles loops and does not describe user-interface, EMC, safety etc.

3. References

- [1] TDC technical requirements for approval of equipment intended for connection to TDC unbonded copper" rev. 4.1, Jan 2007
- [2] Transmission and Multiplexing (TM); Integrated Services Digital Network (ISDN) basic rate access; Digital transmission system on metallic local lines; ETSI TS 102 080 V.1.3.2 (2000-05)
- [3] ITU-T, Transmission systems and media, Digital systems and networks. Single-pair high-speed digital subscriber line (SHDSL) transceivers. G.991.2 (02/01)
- [4] Transmission and Multiplexing (TM); Access transmission system on metallic access cables; Symmetrical single pair high bitrate Digital Subscriber Line (SDSL), ETSI TS 101 524 V1.1.1
- [5] ITU-T G.992.1 (06/99): Transmission systems and media, digital systems and networks. Asymmetrical Digital Subscriber Line (ADSL) transceivers.
- [6] ITU-T G.992.2 (06/99): Transmission systems and media, digital systems and networks. Splitterless Asymmetrical Digital Subscriber Line (ADSL) transceivers.
- [7] Attachment to the Public Switched Telephone Network (PSTN); General technical requirements for equipment connected to an analogue subscriber interface in the PSTN, ETSI ETS 300 001 V.1.5.1 (1998-10)
- [8] ITU-T G.992.3 (07/2002): Transmission systems and media, Digital systems and networks. Digital sections and digital line system – Access networks; Asymmetric Digital Subscriber Line (ADSL) transceivers – 2 (ADSL2), including Draft new Amendment 2 to Annex J and Draft new Annexes L and M to Recommendation G.992.3
- [9] ITU-T G.992.5 (05/2003): Transmission systems and media, Digital systems and networks. Digital sections and digital line system – Access networks; Asymmetric Digital Subscriber Line (ADSL) transceivers (ADSL2+), including Draft new Amendment 2 to Annex J and Draft new Annexes L and M to Recommendation G.992.3
- [10] ITU-T Series G: Transmissions systems and media digital systems and networks. Digital sections and digital line system – Access networks; Very high speed digital subscriber line transceivers 2 (VDSL2) 993.2. (pre-published 02-2006)
- [11] ITU-T G: Transmissions systems and media digital systems and networks. Digital sections and digital line system – Access networks. Self-FEXT cancellation (vectoring) for use with VDSL2 transceivers 993.5. 04-2010 with later amendments.

4. Definitions



CPE is a network terminating unit, e.g. an ADSL/SHDSL/VDSL-modem comprising ADSL/SHDSL/VDSL- Ethernet interfaces.

During testing interoperability and performance of a CPE up against a DSLAM the test instruments are connected between testing point 1 (TP 1) and testing point 2 (TP 2) supplemented by line parameters derived from DSLAM management system.

FW: Firmware is part of the CPE and is not altered or removed when the CPE is turned off or disconnected.

SW: Software, any other software that is not firmware.

5. Documentation of compliance

The CPE must comply with all mandatory requirements of this dokument, as listed in section 6. Requirement Tables must be declared by stating **Yes** or **No** or further specified in the relevant field of the "Supported" column.

The necessary documentation must be submitted to TDC on request.

TDC can provide with further information about testing on request.

Identification of the product in question:

Product name:

Product manufactured by:

Applicant name, address, phone, e-mail:

Other information:

Date and signature:

6. Requirements

6.1 General (common requirements for all CPE`s)

Table 1. Requirements table. General.					
No.	Reference to subsequent paragraph	Requirement	Mandatory / Preferred / Optional	Supported? (Yes / No / Specification)	Result (Pass / Fail / Remark)
		Approvals			
1.		Fulfills the requirements in the TDC document: "TDC technical requirements for approval of equipment intended for connection to TDC unbonded copper" rev. 4.1, Jan 2007" ref. [1]	M		
2.		Performance and interoperability test has to be done up against TDC DSLAM platforms.	M		
		Version status			
3.		Specification of hardware version.	M	Specify:	
4.		Specify the firmware and software version.	M	Specify:	
		Physical interface connections summary			
5.		Line (ADSL/SHDSL/VDSL). According to RJ11. DSL line pin 3 and 4.	M	Specify:	

6.2 Product (the relevant table for the physical layer must be chosen).

6.2.1 ADSL or VDSL over POTS

Table 2. Requirements table. ADSL or VDSL over POTS.					
No.	Reference to subsequent paragraph	Requirement	Mandatory / Preferred / Optional	Supported? (Yes / No / Specification)	Result (Pass / Fail / Remark)
		Compliance			
1.		<p>The ADSL-modem complies with ITU-T G.992.1 Annex A Ref. [5] or ITU-T G.992.3 Annex A and L ref. [8] or ITU-T G.992.5 Annex A, L and M ref. [9]</p> <p>The VDSL-modem complies with ITU-T G.993.2 ref. [10]</p> <p>The VDSL-modem supports Vectoring as specified in G.993.5 [11]</p>	M		
		Integrated lowpass filter for POTS			
2.		The filter can be permanently disconnected.	Mandatory if filter is integrated.	Specify:	
		Interoperability			
3.		<p>Interoperability test has been performed against Siemens DSLAM. (ADSL)</p> <p>The interoperability test report must be submitted to TDC.</p>	M	Specify:	
4.		<p>Interoperability test has been performed against Ericsson DSLAM. EAR (ADSL)</p> <p>The interoperability test report must be submitted to TDC.</p>	M	Specify:	
5.		<p>Interoperability test has been performed against Ericsson DSLAM EDA. (ADSL)</p> <p>The interoperability test report must be submitted to TDC.</p>	M	Specify:	

Table 2. Requirements table. ADSL or VDSL over POTS.					
No.	Reference to subsequent paragraph	Requirement	Mandatory / Preferred / Optional	Supported? (Yes / No / Specification)	Result (Pass / Fail / Remark)
6.		Interoperability test has been performed against Alcatel DSLAM ISAM 73XX (ADSL or VDSL) The interoperability test report must be submitted to TDC.	M	Specify:	

6.3 ATM (this table is common for all CPE`s except VDSL CPE`S)

6.3.1 ATM

Table 3. Requirements table.

No.	Reference to subsequent paragraph	Requirement	Mandatory / Preferred / Optional	Supported? (Yes / No / Specification)	Remarks
		DSL encapsulation			
1.		VPI/VCI default 0/101	M		
2.		Address space of VP (virtual path).	M	Specify	
3.		Address space of VC (virtual channel).	M	Specify	
4.		The ADSL modem complies with ITU-T 610 ref[5]	M		
5.		The ADSL/SHDSL modem is able to answer F4 end-to-end and F5 segment OAM loopback cells according to ITU-T 610 ref[5]	M		
6.		The ADSL/SHDSL modem is able to answer F5 end-to-end and F5 segment OAM loopback cells according to ITU-T 610 ref[5]	M		
7.		<p>QoS</p> <p>PVC Group 1 (LAN port1) PVC 0/101. (BE UBR)</p> <p>PVC Group 2 (LAN port2) PVC 0/32, (BE UBR)</p> <p>PVC Group 3 (LAN port3) PVC 0/33,1/32,1/33,1/34 (VBR NRT RF)</p> <p>PVC Group 4 (LAN port4) PVC 0/34. (VBR RT EF)</p>	M		

6.4 PTM (this table is for VDSL CPE`S)

Table 4. Requirements table.					
No.	Reference to subsequent paragraph	Requirement	Mandatory / Preferred / Optional	Supported? (Yes / No / Specification)	Remarks
1.		EFM IEEE 802.3ah Copper track	M		

6.5 IP connectivity

6.5.1. Bridged Ethernet (only relevant if there is IP connectivity through TDC`s IP net).

Table 5. Requirements table.					
No.	Reference to subsequent paragraph	Requirement	Mandatory / Preferred / Optional	Supported? (Yes / No / Specification)	Remarks
1.		Encapsulation by LLC SNAP RFC 1483 /2684	M		
2		IEEE802.1D IEEE standard for local and metropolitan area networks--Media access control (MAC) Bridges	M		
3		DHCP RFC 1531	M		

6.5.2 Services (chose the relevant parametres)

Table 6 Requirements table.					
No.	Reference to subsequent paragraph	Requirement	Mandatory / Preferred / Optional	Supported? (Yes / No / Specification)	Remarks
1.		Fixed IP RFC 1483 / 2684	M		
2.		DHCP RFC 1531	M		
3.		PPP RFC 1172	M		

7.1 VDSL spectrum

Table 7. Spectrum table VDSL.			
Requirement	Mandatory / Preferred / Optional	Supported? (Yes / No / Specification)	Remarks
Spectrum ITU-T G 993.2 (12a) With U0 band 276 kHz	M		
Spectrum ITU-T G 993.2 (17a) With U0 band 276 kHz	M		