

Bilag 8. TDC technical requirements for approval of splitterfilters and inline filters intended for shared access (ADSL or VDSL over POTS).

Dette bilag udgør bilag 8 til det mellem parterne tiltrådte Produkttillæg for Rå kobber/Delt rå kobber eller Standardaftale for Delt rå kobber. Bilaget erstatter samtidig følgende tidligere bilag:

Bilag 7. Formular til godkendelse af splitters hørende til Standardaftale for delt rå kobber

Ved krydshenvisning i dette bilag er henvisninger til Generelle vilkår og Produkttillæg for Rå kobber/Delt rå kobber anført med almindelig typografi, mens henvisninger til Standardaftalen for Delt rå kobber er anført med kursiv og indsat i firkantet parentes.

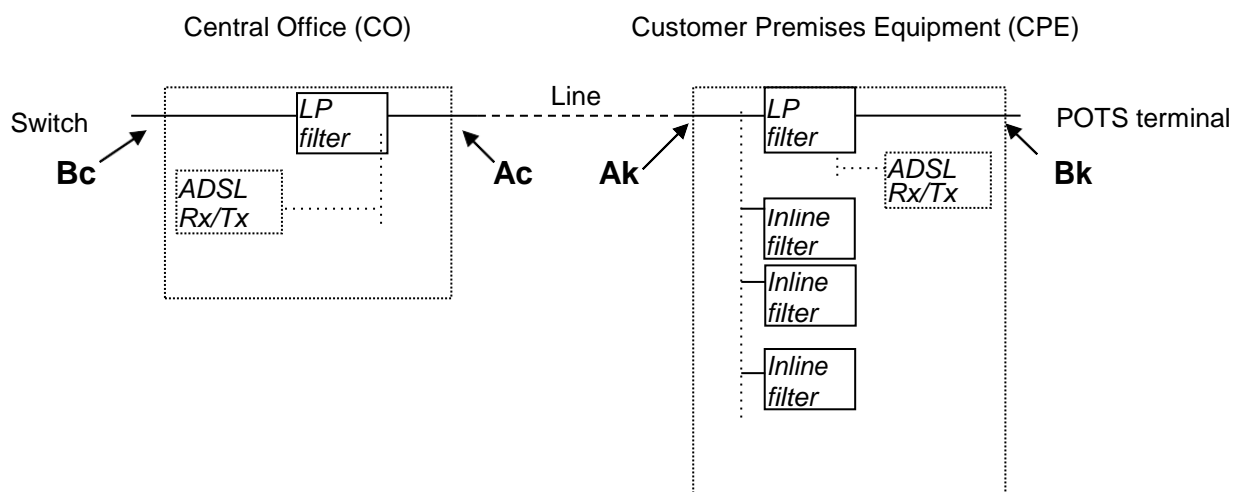
The purpose of this document is to assist applicants seeking approval of equipment for connection to TDC shared access, to assess, if the equipment fulfils the technical requirements for connection. This document contains an extract of the technical requirements given in: TDC "Produkttilæg for Rå kobber/Delt rå kobber" or "Standardaftale om Delt Rå Kobber".

In the following pages the technical requirements for approval are listed in tables 1-3. The applicant is requested to compare the requirements listed in the tables with the test reports for the equipment under consideration and check compliance. If the equipment complies, a reference to the page/clause in the test report(s) documenting compliance should be noted in the blank column provided.

Please fill out separate forms for CO and CPE filters and separate forms for each product variant to be considered.

The tables with the applicants' notes and the test reports should subsequently be sent to TDC for formal approval. If test reports do not exist, or are incomplete, TDC may perform the necessary measurements against payment.

Figure 1. Definition of interface points for shared access.



Reference documents:

- [1] ETSI TR 101 952-1-1 (05/2002): Access network xDSL transmission filters; Part 1: ADSL splitters for European deployment; Sub-part 1: Specification of the low pass part of ADSL/POTS splitters.
- [2] ETSI TS 101 952-1-5 (05/2003): Access network xDSL transmission filters; Part 1: ADSL splitters for European deployment; Sub-part 5: Specification for ADSL over POTS distributed filters.
- [3] ETSI TS 101 952-2-3 (03/2003): Access network xDSL transmission filters; Part 1: VDSL splitters for European deployment; Sub-part 3: Specification of VDSL/ISDN splitters.
- [4] ETSI TS 101 952-1-3 (05/2002): Access network xDSL transmission filters; Part 1: ADSL splitters for European deployment; Sub-part 3: Specification of ADSL/ISDN splitters.

Requirements for ADSL(2/2+) or VDSL(2) transceivers

Requirements for CO and CPE ADSL(2/2+) or VDSL(2) transceiver equipment are described in: "TDC technical requirements for approval of equipment intended for connection to TDC unbundled copper (Table 1 to 7)."

The appropriate spectrum profiles for deployment over POTS or ISDN apply.

Requirements for ADSL/VDSL over POTS splitters

Equipment type: _____

Designation: _____

Test report: _____

The requirements apply to CO and CPE splitters. The ADSL port on the splitter must be connected to the ADSL/VDSL transceiver (passive) during measurement or connected to a suitable impedance.

The parameters should be measured from reference points Bc to Ac or Bk to Ak (refer to fig. 1)

Table 1: Requirements concerning DC parameters for splitters

Parameter	Measurement method and limit	Applicants notes. Are requirements meet? If meet, reference to page/paragraph in test report
Polarity independence	Ref. [1] or [3]: Clause 5.1.1	
DC resistance to earth	Ref. [1] or [3]: Clause 6.2.1	
DC resistance a – b wires	Ref. [1] or [3]: Clause 6.2.2	
DC series resistance	Ref. [1] or [3]: Clause 6.2.3	

Requirements listed in table 2 should be met for line currents in the range 0 – 80 mA. The parameters should be measured from reference point Bc to Ac or Bk to Ak (refer to fig. 1)

Table 2: Requirements concerning AC parameters for splitters

Parameter	Measurement method and limit	Applicants notes. Are requirements met? If meet, reference to page/paragraph in test report
Insertion loss at 25 and 50 Hz	Ref. [1] or [3]: Clause 6.2.3	
POTS insertion loss	Ref. [1] or [3]: Clause 6.5.1	
POTS insertion loss distortion	Ref. [1] or [3] : Clause 6.5.2	
Impedance at 25 and 50 Hz	Ref. [1] or [3]: Clause 6.3.2	
Return loss (CO splitter). <i>Note 1</i>	Ref. [1] or [3]: Clause 6.6.1.1	
Return loss (CPE splitter). <i>Note 1</i>	Ref. [1] or [3]: Clause 6.6.1.1	
Longitudinal balance	Ref. [1] or [3]: Clause 6.8	
Attenuation of ADSL signals to POTS port. <i>Note 2.</i>	Ref. [1] or [3]: Clause 6.9.2 option A.	
Group delay distortion	Ref. [1] or [3]: Clause 6.12	

Note 1. It is sufficient that only test 3 and test 4 specified in clause 6.6.1.1 Ref.[1] are met.

Note 2. It is recommended that the splitter attenuates the ADSL signals by at least 55 dB at 25 kHz. A large number of telephone sets used in DK are very sensitive to ADSL upstream signals, and will generate audible noise if the attenuation is lower.

Requirements for ADSL over POTS inline filters.

Equipment type: _____

Designation: _____

Test report: _____

The requirements apply to CPE Inline filters. If any ADSL port on the filter it must be connected to the ADSL transceiver (passive) during measurement or connected to a suitable impedance.

The parameters should be measured from reference points Bk to Ak (refer to fig. 1).

During measurement, the maximum allowed number of filters must be connected simultaneously. If the maximum number is not specified or less than 3, 3 filters must be connected.

The transmission characteristics are measured at the output of one splitter, outputs of the other splitters are left open.

Table 3: Technical requirements for distributed filters (inline).

Parameter	Measurement method and limit. (At least 3 filters in parallel)	Applicants notes. Are requirements met? If meet, reference to page/paragraph in test report
Polarity independence	Ref. [2] 5.1.1	
DC resistance to earth	Ref. [2] 6.2.1	
DC resistance a-b wires	Ref. [2] 6.2.2	
DC series resistance	Ref. [2] 6.2.3	
Insertion loss 25 and 50 hz	Ref. [2] 6.3.1	
Impedance at 25 and 50 Hz	Ref. [2] 6.3.2	
Pots insertion loss	Ref. [2] 6.5.1 Note 1	
Pots insertion loss distortion	Ref. [2] 6.5.2 Note 2	
Return loss	Ref. [2] 6.6.1.1 Note 3	
Longitudinal balance	Ref. [2] 6.8	
Attenuation of ADSL signals to POTS port.	Ref. [2] 6.9.2 Note 4	
Group delay distortion	Ref. [2] 6.12	

Note 1. The requirement is reduced to max. 1,5 dB

Note 2. The requirement is reduced to max. 2,0 dB

Note 3. The requirement is reduced to min 10 dB from 300 Hz to 3400 Hz and 8 dB 3400 – 4000 Hz.

Note 4. The attenuation requirement is reduced to min:

<i>20 kHz</i>	<i>15 dB</i>
<i>25 kHz</i>	<i>30 dB</i>
<i>30 kHz</i>	<i>35 dB</i>
<i>> 30 kHz</i>	<i>35 dB</i>

The requirement only has to be fulfilled with ZR.

The frequency range for the ADSL band is expanded from 1.1 to 2.2 MHz to accommodate ADSL2+.

Requirements for ADSL over ISDN splitters

Equipment type: _____

Designation: _____

Test report: _____

Table 4: Requirements concerning ISDN splitters.

Parameter	Measurement method and limit	Applicants notes. Are requirements meet? If meet, reference to page/paragraph in test report
DC series resistance	ref. [4]: Clause 6.1.3	
ISDN band insertion loss	ref. [4]: Clause 6.3 <i>Note 3</i>	
ISDN band insertion loss	ref. [4]: Clause 6.4 <i>Note 3</i>	
Longitudinal balance	ref. [4]: Clause 6.5	
Attenuation of ADSL/VDSL signals to ISDN port	ref. [4]: Clause 6.6 <i>Note 3</i>	
Group delay distortion	ref. [4] : Clause 6.8	

The ADSL port on the splitter must be connected to the ADSL transceiver (passive) during measurement or connected to suitable impedance.

Requirements must be meet for line currents between 0 and 50 mA.