TITLE **Realistic performance tests for ADSL**

PROJECT ADSL (study point SP-1)

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STATUS Proposal, for decision

ABSTRACT It has become apparent that the ETSI noise models A and B for ADSL are not realistic. The FSAN proposals for SDSL and VDSL demonstrate the growing understanding that the impairment in real access networks will be significantly higher. This contribution proposes to bring the existing ADSL performance tests fully in line with the performance tests that are currently under development for SDSL (and already adopted for VDSL). The current status of these SDSL proposals is described in permanent document TM6(98)10.

1. Problem

Improved understanding on impairment in access networks has resulted in the conclusion that the current ETSI noise models A and B for ADSL are far from realistic. The FSAN proposals for SDSL and VDSL have demonstrated the growing understanding that the impairment in real access networks will be significantly higher than was assumed several years ago. This difference is shown in figure 1. The ADSL noise models are taken from ETR 328 (nov 1996). The SDSL alien noise models are taken from the most recent FSAN update [3] (TD9, this ETSI meeting) and calculated for 3 km on SDSL testloop #2. The SDSL self noise shall be added to it, but its PSD has not been defined yet.

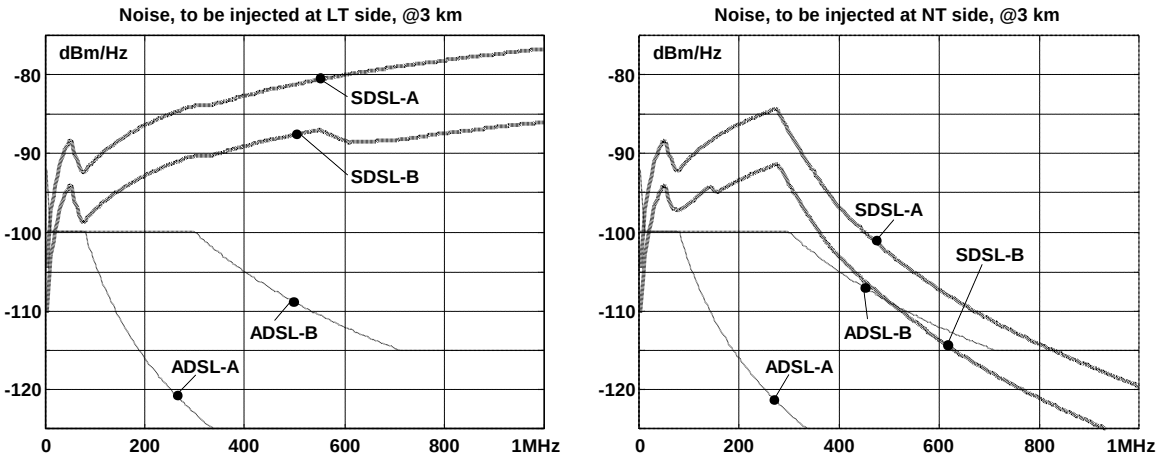

Fig 1. Difference between the noise levels of the existing ADSL tests, and the proposed SDSL tests. The significant difference between those two makes that the current ADSL test are not realistic. Note that the real SDSL noise is higher than depicted here. This figure shows the SDSL alien noise only; the SDSL self noise must be added to it, as soon as the SDSL PSD has been defined.

ADSL will share the acces network with other xDSL technologies, such as HDSL and SDSL To make comparisons between the performance of different xDSL technologies, it is essential that they are all tested under similar test conditions.
ADSL will be deployed with bitrates and reach estimates, under impairment conditions that are assumed to be realistic. To ensure that ADSL systems function well under these conditions, it is essential that they are tested under test conditions that are close to what is assumed realistic. Experience from recent practice has learned KPN that when commercially available ADSL products can pass the ETSI performance test, it can fail[1] completely under realistic noise conditions.

2. Proposal

In the recent past, the ETSI-TM6 understanding on performance tests has improved significantly. Most of these ideas have been developed while preparing the VDSL report. The current proposals on the SDSL performance tests [4] are based on what has been agreed for VDSL, and updated according to the latest views. The SDSL noise models are currently supported by many european operators that work together within FSAN [2,3]. In these SDSL proposals, the noise that impairs the modems under test is dependent on the length of the testloop, as is also common for real access networks.

We propose to bring the existing ADSL performance test fully in line with the performance tests that are currently under development for SDSL (and is adopted for VDSL). Permanent document TM6(98)10 [4] keeps track of the SDSL proposals so far, and can broaden its scope to cover ADSL as well. The ultimate target is to unify all xDSL performance test into one common method. This ADSL proposal brings ADSL in line with SDSL, which is already in line with VDSL.

3. References

[1] Rob van den Brink, KPN, *Proposal for SDSL performance tests*, ETSI-TM6 contribution TD27 (984t27a0), Vienna, Sept 1998.
[2] KPN/FSAN xDSL working group, *Revised noise models for SDSL*, ETSI-TM6 contribution TD20 (991t20a0), Villach, Feb 1999.
[3] KPN/FSAN xDSL working group, *Self-crosstalk update of the SDSL noise models*, ETSI-TM6 contribution TD9 (992t09a0), Grenoble, May 1999.
[4] Rob van den Brink, KPN, *Performance tests for SDSL and other long-range xDSL systems*, ETSI-TM6 permanent documents TM6(98)10, (980p10a1), Grenoble, May 1999.

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[1] KPN has even observed ADSL systems (from different vendors) under SDSL noise conditions that did function above 2.8 km, but reduced their maximum bitrate ***below*** that length and were even unable to start up **below** 1.3 km. Probably, these modems could not handle the higher signals and noise levels associated with shorter lines. This illustrates how important it is to revise the existing ADSL performance tests into a test that is realistic.