TITLE   **Report of the ad-hoc meeting about noise calibration**

PROJECT   SDSL, ADSL

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Since feb 2001

STATUS   for information

The ad hoc was attended by representatives of Ascom, Spirent, Broadcom, KPN, Tioga, ….
and lateron Connexant, Adtran, …

This adhoc meeting was focussed on what setup it required for calibrating the noise level that is to be injected in the testloops. See TD6, TD25 and TD44 for details. A common solution for all xDSL systems (SDSL, ADSL and lateron VDSL) is prefered.
The discussed issues deal with purpose, worry and questions related to different calibrations.
There was no consensus on any solution on how to proceed, so the originating problems remain unsolved.

Purposes for noise calibration in general are:
- to enable the specification of the accuracy of noise levels
- to verify if noise levels are within specifications, in a way that is close to the actual way xDSL is tested.
- to figure out what the reason is that different performance test setups produce different results, and to prevent these differences
- to solve the reported problem that SDSL cannot meet the reach requirements at lower bitrates, due to the fact that noise is not injected as intended by the FSAN rationale behind impairment.

Worries that were raised about using a complex impedance for calibrations are:
- it may require a change of existing equipment.
- it may block the automation of testing
- it makes ETSI and ITU tests different

Questions that were raised about using a complex impedance are:
- what do we gain from it?
- what is the improvement? This calibration it is still an approximation of a real test setup.
- will it complicate testing or the calibration procedure?

During the discussions, the following was noted:
- The tests from ITU and ETSI are very different, so why worry about only the calibration issue
- Calibration is only done once in a long period, so it does not influence the possibility of automation.
- It was only recently observed that the precise method of injecting noise was unclear, so it is unlikely that all existing equipment are all based on the interpretation ETSI have chosen recently. (current injection with calibration into real impedances) So changing some of the existing hardware is to be expected anyhow.
- The use of a complex calibration impedance is indeed an approximation of the real test setup, but much closer then when calibrated with a real impedances. Deviations up to 2-3 dB, causes by of this real impedance calibration, has caused that SDSL connot meet the reach requirements at lower bitrates.

During the discussion, different possible solutions were discussed, but none of them reached consensus.

- The worry about changing equipment when complex impedances, can be solved by "grandfathering". This allows modified tests results when "old" equipment is used, but solves it for future equipment.
- When using real impedances for calibration, the raised problem with the SDSL reach requirements remain unsolved.
- When relaxing the margin requirements (from 6 dB to 4 dB), so "repair" the SDSL reach, then the way is opened to accept noise margins below 6 dB.
- Changing the noise profile, dedicated to each testloop, in a way that corrects for the difference between testing and calibration, has also controversal consequences. It diverts from the original FSAN rationale behind the noise models. Moreover, if this is doen for each testloop, the number of noise profiles will increase significantly.
- Relaxing the reach requirement, to repair the SDSL error, requires a change of the published standard and causes that all ADSL performance numbers for ADSL has to be re-evaluated.