ETSI WG TM6
(ACCESS TRANSMISSION SYSTEMS ON METALLIC CABLES)

Permanent Document
TM6(06)05 – rev 2

Living List for Spectral Management
SpM - part 2
revision of TR 101 830-2

This document is the living list of current issues connected with ETSI's spectral management report TR 101 830, part 2 (*Technical methods for performance evaluations*). This work item is focussed on the revision of "Part 2", dedicated to calculation and measurement methods for evaluating what the performance of xDSL systems will be for various scenarios. The target date for achieving "working group approval" from ETSI-TM6 is scheduled for **February 2007**. (See work item sheet in 061w23.pdf)

Scope: The present document gives guidance on a common methodology for studying the impact of noise on xDSL performance (maximum reach, noise margin, maximum bitrate) when changing parameters within various Spectral Management scenarios. These methods enable reproducible results and a consistent presentation of the assumed conditions (characteristics of cables and xDSL equipment) and configuration (chosen technology mixture and cable fill) of each scenario. The revision could add to this:
- receiver performance models for all variants of VDSL, ADSL2plus, enhanced-SDSL and ADSL2.
- transmitter models for the same modems (PSD templates in stead of PSD masks, PSD shaping parameters
- models for crosstalk from multiple locations, such as topologies with customers distributed along the line (relevant for VDSL simulations) or branched topologies.
- additional example scenarios
- refining the generic DMT model by accounting for side-lobe pick-up
- etc.

The issues related to "Part 1" or "Part 3", are beyond the scope of this living list.

PLEASE NOTE THE CHANGE OF MY E-MAIL ADDRESS (since june 2006)

2. STUDY POINTS PART 2 (TECHNICAL METHODS FOR PERFORMANCE EVALUATIONS)

SP	Title	Owner	Status
2-1	Performance model for ADSL2	Bernd Heise (Infineon)	US
2-2	Performance model for ADSL2plus	Bernd Heise (Infineon)	US
2-3	Modelling sidelobe pick-up in DMT Receivers	Olivier van de Wiel (Broadcom	Prov deleted
2-4	Multi node crosstalk models, restricted to the case that all LT nodes are co-located, and NT distributed	Czech Telecom (Milan Meninger)	US
2-5	Multi node crosstalk models, with both LT nodes and NT nodes distributed	Czech Telecom (Milan Meninger)	US
2-6	Basic transmitter/disturber model for VDSL2	Swisscom (Andreas Thöny)	US
2-7	Model for VDSL2 PSD template variations	Swisscom (Andreas Thöny)	US
2-8	Model for VDSL2 PSD shaping for remote deployment	Swisscom (Andreas Thöny)	US
2-9			
2-10			
2-11			
2-12			

The current agreed procedure for changing the status of living list items is in Annex A of TM6 working methods.

Part 2 study points

SP 2-1   Performance model for ADSL2
The performance of ADSL2 is different from the performance of ADSL, and a dedicated calculation model is desired. A useful performance benchmark for ADSL2 is unfortunately lacking, since there are currently no reach requirements in a standard that pushes these modem with extend spectrum to their true performance limits. Therefore this study point has also to address the way of preventing the inclusion of models in the SpM-2 standard that are predicting overoptimistic results
Related Contributions:
- *034t33, Sophia 2003 - Receiver models for G.992.3@A and G.992.5@A - TI*

SP 2-2   Performance model for ADSL2plus
The performance of ADSL2plus is different from the performance of ADSL, and a dedicated calculation model is desired. A useful performance benchmark for ADSL2plus is unfortunately lacking, since there are currently no reach requirements in a standard that pushes these modem with extend spectrum to their true performance limits. Therefore this study point has also to address the way of preventing the inclusion of models in the SpM-2 standard that are predicting overoptimistic results
Related Contributions:
- *034t33, Sophia 2003 - Receiver models for G.992.3@A and G.992.5@A - TI*

SP 2-3   Modelling sidelobe pick-up in DMT Receivers
In order to improve the validity of performance models for DMT receivers, the impact of sidelobe pick-up in DMT receivers may be a useful addition to the model, including a model for input filtering that reduces the impact of sidelobe pick-up. The main issues are detailed in 041t22, and this study point is to develop the text that should be added to the description of the DMT performance model.
Related Contributions:
- *991t30, Villach 1999 - Adopting HDSL2 components in SDSL (Fig 1 & table 1)*
- *034w13, Sophia 2003 - Sidelobe pick-up in DMT receivers - Alcatel, Conexant*
- *041t22, Sophia 2004 - Sidelobe pick-up in ADSL DMT receivers - Alcatel*
- *041t23, Sophia 2004 - Modeling filtering in ADSL receivers - Alcatel*

SP 2-4   Multi node crosstalk models, restricted to the case that all LT nodes are co-located, and NT distributed (*for VDSL from the exchange*)

A commonly used simplification of modeling crosstalk coupling in a loop assumes a two-node topology, as if all disturbers are co-located at the NT side as well as the LT side. In some cases, more advanced models for crosstalk coupling are required, accounting for the fact that NT modems are not co-located but "scattered" along the loop, and connected with branches. These models (without branching) have been used in various "VDSL from the exchange" studies, but a *punctual* description of that approach is lacking.

This study point is to develop a literal text proposal on a mathematical description to specify such a multi-node crosstalk model.

- *033w07, Sophia 2003 – Method on Xtalk Calculations in a Distributed Environment*
- *051t21, Sophia, feb 2005 – Distributed cable tree installation scenario – Czech Telecom*
- *052t06, Sophia, june 2005 –Generic crosstalk model, for one/multi node collocation – Czech Telecom*
- *052t07, Sophia, june 2005 –Crosstalk model, based on distribution of coupling – Czech Telecom*
- *053t22, Ghent, sept 2005 –Editorial changes for draft text of SP 2-44 (see LL used for creating SpM-2) – Czech Telecom*
- *054t17, Vienna, nov 2005 – US and DS equivalent crosstalk powers at one node/multi-node collocation - Czech Tel.*
- *054w20, Vienna, nov 2005 – WD20 Problems with proposed models for crosstalk from multiple locations -TNO*
- *061t06, Zurich, jan 2006 –* Crosstalk One-node/Multi-node co-location model- *Czech Telecom*
- *061w21, Zurich, jan 2006 – Examples of One-node/Multi-node co-location model- Czech Telecom*
- *061w25, Zurich, jan 2006 – Evaluating the crosstalk for a multi-node topology – TNO*
- *063t03, Zurich, may 2006 –* Crosstalk One/Multi-node co-location model *- Czech Telecom*
- *063w23, Zurich, may 2006 –* Crosstalk One/Multi-node co-location model *- Czech Telecom*

SP 2-5   Multi node crosstalk models, with both LT nodes and NT nodes distributed (*for VDSL from the cabinet*)

Somewhat similar to SP2-4, but now to model the crosstalk in case VDSL is deployed from the cabinet and other xDSL modems from the local exchange.

- *061t07, Zurich, jan 2006 –* Crosstalk Multi-node/Multi-node co-location model- *Czech Telecom*
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SP2-6:   Basic transmitter/disturber model for VDSL2

è *To define a fixed PSD template (e.g. for VDSL2/Ex from the exchange) up to a certain loop length,*

It is the intention to elaborate a description of the PSD templates of several VDSL2 options (depending on bandplan, profile, deployment topology, …)

Related Contributions:

- *061t20, Zurich, jan 2006 - Issues concerning the description of VDSL2 PSD templates - Swisscom*

SP2-7:   Model for VDSL2 PSD Template Variations

è *To define a length-dependent PSD template (e.g. for VDSL2/Ex beyond that loop length)*

The VDSL2 Limit PSD Mask as described in European Annex B of G.993.2 allows to allocate the transmitting power to different frequency ranges taking into account the bit loading in order to get the best possible performance. The result of this SP shall be a description of the VDSL2 PSD Template for up- and downstream taking such variations into account.

Related Contributions:
- *061t20, Zurich, jan 2006 - Issues concerning the description of VDSL2 PSD templates - Swisscom*

SP2-8:   Model for VDSL2 PSD Shaping for remote deployment
è To define a set that address PSD shaping (e.g for VDSL2/Cab from the cabinet, at specified distance between exchange and cabinet).
The VDSL2 offers the flexibility to perform in a remote deployment a PSD shaping in order to reduce the disturbance on the DSLs deployed from e.g. the CO. The result of this SP shall be a description of the VDSL2 PSD shaping mechanism for simulations. Items to be considered are: • Distance between CO and cabinet • kind of protection (non protection, full protection, equal pain, …) • the type of DSL to protect (ADSL, ADSL2+, …) • shaping floor (e.g. -80 dBm/Hz) • fstart incl. MUF concept
Related Contributions:
- *061t20, Zurich, jan 2006 - Issues concerning the description of VDSL2 PSD templates - Swisscom*

Text proposals, for inclusion in the revised SpM-2.

The text fragments below have been proposed for inclusion in the draft version of SpM part 2, but are still in the "under study" status. If agreement is achieved, they will be moved into the Draft

Text portions, proposed for inclusion in clause 8

8 Crosstalk models

There have been so many proposals on the table, changing the previous text again and again, that it makes currently no sense to include them here. Therefore I removed the text being proposed so far from this living list, and wait until a text proposal is made that looks stable

End of literal text proposals