

Addendum to BROBA
Main Body

**ADSL2+ deployment rule and additional ADSL2+
Line Profiles**

16 October 2008

1 Introduction

The present addendum describes the impact of the introduction of the ADSL2+ deployment rules on the Belgacom Reference Offer for Bitstream Access, BROBA II ADSL (covering the technologies ADSL, Reach Extended ADSL2 and ADSL2+).

It also describes the impact of extending the number of Line Profiles on the same Offer.

Both modifications are intended to clarify the rules used by Belgacom to validate the ADSL2+ Line Profiles submitted by the Beneficiaries to Belgacom.

2 Scope of this addendum

The scope of this addendum is limited to the BROBA II ADSL services, as described in the BROBA II ADSL (covering the technologies ADSL, Reach Extended ADSL2 and ADSL2+) Main Body, section 1. "Glossary".

3 Planning

The present addendum is applicable with immediate effect as of its approval.

4 Adaptation on BROBA documents

This addendum impacts only the BROBA II ADSL (covering the technologies ADSL, Reach Extended ADSL2 and ADSL2+) Main Body.

The sections of the BROBA II ADSL Main Body, which are impacted by this Addendum, are indicated in the subsequent paragraphs. Those adaptations refer to the BROBA 2008 offer, as approved by BIPT on 20/08/08.

In 4.5, the §52 must be replaced by :

52. (For so long that the total number of line profiles in the system is below 128), the Beneficiary can obtain 10 own ADSL, Reach Extended ADSL2 or ADSL2+ Line Profiles (from which maximum 8 ADSL Line Profiles) and 8 own ATM Profiles. Additionally, the Beneficiary can use the profiles defined in a common pool of 30 ADSL, Reach Extended ADSL2 and ADSL2+ Line Profiles (from which maximum 20 ADSL Line Profiles) and 100 ATM Profiles. To provision a BROBA II line under a specific technology (i.e.: ADSL, Reach Extended ADSL2 or ADSL2+), the Beneficiary may only use its own profiles, or the common profiles, defined for this technology.

- The ADSL, Reach Extended ADSL2, or ADSL2+ profiles in the common pool will be added after agreement of all concerned Beneficiaries and Belgacom.
- Originally, Belgacom defined 2 Reach Extended ADSL2 profiles in the common pool, for maximum downstream bit rates of 1.120 kbps and 512 kbps, other values being maximum upstream bit rate 192, and minimum downstream and upstream bit rates of 32 kbps.
- Originally, Belgacom defined 2 ADSL2+ profiles in the common pool, for maximum downstream bit rates of respectively 9.024 kbps and 12.000 kbps, other bit rate values being maximum upstream 512 kbps, minimum downstream 288 kbps and minimum upstream 256 kbps.

In 4.9.3, the §91 & 92 must be replaced by :

91. Any Operator may ask Belgacom to add other line profiles than the 2 above-defined. This will only be possible after individual validation of the profiles by Belgacom, in line with the delays specified hereafter, and conditional to the availability of Belgacom IT resources to validate and to implement them in the Belgacom systems.

- The validation of a line profile by Belgacom consists in defining for which attenuation range this profile can be configured by Belgacom, in order to guarantee

the stability of the lines dimensioned with this profiles, as well as of all other xDSL lines installed in the same cable bundle. The rules used by Belgacom to validate the proposed profiles are explained in §92.

- The attenuation range will of course also be used to validate each individual order of a BROBA ADSL2+ line: every order of a line that falls outside the attenuation range applicable for the profile specified in the order will be rejected.
- For any demand of additional profiles, the Operator must specify 6 months in advance the profiles needed (in line with rules on number of profiles defined in §52) and their characteristics (maximum and minimum upstream and downstream bitrates. Same timing are applicable for own and common profiles.
- Conditional to the availability of sufficient resources for validation and IT resources, the creation of additional profiles is expected to be possible in the subsequent Belgacom release at the earliest, or in any subsequent release, provided the delays for communication described above have been respected. In any event these delays do not contain a commitment of Belgacom.

92. In order to help the operators to define, if necessary, additional line profiles for ADSL2+, Belgacom specifies hereunder the ADSL2+ deployment tables used by Belgacom to validate the line profiles, or used by Belgacom as treshold in the repair process. The nearest above loop attenuation in the below tables shall be considered. Different values are defined for ADSL2+ over POTS and for ADSL2+ over ISDN as well as for the upstream and the downstream for both ADSL2+ flavours. Those curves are only deployment rules and not a performance guarantee. The curves are subject to evolution and could be reviewed.

| [In kbps] | POTS | | | | | |
|-------------------|---|--|---|--|---|--|
| Att at 800Hz [dB] | Upper limit for min UP target bit rate for provisioning | Upper limit for min DWN target bit rate for provisioning | Upper limit for max UP target bit rate for repair | Upper limit for max DWN target bit rate for repair | Upper limit for max UP target bit rate for provisioning | Upper limit for max DWN target bit rate for provisioning |
| 0 | 512 | 5.504 | 512 | 13.056 | 740 | 23.000 |
| 0,25 | 512 | 5.504 | 512 | 12.576 | 740 | 16.192 |
| 0,5 | 512 | 5.504 | 512 | 12.096 | 740 | 15.712 |
| 0,75 | 512 | 5.504 | 512 | 11.648 | 740 | 15.264 |
| 1 | 512 | 5.440 | 512 | 11.040 | 740 | 14.656 |
| 1,25 | 512 | 5.344 | 512 | 10.368 | 740 | 13.984 |
| 1,5 | 512 | 5.216 | 512 | 9.696 | 740 | 13.312 |
| 1,75 | 512 | 5.056 | 512 | 8.960 | 740 | 12.416 |
| 2 | 512 | 4.864 | 512 | 8.192 | 740 | 11.520 |
| 2,25 | 512 | 4.672 | 512 | 7.488 | 740 | 10.688 |
| 2,5 | 512 | 4.448 | 512 | 6.720 | 740 | 9.792 |
| 2,75 | 512 | 4.224 | 512 | 6.048 | 740 | 8.960 |
| 3 | 512 | 3.968 | 512 | 5.344 | 740 | 8.128 |
| 3,25 | 512 | 3.744 | 512 | 4.704 | 740 | 7.360 |
| 3,5 | 512 | 3.488 | 512 | 4.096 | 740 | 6.624 |
| 3,75 | 512 | 3.200 | 512 | 3.488 | 740 | 5.888 |
| 4 | 512 | 2.944 | 512 | 2.944 | 740 | 5.184 |
| 4,25 | 512 | 2.688 | 512 | 2.688 | 740 | 4.800 |
| 4,5 | 512 | 2.432 | 512 | 2.432 | 740 | 4.416 |
| 4,75 | 512 | 2.176 | 512 | 2.176 | 740 | 4.032 |
| 5 | 512 | 1.952 | 512 | 1.952 | 740 | 3.680 |
| 5,25 | 448 | 1.696 | 448 | 1.696 | 740 | 3.264 |
| 5,5 | 384 | 1.504 | 384 | 1.504 | 740 | 2.944 |
| 5,75 | 320 | 1.280 | 320 | 1.280 | 740 | 2.592 |
| 6 | 288 | 1.120 | 288 | 1.120 | 740 | 2.304 |
| 6,25 | 224 | 960 | 224 | 960 | 740 | 2.016 |
| 6,5 | 160 | 832 | 160 | 832 | 740 | 1.728 |

| [In kbps] | ISDN | | | | | |
|-------------------|---|--|---|--|---|--|
| Att at 800Hz [dB] | Upper limit for min UP target bit rate for provisioning | Upper limit for min DWN target bit rate for provisioning | Upper limit for max UP target bit rate for repair | Upper limit for max DWN target bit rate for repair | Upper limit for max UP target bit rate for provisioning | Upper limit for max DWN target bit rate for provisioning |
| 0 | 512 | 5.504 | 512 | 13.056 | 740 | 23.000 |
| 0,25 | 512 | 5.312 | 512 | 12.384 | 740 | 15.962 |
| 0,5 | 512 | 5.152 | 512 | 11.744 | 740 | 15.290 |
| 0,75 | 512 | 5.056 | 512 | 11.200 | 740 | 14.726 |
| 1 | 512 | 4.928 | 512 | 10.528 | 740 | 14.042 |
| 1,25 | 512 | 4.800 | 512 | 9.824 | 740 | 13.331 |
| 1,5 | 512 | 4.672 | 512 | 9.152 | 740 | 12.659 |
| 1,75 | 512 | 4.480 | 512 | 8.384 | 740 | 11.725 |
| 2 | 512 | 4.288 | 512 | 7.616 | 740 | 10.829 |
| 2,25 | 512 | 4.032 | 512 | 6.848 | 740 | 9.920 |
| 2,5 | 512 | 3.744 | 512 | 6.016 | 740 | 8.947 |
| 2,75 | 512 | 3.456 | 512 | 5.280 | 740 | 8.038 |
| 3 | 512 | 3.136 | 512 | 4.512 | 740 | 7.130 |
| 3,25 | 480 | 2.784 | 480 | 3.744 | 740 | 6.208 |
| 3,5 | 448 | 2.432 | 448 | 3.040 | 740 | 5.357 |
| 3,75 | 416 | 2.080 | 416 | 2.368 | 740 | 4.544 |
| 4 | 384 | 1.760 | 384 | 1.760 | 740 | 3.763 |
| 4,25 | 384 | 1.440 | 384 | 1.440 | 740 | 3.302 |
| 4,5 | 352 | 1.152 | 352 | 1.152 | 740 | 2.880 |
| 4,75 | 288 | 928 | 288 | 928 | 740 | 2.534 |
| 5 | 256 | 736 | 256 | 736 | 740 | 2.221 |
| 5,25 | 224 | 576 | 224 | 576 | 740 | 1.920 |
| 5,5 | 192 | 448 | 192 | 448 | 740 | 1.677 |
| 5,75 | 160 | 352 | 160 | 352 | 740 | 1.478 |
| 6 | 64 | 128 | 64 | 128 | 740 | 1.114 |
| 6,25 | - | - | - | - | 740 | 864 |
| 6,5 | - | - | - | - | 740 | 730 |

- Belgacom will provision BROBA II ADSL2+ service on an end-user line only if loop attenuation at 800Hz is less than 6,5dB and if both upstream and downstream Minimum bit rates of the Line Profile are lower than indicated in above tables for the corresponding ADSL2+ flavour and loop attenuation.
- Belgacom will accept trouble tickets for resynchronization problems on a BROBA ADSL2+ line only if both upstream and downstream Maximum bit rates of the Line Profile are lower than indicated in above tables for the corresponding ADSL2+ flavour and loop attenuation.
- Belgacom will provision BROBA II ADSL2+ service on an end-user line only if loop attenuation at 800Hz is less than 6,5dB and if both upstream and downstream Maximum bit rates of the Line Profile are lower than indicated in above tables for the corresponding ADSL2+ flavour and loop attenuation.

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