



Addendum to WBA VDSL2

## Upstream vectoring phase 2 and introduction of the vectoring zones 4&5

Approved by BIPT on 09/08/2017  
Sensitivity: **Confidential**

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# 1. Purpose

The present addendum further improves VDSL2 performance. It further improves upstream speeds and it introduces 2,2 MHz vectoring in the vectoring zones 4&5. It is also part of the project “Vectoring in ADSL(2+) frequencies” by introducing also 1,1 MHz vectoring in the vectoring zones 4&5 for all ROPs that will be homogenized.

For more details on the rationale and the definitions used for the project “Vectoring in ADSL(2+) frequencies”, reference is made to the addendum to the BROBA reference offer: “Vectoring in ADSL(2+) frequencies – phase 1” which has been approved by the BIPT on 21/10/2016.

The purpose of the present addendum is to address the impacts on the WBA VDSL2 reference offer of the introduction of:

1. Upstream vectoring phase 2 (for the 5 vectoring zones),
2. Introduction of the downstream vectoring zones 4 and 5,
3. DLM for the vectoring zones 4 and 5.

The changes introduced with this addendum are summarized in the tabel below:

	Current situation					As from 23/10/2017				
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Downstream Vectoring	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Upstream Vectoring	Yes	Yes	Yes	No	No	Phase 2	Phase 2	Phase 2	Yes	Yes
DLM on vectoring	Yes	Yes	Yes	No	No	Improved	Improved	Improved	Yes	Yes

(changes are highlighted in turquoise)

The deployment rules for upstream vectoring in the vectoring zones 1, 2 and 3 will be broadened thanks to 1,1 MHz vectoring and the upstream vectoring zones 4 and 5 will be added. See further in this document for more details.

As these improvements would have implied a large number of new line profiles to be added to the WBA VDSL2 reference offer, Proximus reviewed the current definition of the line profiles by having removed some secondary parameters. This also enabled the removal of many similar line profiles. The details of this have been submitted to the BIPT for approval on 12/05/2017 with the addendum “Line Profile numbering rationalization”.

The present addendum already uses these newly defined line profiles.

## 2. Dependencies with other addenda

Some addenda related to this addendum have already been submitted to the BIPT:

- Addendum to WBA, “[Vectoring in the frequency band 1,1MHz -2,2Mhz](#)” for the 1,1 MHz vectoring zones 1, 2 & 3” (approved by the BIPT on 22/02/2017),
- See also the list of other relevant addenda on vectoring referenced in section 2 of the above mentioned addendum.

As explained above, the present addendum already uses the newly defined line profiles as described in the addendum “[Line Profile numbering rationalization](#)” submitted to the BIPT for approval on 12/05/2017.

## 3. Scope and planning

This addendum is applicable to the WBA VDSL2 services with shared and with dedicated VLAN, as described in the WBA VDSL2 reference offer.

The present addendum has been submitted for approval to the BIPT in order to become effective as from **23 October 2017**<sup>1</sup>.

<sup>1</sup> Proximus might postpone this date in order to guarantee the quality of the deliverables

## 4. Vectoring general principle and new deployment rules

Reminder: the principle of vectoring is to cancel the cross-talk (FEXT) between different VDSL2 lines present in the same copper binder by injecting an anti-signal on each crosstalk-impaired VDSL2 line of the bundle. With no interference, each vectored VDSL2 line can operate at higher-speeds, downstream and upstream, as if it was the only line in the binder.

As from 23/10/2017, Proximus targets to improve VDSL2 provisioning upstream speeds on vectored lines to reach a:

- Upstream Maximum Net Data Rate of **30 Mbps** in vectoring zone 1
- Upstream Maximum Net Data Rate of **15 Mbps** in vectoring zone 2
- Upstream Maximum Net Data Rate of **10 Mbps** in vectoring zone 3
- Upstream Maximum Net Data Rate of **2 Mbps** in vectoring zone 4
- Upstream Maximum Net Data Rate of **1,5 Mbps** in vectoring zone 5

As from 23/10/2017, Proximus also targets to improve VDSL2 provisioning downstream speeds on vectored lines to reach a:

- Downstream Maximum Net Data Rate of **18 Mbps** in 2,2 MHz vectoring zone 4
- Downstream Maximum Net Data Rate of **22 Mbps** in 1,1 MHz vectoring zone 4
- Downstream Maximum Net Data Rate of **12 Mbps** in 2,2 MHz vectoring zone 5
- Downstream Maximum Net Data Rate of **18Mbps** in 1,1 MHz vectoring zone 5

All existing vectored lines will be re-evaluated in order to get new upstream speeds based on these new provisioning rules and line capabilities. Note that the provisioning zone will be re-evaluated also for every line when the vectoring level of the ROP changes from 2,2 MHz vectoring to 1,1 MHz vectoring based on these new provisioning rules.

The **new provisioning rules, applicable for all new VDSL2 lines** provisioned as from 23/10/2017 onwards, are summarized in the summary table below which distinguishes three cases:

1. Non-vectorized ROP/LEX (no changes, for reference only (see columns "Legacy")
2. Vectorized ROP, with vectoring as from 2,2MHz (see columns "2,2 MHz vectoring"),
3. Vectorized ROP, with vectoring as from 1,1MHz. (see columns "1,1 MHz vectoring")

Zone	Legacy		2,2MHz Vectoring		1,1MHz Vectoring	
	Length (m)	Att (dB)	Length (m)	Att (dB)	Length (m)	Att (dB)
1	400	0,4	900	0,4	900	0,5
2	700	0,7	1200	0,7	1200	0,7
3	1000	1	1700	1	1800	1,1
4	1400	1,4	2300	1,4	2300	1,4
5	1600	1,6	2700	1,6	2700	1,6

Remarks:

- The novelties of the June 2017 release are explained in the confidential addendum "Vectoring in the frequency band 1,1MHz -2,2Mhz" for the 1,1 MHz vectoring zones 1, 2 & 3" which has been approved by the BIPT on 22/02/2017.
- The existing vectoring profiles will gradually disappear as they will be replaced with the new vectoring profiles created in the framework of this addendum.
- The present addendum has no impact on the lines connected on non vectorized ROPs/LEXs.
- Both criteria, length and attenuation, must be fulfilled to assign a specific Line Profile but for 1,1 MHz vectoring and 2,2 MHz vectoring the "length" values are set very high as attenuation and not distance is the main criterion for vectored lines.

## 5. New vectoring provisioning & repair profiles

New WBA VDSL2 lines eligible for vectoring and fulfilling the vectoring deployment rules as described in this addendum will get the new **vectoring line profile**, communicated through the standard line profile communication process (XML BGCOU12).

In case of perturbation on the vectored line itself or on neighbouring lines, the vectoring provisioning line profile can be downgraded to one of the associated vectoring repair profiles defined for each vectoring zone.

The table below shows which are the main profiles applicable for each zone.

Table explanation:

Each cell contains 2 values:

- Left value: indicator for 2,2MHz vectoring
- Right value: indicator for 1,1MHz vectoring

Possible indicator values:

- "P": Provisioning profile
- "R": Repair profile
- "-": Not usable in the concerned zone

Downstream Maximum Net Data Rate	Upstream Maximum Net Data Rate	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
70 Mbps	30 Mbps	P/P	-/-	-/-	-/-	-/-
70 Mbps	20 Mbps	R/R	-/-	-/-	-/-	-/-
70 Mbps	15 Mbps	R/R	-/-	-/-	-/-	-/-
50 Mbps	15 Mbps	R/R	P/P	-/-	-/-	-/-
50 Mbps	10 Mbps	R/R	R/R	-/-	-/-	-/-
50 Mbps	6 Mbps	R/R	R/R	-/-	-/-	-/-
50 Mbps	5 Mbps	R/R	R/R	-/-	-/-	-/-
30 Mbps	10 Mbps	R/R	R/R	P/P	-/-	-/-
30 Mbps	5 Mbps	R/R	R/R	R/R	-/-	-/-
30 Mbps	3 Mbps	R/R	R/R	R/R	-/-	-/-
20 Mbps	3 Mbps	R/R	R/R	R/R	-/-	-/-
22 Mbps	2 Mbps	-/R	-/R	-/R	-/P	-/-
18 Mbps	2Mbps	R/-	R/-	R/-	P/-	-/-
18 Mbps	1,5 Mbps	-/R	-/R	-/R	-/R	-/P
16,5 Mbps	2Mbps	R/-	R/-	R/-	R/-	-/-
14,5 Mbps	2 Mbps	R/-	R/-	R/-	R/-	-/-
12 Mbps	1,5 Mbps	R/R	R/R	R/R	R/R	P/R



## 6. DLM process

The purpose of the present addendum is also to apply the DLM process on the vectoring profiles in the new “2,2 MHz vectoring zones 4 and 5” and the new “1,1 MHz vectoring zones 4 and 5”.

The DLM (Dynamic Line Management) process for vectoring profiles in the different “vectoring zones 4 and 5” is identical to the DLM process applicable for the “vectoring zone 1”, “vectoring zone 2” and “vectoring zone 3” as already explained in the previously approved addenda “DLM on vectoring” (approved by BIPT on 13/02/2015), and “Upstream Vectoring in vectoring zones 1, 2 and 3 & Extension to Vectoring zone 3 (incl. DLM)” (approved by BIPT on 15/07/2015).

Although engineering design is not entirely finished yet, Proximus can already today reasonably take the assumption that these new profiles might deliver speeds of up to <sup>(2)</sup>:

- in “2,2MHz vectoring zone 4” of up to **60 Mbps Downstream** and up to **10 Mbps Upstream**,
- in “2,2MHz vectoring zone 5” of up to **60 Mbps Downstream** and up to **10 Mbps Upstream**
- in “1,1MHz vectoring zone 4” of up to **60 Mbps Downstream** and up to **10Mbps Upstream**,
- in “1,1MHz vectoring zone 5” of up to **60 Mbps Downstream** and up to **10 Mbps Upstream**

on VDSL2 lines equipped with a whitelisted vector-compliant modem.

Under the same conditions, the DLM process might also allow to deliver increased upstream speeds in the vectoring zones 1, 2 and 3 of up to <sup>(2)</sup>:

- in “2,2MHz vectoring zone 1” of up to **40 Mbps Upstream**,
- in “2,2MHz vectoring zone 2” of up to **40 Mbps Upstream**,
- in “2,2MHz vectoring zone 3” of up to **15 Mbps Upstream**,
- in “1,1MHz vectoring zone 1” of up to **40 Mbps Upstream**,
- in “1,1MHz vectoring zone 2” of up to **40 Mbps Upstream**,
- in “1,1MHz vectoring zone 3” of up to **15 Mbps Upstream**.

<sup>2</sup> Further study is required to determine the speeds to be communicated as defined in the BIPT decision of 2 May 2017 with regard to communications on the speeds of fixed and mobile broadband connections.

## 7. List of new line profiles<sup>3</sup>

The new line profiles presented hereafter already use the new definition which is introduced with the addendum “Line Profile numbering rationalization” submitted for approval to the BIPT on 12/05/2017.

Although engineering design is not entirely finished yet, Proximus can already today reasonably present you the definition of 154 new line profiles in scope of the present addendum which will be available as from 23/10/2017<sup>4</sup> for VDSL2-lines equipped with a whitelisted vector-compliant modem.

LP	Upstream Max Net Data Rate	Upstream Max Bit Rate	Downstream Max Net Data Rate	Downstream Max Bit Rate
LP004	40.000	n/a	100.000	n/a
LP005	35.000	n/a	100.000	n/a
LP006	30.000	n/a	100.000	n/a
LP007	25.000	n/a	100.000	n/a
LP009	17.500	n/a	100.000	n/a
LP011	12.500	n/a	100.000	n/a
LP021	40.000	n/a	85.000	n/a
LP022	35.000	n/a	85.000	n/a
LP023	30.000	n/a	85.000	n/a
LP024	25.000	n/a	85.000	n/a
LP026	17.500	n/a	85.000	n/a
LP028	12.500	n/a	85.000	n/a
LP038	40.000	n/a	70.000	n/a
LP039	35.000	n/a	70.000	n/a
LP040	30.000	n/a	70.000	n/a
LP041	25.000	n/a	70.000	n/a
LP043	17.500	n/a	70.000	n/a
LP045	12.500	n/a	70.000	n/a
LP055	40.000	n/a	60.000	n/a
LP056	35.000	n/a	60.000	n/a
LP057	30.000	n/a	60.000	n/a
LP058	25.000	n/a	60.000	n/a
LP060	17.500	n/a	60.000	n/a
LP062	12.500	n/a	60.000	n/a
LP070	1.500	n/a	60.000	n/a
LP071	1.000	n/a	60.000	n/a
LP077	n/a	2.264	60.000	n/a
LP079	40.000	n/a	50.000	n/a

<sup>3</sup> The definitive values of the Line Profiles have been updated on 11 September 2017. Changes are highlighted in turquoise.

<sup>4</sup> Proximus might postpone this date in order to guarantee the quality of the deliverables

LP	Upstream Max Net Data Rate	Upstream Max Bit Rate	Downstream Max Net Data Rate	Downstream Max Bit Rate
LP080	35.000	n/a	50.000	n/a
LP081	30.000	n/a	50.000	n/a
LP082	25.000	n/a	50.000	n/a
LP084	17.500	n/a	50.000	n/a
LP086	12.500	n/a	50.000	n/a
LP094	1.500	n/a	50.000	n/a
LP095	1.000	n/a	50.000	n/a
LP101	n/a	2.264	50.000	n/a
LP103	40.000	n/a	40.000	n/a
LP104	35.000	n/a	40.000	n/a
LP105	30.000	n/a	40.000	n/a
LP106	25.000	n/a	40.000	n/a
LP108	17.500	n/a	40.000	n/a
LP110	12.500	n/a	40.000	n/a
LP118	1.500	n/a	40.000	n/a
LP119	1.000	n/a	40.000	n/a
LP125	n/a	2.264	40.000	n/a
LP127	40.000	n/a	30.000	n/a
LP128	35.000	n/a	30.000	n/a
LP129	30.000	n/a	30.000	n/a
LP130	25.000	n/a	30.000	n/a
LP132	17.500	n/a	30.000	n/a
LP134	12.500	n/a	30.000	n/a
LP142	1.500	n/a	30.000	n/a
LP143	1.000	n/a	30.000	n/a
LP144	800	n/a	30.000	n/a
LP150	n/a	2.264	30.000	n/a
LP152	15.000	n/a	25.000	n/a
LP153	12.500	n/a	25.000	n/a
LP154	10.000	n/a	25.000	n/a
LP155	8.000	n/a	25.000	n/a
LP156	6.000	n/a	25.000	n/a
LP157	5.000	n/a	25.000	n/a
LP158	4.000	n/a	25.000	n/a
LP159	3.000	n/a	25.000	n/a
LP160	2.000	n/a	25.000	n/a
LP161	1.500	n/a	25.000	n/a
LP162	1.000	n/a	25.000	n/a
LP163	800	n/a	25.000	n/a
LP164	15.000	n/a	22.000	n/a

LP	Upstream Max Net Data Rate	Upstream Max Bit Rate	Downstream Max Net Data Rate	Downstream Max Bit Rate
LP165	12.500	n/a	22.000	n/a
LP166	10.000	n/a	22.000	n/a
LP167	8.000	n/a	22.000	n/a
LP168	6.000	n/a	22.000	n/a
LP169	5.000	n/a	22.000	n/a
LP170	4.000	n/a	22.000	n/a
LP171	3.000	n/a	22.000	n/a
LP172	2.000	n/a	22.000	n/a
LP173	1.500	n/a	22.000	n/a
LP174	1.000	n/a	22.000	n/a
LP175	800	n/a	22.000	n/a
LP176	15.000	n/a	20.000	n/a
LP177	12.500	n/a	20.000	n/a
LP178	10.000	n/a	20.000	n/a
LP179	8.000	n/a	20.000	n/a
LP180	6.000	n/a	20.000	n/a
LP185	1.500	n/a	20.000	n/a
LP186	1.000	n/a	20.000	n/a
LP187	800	n/a	20.000	n/a
LP188	15.000	n/a	18.000	n/a
LP189	12.500	n/a	18.000	n/a
LP190	10.000	n/a	18.000	n/a
LP191	8.000	n/a	18.000	n/a
LP192	6.000	n/a	18.000	n/a
LP193	5.000	n/a	18.000	n/a
LP194	4.000	n/a	18.000	n/a
LP195	3.000	n/a	18.000	n/a
LP196	2.000	n/a	18.000	n/a
LP197	1.500	n/a	18.000	n/a
LP198	1.000	n/a	18.000	n/a
LP199	800	n/a	18.000	n/a
LP200	15.000	n/a	16.500	n/a
LP201	12.500	n/a	16.500	n/a
LP202	10.000	n/a	16.500	n/a
LP203	8.000	n/a	16.500	n/a
LP204	6.000	n/a	16.500	n/a
LP208	2.000	n/a	16.500	n/a
LP209	1.500	n/a	16.500	n/a
LP210	1.000	n/a	16.500	n/a
LP211	800	n/a	16.500	n/a

LP	Upstream Max Net Data Rate	Upstream Max Bit Rate	Downstream Max Net Data Rate	Downstream Max Bit Rate
LP212	15.000	n/a	14.500	n/a
LP213	12.500	n/a	14.500	n/a
LP214	10.000	n/a	14.500	n/a
LP215	8.000	n/a	14.500	n/a
LP216	6.000	n/a	14.500	n/a
LP217	5.000	n/a	14.500	n/a
LP218	4.000	n/a	14.500	n/a
LP219	3.000	n/a	14.500	n/a
LP220	2.000	n/a	14.500	n/a
LP221	1.500	n/a	14.500	n/a
LP222	1.000	n/a	14.500	n/a
LP223	800	n/a	14.500	n/a
LP224	2.000	n/a	12.000	n/a
LP225	1.500	n/a	12.000	n/a
LP226	1.000	n/a	12.000	n/a
LP227	800	n/a	12.000	n/a
LP228	2.000	n/a	11.000	n/a
LP229	1.500	n/a	11.000	n/a
LP230	1.000	n/a	11.000	n/a
LP231	800	n/a	11.000	n/a
LP253	n/a	2.264	n/a	30.064
LP261	n/a	2.264	n/a	25.064
LP269	n/a	2.264	n/a	20.064
LP272	n/a	704	n/a	20.064
LP273	n/a	576	n/a	20.064
LP274	n/a	516	n/a	20.064
LP280	n/a	2.264	n/a	16.564
LP286	n/a	10.064	n/a	14.564
LP287	n/a	8.064	n/a	14.564
LP291	n/a	2.264	n/a	14.564
LP297	n/a	10.064	n/a	12.064
LP298	n/a	8.064	n/a	12.064
LP299	n/a	6.064	n/a	12.064
LP302	n/a	2.264	n/a	12.064
LP308	n/a	6.064	n/a	10.100
LP311	n/a	2.264	n/a	10.100
LP317	n/a	6.064	n/a	9.564
LP320	n/a	2.264	n/a	9.564
LP326	n/a	6.064	n/a	7.064
LP335	n/a	4.064	n/a	5.064

LP	Upstream Max Net Data Rate	Upstream Max Bit Rate	Downstream Max Net Data Rate	Downstream Max Bit Rate
LP336	n/a	3.064	n/a	5.064
LP337	n/a	2.264	n/a	5.064
LP338	n/a	2.064	n/a	5.064
LP339	n/a	1.064	n/a	5.064
LP340	n/a	704	n/a	5.064
LP342	n/a	516	n/a	5.064

The definitive number and parameters of the new line profiles will be communicated by Proximus at the latest 6 weeks before the launch date of the service.

## 8. Ordering and provisioning process

The new provisioning line profiles do not have any impact on the ordering process, nor on the communication flows during ordering and provisioning of new WBA VDSL2 lines: no new XML, no new action type, and no new fields in the XML messages.

More specifically the communication of the new Vectoring Provisioning Line Profiles will be performed through the XML BGCOUT9, BGCOUT10 & BGCOUT12 messages and remains unchanged.

## 9. Borderline cases

The new vectoring deployment rules mainly use the attenuation documented on the line connected to a vectored ROP in order to increase the number of lines eligible for vectoring provisioning profiles. As the new vectoring deployment rules are only used for newly provisioned VDSL2 lines on vectored ROPs after 23/10/2017, an opportunity exists to reassess with the new “vectoring deployment rules table” all existing VDSL2 lines equipped with a whitelisted vector-compliant modem

1. provisioned on a 1,1MHz or 2,2MHz vectored ROP before 23/10/2017;
2. or provisioned on a ROP before the activation of 1,1MHz or 2,2MHz vectoring on that ROP.

Therefore, as from 23/10/2017, a reassessment will be performed of the WBA VDSL2 lines connected on 1,1MHz and 2,2MHz vectored ROPs which are equipped with a whitelisted vector-compliant modem.

Information will be provided through the standard “planned works” process, in e-TS (Netevent), listing all ROP-related border lines per OLO, at least 48 hours in advance.

Targeted service interruption per customer is estimated to 3 minutes.

- Intervention window:
  - Monday 00h00 – 06h00 AM.
  - Tuesday – Friday: 6h – 7h15 AM.

More specifically, the communication of the new Vectoring Provisioning Line Profiles will be performed with BGCOUT12 XML messages and remains unchanged.

## 10. Other operational impacts

### 10.1 E-tools

#### 10.1.1 XDSL availability tool (web interface)

The XDSL availability tool will provide the maximum downstream/upstream Maximum Net Data rate associated with the new vectoring provisioning line profile on a specific address or existing line by returning the new maximum downstream/upstream Maximum Net Data rate (see above the summary table with the new deployment rules).

#### 10.1.2 XDSL availability tool (XML interface)

The (new) maximum upstream and downstream Maximum Net Data rate (where applicable) will be returned in the same way as today in the XML-pre-qualification response.  
The new DLM line profiles **do not have any impact on the XDSL availability tool (web interface and XML interface)**.

### 10.2 Delivery, repair & e-troubleshooting

The new line profiles will be delivered under the same conditions as the WBA VDSL2 product.  
The repair & e-troubleshooting procedures remain unchanged .

### 10.3 TBF

The communication of the new line profiles through the TBF XML remains unchanged.  
Launching a TBF on a line configured with a DLM profile does not change the applied DLM profile unless there are transmission quality errors and/or stability problems after the resynchronisation in which case the corresponding provisioning profile will be reconfigured as first step.

### 10.4 DLM

Proximus will as from 23/10/2017 combine the effect of DLM and vectoring on VDSL2 lines located in Vectoring zones 4 and 5 (as described above).

### 10.5 Pricing

No impact on WBA-VDSL2 pricing.

## 11. Adaptation on WBA documents

The sections of the WBA offer documents which are impacted by this Addendum are indicated in the subsequent paragraphs (changes are highlighted in turquoise). Those adaptations refer to the consolidated version of the WBA VDSL2 reference offer (version 14), published on the Proximus website, at [http://www.proximuswholesale.be/en/id\\_wba\\_vdsl2/public/access/regulated-services/wba-vdsl-2.html](http://www.proximuswholesale.be/en/id_wba_vdsl2/public/access/regulated-services/wba-vdsl-2.html).

Those adaptations already take into consideration the changes proposed in the chapter 7 of the addendum “Line Profile numbering rationalization” submitted for approval to the BIPT on 12/05/2017.

### WBA Main Body

In section 4.12. “VDSL2 deployment rules” the tables applicable to End-User lines connected to a LEX or LDC or connected to a non-vectorized ROP, or connected to a vectorized ROP must be updated with the following values :

For VDSL2 End-User lines connected to a LEX or LDC or connected to a non-vectorized ROP:

No change compared with the values proposed in the chapter 7 of the addendum “Line Profile numbering rationalization” submitted for approval to the BIPT on 12/05/2017.

For VDSL2 End-User lines connected to a vectorized ROP with 2.2 MHz Vectoring activated:

Att <sub>Loop</sub> [dB]	Length <sub>Loop</sub> [m]	Line Profile name
<0,4	<900	LP042 LP040 <sup>5</sup>
<0,7	<1000 <1.200	LP087 LP085 <sup>6</sup>
<1	<1.400 <1.700	LP138 LP135 <sup>7</sup>
<1,4	<1.400 <2.300	LP304 LP196
<1,6	<1.600 <2.700	LP323 LP225
<0,6	<600	LP275 <sup>8</sup>
<0,6	<600	LP288 <sup>9</sup>

<sup>5</sup> Vectoring Provisioning profiles or subsequent repair profiles will be configured on End-User lines equipped with a (whitelisted) vector-compliant CPE. Lines equipped with a vector-friendly CPE will be configured with a legacy provisioning profile or a subsequent repair profile.

<sup>6</sup> Vectoring Provisioning profiles or subsequent repair profiles will be configured on End-User line equipped with a (whitelisted) vector-compliant CPE. Lines equipped with a vector-friendly CPE will be configured with a legacy provisioning profile or a subsequent repair profile.

<sup>7</sup> Vectoring Provisioning profiles or subsequent repair profiles will be configured on End-User line equipped with a (whitelisted) vector-compliant CPE. Lines equipped with a vector-friendly CPE will be configured with a legacy provisioning profile or a subsequent repair profile.

<sup>8</sup> The profile LP715 LP275 (and the related profiles LP716 LP276, LP717 LP288, LP718 LP300) enable OLOs to offer a WBA service with higher upstream. These profiles will only be provisioned if the OLO made a specific request to order the “WBA VDSL2 high Upstream” product. The details on ordering are available in the “WBA VDSL2 XML content description” document, on the OLO personal page.

<sup>9</sup> The profile LP717 LP288 (and the related profiles LP718 LP300 & LP740 LP329) enables OLOs to offer a WBA service with symmetric profiles. These profiles will only be provisioned if the OLO made a specific request to order the “WBA VDSL2 symmetric” product. The details on ordering are available in the “WBA VDSL2 XML content description” document, on the OLO personal page.



<1	<1.000	LP329
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For VDSL2 End-User lines connected to a vectored ROP with 1,1 MHz Vectoring activated (\*)

Att <sub>Loop</sub> [dB]	Length <sub>Loop</sub> [m]	Line Profile name
<0,5	<900	LP042 LP040 <sup>7</sup>
<0,7	<1000 <1.200	LP087 LP085 <sup>8</sup>
<1,1	<1.400 <1.800	LP138 LP135 <sup>9</sup>
<1,4	<1.400 <2.300	LP304 LP172
<1,6	<1.600 <2.700	LP323 LP197
<0,6	<600	LP275 <sup>10</sup>
<0,6	<600	LP288 <sup>11</sup>
<1	<1.000	LP329

(\*) "These deployment rules are only applicable for new lines provisioned as from 01/07/2017 onwards on ROPs that became activated for 1,1 MHz Vectoring."

## WBA VDSL2, Annex 2: "Technical specifications"

In section 7.2 "DSL profiles at uni (Layer1)" the new list of line profiles (using the new definition of line profiles) must replace the current table :

The new profiles defined in the chapter 7 of the present addendum must be added to the table proposed in the chapter 3.3 of the addendum "Line Profile numbering rationalization" submitted to the BIPT for approval on 12/05/2017.

\*\*\* End of the document \*\*\*