

TR-114

VDSL2 Performance Test Plan

Issue: 1 Corrigendum 1
Issue Date: March 2010

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Issue History

Issue Number	Issue Date	Issue Editor	Changes
1 Corrigendum 1	March 2010	Aleksandra Kozarev, Lantiq	Corrigenda items for TR-114 Issue 1

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Executive Summary

The document contains corrections to TR-114 Issue 1.

1 Purpose

1.1 Purpose

The corrections specified in the following sections apply to TR-114 Issue 1.

2 Correction to Section 8 Physical Layer Test Cases

Delete Section 8.4 Verification of downstream fine gains.

3 Corrections to DPBO Configuration Parameters for BA8c

Downstream power back-off configuration parameters E-side electrical length (DPBOESEL) and E-side cable model (DPBOESCMA, DPBOESCMB and DPBOESCMC) for BA8c_D&UPBO band-profile REIN testing, SHINE testing and combined threat testing shall be referenced at 1 MHz instead of 300 kHz.

3.1 Corrections to Table 95

Update Table 95 as follows:

Table 95: Common Line Settings for BA8c_D&UPBO Band Profile REIN Testing

Parameter	Setting	Description
All parameters but those specified below	Value as specified in Table 11	
DPBOEPSD	ADSL2plus Annex A	PSD mask that is assumed to be permitted at the exchange
DPBOESEL	27dB@1MHz	E-side electrical length
DPBOESCMA	0.421875	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMA (f^0)—G.997.1 form = 364
DPBOESCMB	0.8125	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMB ($f^{0.5}$)—G.997.1 form = 464
DPBOESCMC	0.441406	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMC (f)—G.997.1 form = 369
DPBOMUS	-101.5 dBm/Hz	Minimum usable receive PSD mask
DPBOESCMA	0.4218 <u>0.1719</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMA (f^0)
DPBOESCMB	0.8136 <u>0.644453</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMB ($f^{0.5}$)
DPBOESCMC	0.4417 <u>0.18359</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMC (f)
DPBOMUS	-101.5 dBm/Hz	Minimum usable receive signal PSD
DPBOFMIN	138 kHz	Minimum frequency from which on the DPBO SHALL be applied
DPBOFMAX	2208 kHz	Maximum frequency up to which the DPBO SHALL be applied
UPBOKLF	0	Force CO-MIB electrical loop length (means that kl_0 is estimated during training)
UPBOKL	estimated during training	Upstream electrical loop length (kl_0)
UPBOA US0	40.00	A and B values US band 0 (these values imply no UPBO)
UPBOB US0	0	
UPBOA US1	60	A value US band 1
UPBOB US1	17	B value US band 1

NOTE: the values of DPBOESCMA, B and C are referred to a PE 0.4mm loop @ 300kHz 1 MHz. Values that are configured according to G.997.1 SHALL be rounded to the nearest scalar value.

3.2 Corrections to Table 104

Update Table 104 as follows:

Table 104: Common line settings for BA8c_D&UPBO band-profile SHINE testing

Parameter	Setting	Description
All parameters but those specified below	Value as specified in Table 11	
DPBOEPSD	ADSL2plus Annex A	PSD mask that is assumed to be permitted at the exchange
DPBOESEL	27dB@1MHz	E-side electrical length
DPBOESCMA	0.421875	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMA (f^0) – G.997.1 form = 364
DPBOESCMB	0.8125	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMB ($f^{0.5}$) – G.997.1 form = 464
DPBOESCMC	0.441406	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMC (f) – G.997.1 form = 369
DPBOMUS	-101.5 dBm/Hz	Minimum usable receive PSD mask
DPBOESCMA	0.4218 <u>0.1719</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMA (f^0)
DPBOESCMB	0.8136 <u>0.644453</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMB ($f^{0.5}$)
DPBOESCMC	0.4417 <u>0.18359</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMC (f)
DPBOMUS	-101.5 dBm/Hz	Minimum usable receive signal PSD
DPBOFMIN	138 kHz	Minimum frequency from which on the DPBO SHALL be applied
DPBOFMAX	2208 kHz	Maximum frequency up to which the DPBO SHALL be applied
UPBOKLF	0	Force CO-MIB electrical loop length (means that kl_0 is estimated during training)
UPBOKL	estimated during training	Upstream electrical loop length (kl_0)
UPBOA US0	40.00	A and B values US band 0 (these values imply no UPBO)
UPBOB US0	0	
UPBOA US1	60	A value US band 1
UPBOB US1	17	B value US band 1
NOTE: the values of DPBOESCMA, B and C are referred to a PE 0.4mm loop @ <u>300kHz</u> <u>1 MHz</u> . Values that are configured according to G.997.1 SHALL be rounded to the nearest scalar value.		

3.3 Corrections to Table 113

Update Table 113 as follows:

Table 113: Common line setting for BA8c_D&UPBO band-profile combined threat testing

Parameter	Setting	Description
All parameters but those specified below	Value as specified in Table 11	
DPBOEPSD	ADSL2plus Annex A	PSD mask that is assumed to be permitted at the exchange
DPBOESEL	24dB@300kHz 42dB@1MHz	E-side electrical length
DPBOESCMA	0.421875	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMA (f^0) – G.997.1 form = 364
DPBOESCMB	0.8125	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMB ($f^{0.5}$) – G.997.1 form = 464
DPBOESCMC	0.441406	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMC (f) – G.997.1 form = 369
DPBOMUS	-101.5 dBm/Hz	Minimum usable receive PSD mask
DPBOESCMA	0.4218 <u>0.1719</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMA (f^0)
DPBOESCMB	0.8136 <u>0.64453</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMB ($f^{0.5}$)
DPBOESCMC	0.4417 <u>0.18359</u>	Model of the frequency dependent loss of E-side cable: scalars DPBOESCMC (f)
DPBOMUS	-101.5 dBm/Hz	Minimum usable receive signal PSD
DPBOFMIN	138 kHz	Minimum frequency from which on the DPBO SHALL be applied
DPBOFMAX	2208 kHz	Maximum frequency up to which the DPBO SHALL be applied
UPBOKLF	0	Force CO-MIB electrical loop length (means that kl_0 is estimated during training)
UPBOKL	estimated during training	Upstream electrical loop length (kl_0)
UPBOA US0	40.00	A and B values US band 0 (these values imply no UPBO)
UPBOB US0	0	
UPBOA US1	60	A value US band 1
UPBOB US1	17	B value US band 1
NOTE: the values of DPBOESCMA, B and C are referred to a PE 0.4mm loop @ 300kHz <u>1 MHz</u> . Values that are configured according to G.997.1 SHALL be rounded to the nearest scalar value.		

4 Correction to Table 50 (REIN test for AA8d)

In the Expected Test Result in Table 50, the pass/fail criteria shall be based on the reported number of downstream errored seconds (ES) recorded in the Method of Procedure, step 4.

Update Table 50 as follows:

Table 50: REIN testing for AA8d

Test Configuration	<ol style="list-style-type: none"> 1. Configure the SUT in AA8d_RA_I_096_056 profile-line combination, with the UPBO settings from Table 36. 2. The DSLAM and CPE are connected in turn through 26 AWG straight loops: 1200ft and 4000ft. 3. The crosstalk noise impairment as defined for the rate adaptive tests (Table 46) shall be applied at both DSLAM and CPE. 4. The REIN noise impairment shall be applied at the CPE in addition to the crosstalk noise. 5. Additional test conditions: optional OLR functionality (SRA, SOS) SHALL NOT be used
Method of Procedure	<p>For each INP_min setting, do the following steps:</p> <ol style="list-style-type: none"> 1. Inject the crosstalk impairment and let the system train. 2. Wait for 3 minutes for bitswaps to settle. 3. Record the net data rate and reported noise margin. 4. Apply the REIN impairment for 2 minutes and record the number of ES. 5. Record the net data rate and reported noise margin.
Expected Test Result	<p>For each loop distance <u>the</u> :</p> <p>1. Reported number of downstream code violations <u>ES SHALL be ≤</u> 2 per minute</p>

5 Corrections to the Margin Verification Tables 89, 92 and 94

Anticipated net data rates in table 89, 92 and 94 shall be aligned with the performance objectives for the following profile-line combinations:

- BA8b_RA_F_150_150 (Table 57)
- BA12a_RA_F_150_150 (Table 59)
- BA17a_D&UPBO_RA_F_150_150 (Table 73)

5.1 Corrections to Table 89

Update Table 89 as follows:

Table 89: Downstream Margin verification for VDSL2oPOTS (0.4mm PE)

Profile-line combination	Length (m)	Crosstalk	DS net data rate (kbps)		Test Time (minutes)	SES Count	CRC Count	Estimated BER	Pass/Fail
			Anticipated	Achieved (test start) (test end)					
BA8b_RA_F_150_150	300	n_BA8b	≥ 40712		5				
	1200		≥ 47880 <u>17328</u>		5				
	1800		≥ 8380		5				
BA8b_RA_I_150_150	300	n_BA8b	≥ 37928		5				
	1200		≥ 16828		5				
	1800		≥ 7792		10				
BA12a_RA_F_150_150	150	n_BA12a	≥ 44728		5				
	1050		≥ 20172		5				
	1500		≥ 43552 <u>13096</u>		5				
BA12a_RA_I_150_150	150	n_BA12a	≥ 42696		5				
	1050		≥ 19956		5				
	1500		≥ 12584		10				
BA17a_RA_F_150_150	150	n_BA17a	≥ 54892		5				
	450		≥ 38712		5				
	900		≥ 23960		5				
BA17a_RA_I_150_150	150	n_BA17a	≥ 53256		5				
	450		≥ 39144		5				
	900		≥ 23360		5				
BA17a_D&UPBO_RA_F_150_150	150	n_BA17a_D&UPBO	≥ 51336		5				
	450		≥ 39348 <u>37744</u>		5				
	900		≥ 19700		5				
BA17a_D&UPBO_RA_I_150_150	150	n_BA17a_D&UPBO	≥ 51728		5				
	450		≥ 37924		5				
	900		≥ 18828		5				

5.2 Correction to Table 92

Update Table 92 as follows:

Table 92: Upstream margin verification for VDSL2oPOTS (0.4mm PE)

Profile-line combination	Length (m)	Crosstalk	US net data rate (kbps)		Test Time (minutes)	SES Count	CRC Count	Estimated BER	Pass/Fail
			Anticipated	Achieved (test start) (test end)					
BA8b_RA_F_150_150	300	n_BA8b	≥ 8292		5				
	750		≥ 5760		5				
	1200		≥ 328		40 (note 3)				
BA8b_RA_I_150_150	300	n_BA8b	≥ 7888		10				
	750		≥ 5792		15				
	1200		≥ 368		55 (note 2)				
BA12a_RA_F_150_150	150	n_BA12a	≥ 23056		5				
	1050		≥ 24122184		15				
	1500		≥ 640		40				
BA12a_RA_I_150_150	150	n_BA12a	≥ 21112		5				
	1050		≥ 2216		35				
	1500		≥ 632		55 (note 3)				
BA17a_RA_F_150_150	150	n_BA17a	≥ 28728		5				
	450		≥ 19536		5				
	900		≥ 3560		10				
BA17a_RA_I_150_150	150	n_BA17a	≥ 26724		5				
	450		≥ 19020		5				
	900		≥ 3688		20				
BA17a_D&UPBO_RA_F_150_150	150	n_BA17a_D&UPBO	≥ 19596		5				
	450		≥ 16172		5				
	900		≥ 3968		10				
BA17a_D&UPBO_RA_I_150_150	150	n_BA17a_D&UPBO	≥ 20080		5				
	450		≥ 15748		5				
	900		≥ 4184		20				

5.3 Corrections to Table 94

Update Table 94 as follows:

Table 94: Upstream Margin Verification for VDSL2oISDN (0.4mm PE)

Profile-line combination	Length (m)	Crosstalk	US net data rate (kbps)		Test Time (minutes)	SES Count	CRC Count	Estimated BER	Pass/Fail
			Anticipated	Achieved (test start) (test end)					
BB8b_RA_F_150_150	300	n_BB8b	≥ 88328616		5				
	750		≥ 6208		5				
	1200		≥ 616		45				
BB8b_RA_I_150_150	300	n_BB8b	≥ 8284		10				
	750		≥ 6128		15				
	1200		≥ 600		60 (note 5)				
BB12a_RA_F_150_150	450	n_BB12a	≥ 15804		5				
	1050		≥ 23202088		15				
	1500		≥ 652		40				
BB12a_RA_I_150_150	450	n_BB12a	≥ 15316		5				
	1050		≥ 2600		30				
	1500		≥ 680		50 (note 5)				
BB17a_RA_F_150_150	450	n_BB17a	≥ 14644		5				
	1050		≥ 22642056		15				
	1500		≥ 648		40				
BB17a_RA_I_150_150	450	n_BB17a	≥ 14228		5				
	1050		≥ 2536		30				
	1500		≥ 684		50 (note 5)				
BB17a_D&UPBO_RA_F_150_150	150	n_BB17a_D&UPBO	≥ 16668		5				
	1050		≥ 28002584		10				
	1500		≥ 772		35				
BB17a_D&UPBO_RA_I_150_150	150	n_BB17a_D&UPBO	≥ 16152		5				
	1050		≥ 3016		25				
	1500		≥ 756		45 (note 5)				

6 Corrections to Table 116 and 118

Target margin values in tables 116 and 118 in section B.16/TR-114 are not captured correctly.

6.1 Corrections to Table 116

Update Table 116 as follows:

Table 116: Combined noise impairment 1, rate adaptive profile

Test profile BA8c_D&UPBO RA_HI_150_150 with INPmin 16, max delay = 32ms											
loop length (m, TP100)						Measured					Pass / Fail
	Target Margin D/S (dB)	Target Margin US (dB)	Modem trained and did not lose sync? (Y/N)	Expected DS sync rate	Expected US sync rate	DS sync rate (kbps)	Initial DS Noise Margin, (dB)	DS Errored Seconds	US sync rate (kbps)	Initial US Noise Margin, (dB)	
500	96	6		11000	4000						
900	9	6		6000	3500						

6.2 Corrections to Table 118

Update Table 118 as follows:

Table 118: Combined noise impairment 2, rate adaptive profile

Test profile BA8c_D&UPBO RA_HI_150_150 with INPmin 16, max delay = 32ms											
loop length (m, TP100)						Measured					Pass / Fail
	Target Margin DS (dB)	Target Margin US (dB)	Modem trained and did not lose sync? (Y/N)	Expected DS sync rate	Expected US sync rate	DS sync rate (kbps)	Initial DS Noise Margin, (dB)	DS Errored Seconds	US sync rate (kbps)	Initial US Noise Margin, (dB)	
500	6	6		11500	3500						
900	6	6		12000	3000						

End of Broadband Forum Technical Report TR-114