UNH-IOL
DSL Consortium
Broadband Forum TR-114 (TR114)Report Revision 1.0

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February 28, 2013

Joe Vendor
Some Company
15 Middle of No Where Road
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Mr. Vendor,

Enclosed are the results from the Broadband Forum TR-114 Test Suite performed on the Some CPE Company COE_MODEL Modem. The testing was performed according to Issue 2 of the Broadband Forum TR-114, which may be downloaded from the following address:

http://www.broadband-forum.org/technical/download/TR-114.pdf

Sample report If you have any questions about the test procedures or results, please contact me via e-mail at lylavoie@iol.unh.edu, or by phone at +1-603-674-2755.
Sincerely,

Lincoln Lavoie

Report reviewed by

Yuriy Kharin

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Result Key

Result	Interpretation
PASS / P	The device under test (DUT) exhibited conformant behavior.
FAIL / F	The DUT exhibited non-conformant behavior.
PSP	Performance sum pass. The DUT passed according to the performance sum metrics defined in TR-114.
RTC	(Refer-to-Comments) - From the observations a valid pass or fail could not be determined. Additional information explaining the situation is included.
NA	(Not Applicable) - The DUT does not support the technology required to perform this test.
NT	(Not Tested) - This test was not performed. Please refer to comments for a detailed explanation.
NC	(No Connect) - (No Connect) — The CPE/CO failed to train for the respective test point, no further data was collected for the test point

Test Summary

Test Section	Test Name	Results
ANNEX A PHYSICAL LAYER TEST CASES FOR G.993.2 ANNEX A		
ANNEX A.2 – PERFORMANCE TESTING FOR BAND-PROFILE AA8d		
A.2.1	Rate adaptive tests with straight loops for AA8d_RA_I_096_056	PASSED
A.2.2	Rate adaptive tests with bridged tap loops for AA8d_RA_I_096_056	PASSED
A.2.3	Fixed rate tests with straight loops for AA8d_FX_I_027_002 and AA8d_FX_I_014_001	PASSED
ANNEX A.6 – PERFORMANCE TESTING FOR BAND-PROFILE AA8a		
A.6.1	Rate adaptive tests with straight loops for AA8a_RA_I_098_058	PASSED
A.6.2	Rate adaptive tests with bridged tap loops for AA8a_RA_I_098_058	PASSED
ANNEX A.7 – PERFORMANCE TESTING FOR BAND-PROFILE AA12a		
A.7.1	Rate adaptive tests with straight loops for AA12a_RA_I_098_058	PASSED
A.7.2	Rate adaptive tests with bridged tap loops for AA12a_RA_I_098_058	PASSED
ANNEX A.8 – PERFORMANCE TESTING FOR BAND-PROFILE AA17a		
A.8.1	Rate adaptive tests with straight loops for AA17a_RA_I_150_096	PASSED
A.8.2	Rate adaptive tests with bridged tap loops for AA17a_RA_I_150_096	PASSED

Equipment List

1. CPE: Some CPE Company COE_MODEL Modem (IOL ID: 00000)
   - Chipset make: **Some Chipset Company**
   - Chipset model: **CHIPSET_MODEL**
   - Chipset firmware version: **FIRMWARE_VERSION**
   - System software version: **SOFTWARE_VERSION**
   - [illegible] was set to train in **multimode**.
2. DSLAM: Some DSLAM Company DSLAM_MODEL
   - Line card: **Some DSLAM Company LINE-CARD_MODEL**; port **1** (IOL ID: 00000)
   - Line-card [illegible] version: **SOFTWARE_VERSION**
   - Chipset make: **Some Chipset Company**
   - Chipset model: **CHIPSET_MODEL**
   - Chipset firmware version: **CHIPSET_FIRMWARE_VERSION**
   - Net data rates were taken from the VTU-O telnet configuration interface
3. Loop simulator: Spirent Communications DLS 9130 - North American VDSL2 Wireline Simulator
   - Loop simulator serial #: **300035** **300037**
   - Compensated loops **were not** applied in this setup
4. Impairment generator: Spirent Communications DLS 9500 - VDSL 4-output Custom Noise Generator
   - Spirent Communications noise file package **5B4[illegible] 1.1**
   - Compensated noise levels **were not** applied in this test set
5. Coupling circuit: Spirent Communications DLS 5404

Test Section	Results
A.2.1 – Rate adaptive tests with straight loops (AK Section ID: 2664)	PASSED
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in profile AA8d under combinations of -140 dBm/Hz AWGN, self and alien crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	

Results

Test Profile AA8d_RA_I_096_056

Loop Length (kft) (26 AWG)	Forced kl0 value	Upstream Sync Rate Expected	Upstream Sync Rate Measured	Upstream Pass/Fail	Upstream Noise Margin, Rept. (dB)	Downstream Sync Rate Expected	Downstream Sync Rate Measured	Downstream Pass/Fail	Downstream Noise Margin, Rept. (dB)
Noise Profile: 24-self + -140 dBm/Hz AWGN									
300	2.32	[illegible]	7008	P	5.9	48000	50590	P	6.1
600	[illegible]	[illegible]	6533	P	5.9	43400	46065	P	6.1
900	6.97	[illegible]	[illegible]	P	5.9	40400	43099	P	6.1
1200	9.29	5600	[illegible]	P	6.0	38200	40895	P	6.1
1600	12.39	[illegible]	6059	P	6.0	36200	38730	P	6.1
2000	15.48	540[illegible]	5836	[illegible]	5.9	34100	36840	P	6.1
2400	18.58	5300	[illegible]	P	[illegible]	31400	34571	P	6.1
2800	21.68	4800	[illegible]	P	6.0	26300	30715	P	6.1
3200	24.78	3200	415[illegible]	P	5.9	22300	26186	P	6.3
3600	27.88	1400	2503	P	[illegible]	[illegible]0300	23791	P	6.3
4000	30.97	800	1062	P	[illegible]	[illegible]500	20357	P	6.2
Noise Profile: 12-self + 12 ADSL2p[illegible] [illegible]40 dBm/Hz AWGN									
4500	34.85	700	1039	P	6.[illegible]	1[illegible]	16149	P	6.1
5500	42.59	700	1005	P	6.1	[illegible]	[illegible]787	P	6.1
6500	50.33	500	967	P	6.1	[illegible]5500	871[illegible]	P	6.1
Noise Profile: -140 dBm/Hz [illegible]WGN									
7500	58.08	500	1165	P	6.8	6000	[illegible]78	P	6.3
8500	65.82	500	1126	P	6.7	3500	7028	P	6.2

Test Metrics		
1. Data rate requirement: 29 out of 32 test cases must pass	[illegible] Test[illegible]ses p[illegible]ed	PASS
2. Noise margin requirement: No reported noise margins < 4dB (upstream and downstream)	0 reported [illegible] < [illegible]B	PASS
3. Noise margin requirement: Reported noise margins > 4dB and < 5dB on at most 10% of the test points (upstream and downstream) [3 test points for this table]	0 reported N[illegible] > [illegible]dB and < 5dB	[illegible]SS
4. Noise margin requirement: Reported noise margins > 5dB on at least 90% of test points (upstream and downstream) [29 test points for this table]	32 reported NM > 5dB	PASS
5. Noise margin requirement: Report noise margins > 5.8 dB on at least 75% of downstream test points(downstream only) [12 test points for this table]	16 reported DS NM > 5.8dB	PASS
6. Connectivity requirement: all 32 test cases must connect	0 test cases did not connect	PASS
Comments on Test Results		

Test Section	Results
A.2.2 – Rate adaptive tests with bridged tap loops (AK Section ID: 2665)	PASSED
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in profile AA8d under combinations of -140 dBm/Hz AWGN, self and alien crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	

Results

Test Profile AA8d_RA_I_096_056

Loop l ngtn (ft. 26 G loo	ngtn o. tap e, 6 AWG loop)	Forced kl0 value	Upstream				Downstream			
			Sync Rate			Noise Margin, Rept. (dB)	Sync Rate			Noise Margin, Rept. (dB)
			Expected	Measured	Pass/Fail		Expected	Measured	Pass/Fail	
Noise Profile: 24-self + -140 dBm/Hz AWGN										
300	20	2.3	4500	6010	P	5.9	41000	44521	P	6.2
600	1	4	3500	4243	P	5.9	36500	39759	P	5.9
900	200	7	200	4712	P	5.9	33300	36185	P	6.0
1200	50	9.2	43	4720	P	6.0	32000	34494	P	6.1
2000	100	15.48	00	3797	P	6.0	27500	30921	P	6.1
2800	100	21.	2500	3720	P	5.9	17500	22989	P	6.1
3200	200	24.78	1800		P	6.0	16400	19436	P	6.1
4000	100	30.97	80	71		6.4	12300	16376	P	6.1
Noise Profile: 12-s + 12- DSL2plus + -140 dBm/Hz AWGN										
4500	50	34.85	700	032	P	6.2	8700	12809	P	6.1
5500	100	42.59	600	994	P		4500	8569	P	5.9
6500	100	50.33	600	949		6.0	3500	6237	P	6.2
Noise Profile: -140 dB AWGN										
7500	200	58.08	400	1168	P	7.1	00	8165	P	6.2

Test Metrics		
1. Data rate requirement: 22 out of 24 test cases must pass	Test cases passed	**PASS**
2. Noise margin requirement: No reported noise margins < 4dB (u rea and downstream)	eported NM < 4dB	**PASS**
3. Noise margin requirement: Reported noise margins > 4dB and < 5dB on at most 10% of the test points (upstream and downstream) [2 test points for this table]	eporte NM > 4dB nd < 5dF	**PASS**
4. Noise margin requirement: Reported noise margins > 5dB on at least 90% of test points (upstream and downstream) [22 test points for this table]	24 repor M >	**PASS**
5. Noise margin requirement: Report noise margins > 5.8 dB on at least 75% of downstream test points(downstream only) [9 test points for this table]	12 reported NM > 5.8dB	SS
6. Connectivity requirement: all 24 test cases must connect	0 test cases did not connect	**PASS**
Comments on Test Results		

Test Section	Results
A.2.3 – Fixed rate tests with straight loops (AK Section ID: 2666)	PASSED
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in fixed rate under -140 dBm/Hz AWGN and self crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	

Results

Test Profile AA8d_FX_I_027_002

Loop Length (ft, 26 AWG loop)	Upstream				Downstream			
	Sync Rate			Noise Margin, Rept. (dB)	Sync Rate			Noise Margin, Rept. (dB)
	Expected	Measured	Pass/Fail		Expected	Measured	Pass/Fail	
Noise Profile: 24-self + -140 dBm/Hz AWGN								
2000	2000	2067	P	15.3	27000	27105	P	9.6
2400	2000	2121	P	14.8	27000	27136	P	8.9

Test Profile AA8d_FX_I_014_001

Loop Length (ft, 26 AWG loop)	Upstream				Downstream			
	Sync Rate			Noise Margin, Rept. (dB)	Sync Rate			Noise Margin, Rept. (dB)
	Expected	Measured	Pass/Fail		Expected	Measured	Pass/Fail	
Noise Profile: 24-self + -140 dBm/Hz AWGN								
3600	1000	1092	P	11.5	14000	14104	P	13.7
4000	1000	1074	P	6.4	14000	14134	P	10.6

Test Metrics		
1. Data rate requirement: All 8 test cases must pass.	8 Test cases passed	PASS
2. NM requirement: No noise margins < 5.8dB.	0 reported NM < 5.8 dB	PASS
Comments on Test Results		

Test Section	Results
A.6.1 – Rate adaptive tests with straight loops (AK Section ID: 2667)	PASSED
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in profile AA8a under combinations of -140 dBm/Hz AWGN, self and alien crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	

Results

Test Profile AA8a_RA_I_098_058

Loop Length (kft) (26 AWG)	Forced kl0 value	Upstream Sync Rate Expected	Upstream Sync Rate Measured	Upstream Pass/Fail	Upstream Noise Margin, Rept. (dB)	Downstream Sync Rate Expected	Downstream Sync Rate Measured	Downstream Pass/Fail	Downstream Noise Margin, Rept. (dB)
Noise Profile: 24-self + -140 dBm/Hz AWGN									
300	2.32	[illegible]	9734	P	6.0	41000	50245	P	6.1
600	[illegible]	[illegible]	8653	P	6.0	40500	45762	P	6.0
900	6.97	[illegible]	[illegible]	P	6.0	39000	42809	P	6.1
1200	9.29	[illegible]	[illegible]	P	6.0	37000	40369	P	6.1
1600	12.39	[illegible]	8047	P	6.0	34500	38266	P	6.1
2000	15.48	[illegible]	7844	P	6.0	33000	36384	P	6.0
2400	18.58	[illegible]	[illegible]	P	6.0	24500	33452	P	6.1
2800	21.68	[illegible]	[illegible]	P	6.0	22000	29704	P	5.9
3200	24.78	[illegible]	[illegible]	P	6.0	21200	25158	P	6.1
3600	27.88	[illegible]	[illegible]	P	[illegible]	[illegible]	22383	P	6.3
4000	30.97	[illegible]	[illegible]	P	[illegible]	[illegible]	20113	P	6.1
Noise Profile: 12-self + 12 ADSL2p[illegible] [illegible]40 dBm/Hz AWGN									
4500	34.85	[illegible]	[illegible]	P	[illegible]	[illegible]	[illegible]7655	P	6.1
5500	42.59	[illegible]	[illegible]	P	[illegible]	[illegible]	[illegible]255	P	6.2
6500	50.33	[illegible]	[illegible]	P	[illegible]	[illegible]100	[illegible]	P	6.1
Noise Profile: -140 dBm/Hz [illegible]WGN									
7500	58.08	[illegible]	[illegible]	P	[illegible]	[illegible]	[illegible]	P	[illegible]
8500	65.82	[illegible]	[illegible]	P	[illegible]	[illegible]	[illegible]	P	[illegible]

Test Metrics		
1. Data rate requirement: 29 out of 32 test cases must pass	[illegible] Tes[illegible]ses p[illegible]ed	PASS
2. Noise margin requirement: No reported noise margins < 4dB (upstream and downstream)	0 reported [illegible] < [illegible]B	PASS
3. Noise margin requirement: Reported noise margins > 4dB and < 5dB on at most 10% of the test points (upstream and downstream) [3 test points for this table]	0 reported N[illegible] > [illegible]dB and < 5dB	[illegible]SS
4. Noise margin requirement: Reported noise margins > 5dB on at least 90% of test points (upstream and downstream) [29 test points for this table]	32 reported NM > 5dB	PASS
5. Noise margin requirement: Report noise margins > 5.8 dB on at least 75% of downstream test points(downstream only) [12 test points for this table]	16 reported DS NM > 5.8dB	PASS
6. Connectivity requirement: all 32 test cases must connect	0 test cases did not connect	PASS
Comments on Test Results		

Test Section	Results
A.6.2 – Rate adaptive tests with bridged tap loops (AK Section ID: 2668)	PASSED
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in profile AA8a under combinations of -140 dBm/Hz AWGN, self and alien crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	

Results

Test Profile AA8a_RA_I_098_058

Loop l ngtn (ft. 26 G loc	ngth o. fap 6 AWG loop)	Forced kl0 value	Upstream				Downstream			
			Sync Rate			Noise Margin, Rept. (dB)	Sync Rate			Noise Margin, Rept. (dB)
			Expected	Measured	Pass/Fail		Expected	Measured	Pass/Fail	
Noise Profile: 24-self + -140 dBm/Hz AWGN										
300	20	0	7700	10093	P	6.0	37500	43981	P	6.3
600	[illegible]		[illegible]	7660	P	6.0	35000	39413	P	5.9
900	200	[illegible]	66[illegible]	8026	P	6.0	32000	35816	P	6.1
1200	50	0	[illegible]	7834	P	6.1	30000	34271	P	5.9
1600	100	0	5[illegible]	6826	P	6.0	28000	32322	P	6.0
2000	100	0	[illegible]700	5561	P	6.0	21500	29857	P	6.0
2400	50	0	[illegible]	517[illegible]	P	6.1	18800	26409	P	6.1
2800	100	0	2000	[illegible]	P	5.9	16300	22365	P	6.0
3200	200	0	1700	[illegible]579	P	6.1	14400	18140	P	5.9
3600	50	0	925	1[illegible]	P	6.0	13300	16539	P	6.1
4000	100	0	875	1056	P	[illegible]	11800	16257	P	6.1
Noise Profile: 12-self + 12-AD[illegible]2p[illegible]s + -[illegible]0 dBm/Hz AWGN										
4500	50	0	850	1042	P	[illegible]	9[illegible]00	14277	P	6.1
5500	100	0	830	1005	P	[illegible].2	[illegible]	9880	P	5.7
6500	100	0	790	967	P	6.[illegible]	[illegible]200	8141	P	6.1
Noise Profile: -140 dBm/H[illegible] AWG[illegible]										
7500	200	0	725	1157	P	6.9	2900	9[illegible]	P	6.2
8500	100	0	700	1078	P	6.7	[illegible]00	787	P	6.3

Test Metrics		
1. Data rate requirement: 29 out of 32 test cases must pass	[illegible]2 Test ca[illegible]s passed	PASS
2. Noise margin requirement: No reported noise margins < 4dB (upstream and downstream)	[illegible]epo[illegible] NM[illegible]4dB	PASS
3. Noise margin requirement: Reported noise margins > 4dB and < 5dB on at most 10% of the test points (upstream and downstream) [3 test points for this table]	0 repo[illegible] N[illegible] > 4 and < 5dB	PASS
4. Noise margin requirement: Reported noise margins > 5dB on at least 90% of test points (upstream and downstream) [29 test points for this table]	32 reported NM > [illegible]	PASS
5. Noise margin requirement: Report noise margins > 5.8 dB on at least 75% of downstream test points (downstream only) [12 test points for this table]	15 reported DS NM > 5.8dB	PASS
6. Connectivity requirement: all 32 test cases must connect	0 test cases did not connect	PASS
Comments on Test Results		

Test Section	Results
A.7.1 – Rate adaptive tests with straight loops (AK Section ID: 2664)	**PASSED**
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in profile AA12a under combinations of -140 dBm/Hz AWGN, self and alien crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	
Results	

Test Profile AA12a_RA_I_098_058

Loo[illegible]eng[illegible] ([illegible]26 AW[illegible]op)	[illegible]or[illegible]xl0 value	Upstream				Downstream			
		Sync Rate			Noise Margin, Rept. (dB)	Sync Rate			Noise Margin, Rept. (dB)
		[illegible]xpected	Measured	Pass/Fail		Expected	Measured	Pass/Fail	
N[illegible]ise Profile: 24-self + -140 dBm/Hz AWGN									
300	[illegible]	[illegible]	[illegible]23375	P	6.1	42750	50224	P	6.1
600	[illegible]	[illegible]	[illegible]1078	F	6.1	39000	45286	P	6.0
900	0	1980[illegible]	203[illegible]	P	6.0	37000	42284	P	6.1
1200	0	16300	[illegible]337	P	6.0	36000	40074	P	6.1
1600	0	123[illegible]	16677	P	6.0	34000	37956	P	6.2
2000	0	9800	[illegible]2697	[illegible]	5.9	31500	36485	P	6.1

Test Metrics		
1. Data rate requirement: 11 out of 12 tes[illegible]ses must pass	11 Test cases passed	**PASS**
2. Noise margin requirement: No reported noise marg[illegible]B (upstream and downstream)	0 reported NM < 4dB	**PASS**
3. Noise margin requirement: Reported noise margins > [illegible]dB and [illegible]dB on at most 10% of the test points (upstream and downstrea[illegible]n) [1[illegible]poi[illegible]for this table]	0 reported NM > 4dB and < 5dB	**PASS**
4. Noise margin requirement: Reported noise margins > 5[illegible]on at lea[illegible]90% of test points (upstream and downstream) [11 test points fo[illegible]this[illegible]e]	[illegible]12 reported NM > 5dB	**PASS**
5. Noise margin requirement: Report noise margins > 5.8 dB on at least 75% of downstream test points(downstream only) [5 test points for this table]	[illegible]reported DS NM > 5[illegible]	**PASS**
6. Connectivity requirement: all 12 test cases must connect	[illegible] test [illegible]es d[illegible] not co[illegible]	**PASS**
Comments on Test Results		

Test Section	Results
A.7.2 – Rate adaptive tests with bridged tap loops (AK Section ID: 2665)	PASSED
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in profile AA12a under combinations of -140 dBm/Hz AWGN, self and alien crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	

Results

Test Profile AA12a_RA_I_098_058

Loop l ngtn (ft. 26 G loo	ngth o. fap ft. 6 AWG loop)	Forced kl0 value	Upstream				Downstream			
			Sync Rate			Noise Margin, Rept. (dB)	Sync Rate			Noise Margin, Rept. (dB)
			Expected	Measured	Pass/Fail		Expected	Measured	Pass/Fail	
Noise Profile: 24-self + -140 dBm/Hz AWGN										
300	20	0	21000	20366	F	6.0	37000	43665	P	6.6
600	1		1 00	19771	P	6.7	33500	39231	P	5.9
900	200	0	18 0	20019	P	6.0	31100	35559	P	6.0
1200	50	0	10500	15147	P	6.0	29600	33985	P	6.0
1600	100	0	8	12342	P	6.0	26900	32427	P	6.1
2000	100	0	000	8580	P	5.9	24000	29850	P	6.1

Test Metrics		
1. Data rate requirement: 11 out of 12 t case must pass	11 Test cases passed	PASS
2. Noise margin requirement: No reporte oise margins < 4dB (upstream and downstream)	0 reported NM < 4dB	PASS
3. Noise margin requirement: Reported noise ma ns > B l < 5dB on at most 10% of the test points (upstream and downstrea) [1 test nt for this table]	0 reported NM > 4dB and < 5dB	PASS
4. Noise margin requirement: Reported noise margins > dB o t least 90% of test points (upstream and downstream) [11 test points r this tabl	12 reported NM > 5dB	PASS
5. Noise margin requirement: Report noise margins > 5.8 dB or e 75% of downstream test points (downstream only) [5 test points for this table]	eported DS NM > dB	PASS
6. Connectivity requirement: all 12 test cases must connect	test ca s did not nnect	PASS
Comments on Test Results		

Test Section	Results
A.8.1 – Rate adaptive tests with straight loops (AK Section ID: 2664)	**PASSED**
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in profile AA17a under combinations of -140 dBm/Hz AWGN, self and alien crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	

Results

Test Profile AA17a_RA_I_150_096

Loop Length (ft 26 AWG loop)	Forced kl0 value	Upstream Sync Rate Expected	Upstream Sync Rate Measured	Upstream Sync Rate Pass/Fail	Upstream Noise Margin, Rept. (dB)	Downstream Sync Rate Expected	Downstream Sync Rate Measured	Downstream Sync Rate Pass/Fail	Downstream Noise Margin, Rept. (dB)
Noise Profile: 24-self + -140 dBm/Hz AWGN									
300	0	[illegible]	[illegible]7801	P	6.1	60000	69776	P	6.2
600	0	21[illegible]00	[illegible]5498	P	6.0	53000	60801	P	6.1
900	0	2000[illegible]	236[illegible]	P	6.1	49000	56399	P	6.1
1200	0	18500	[illegible]173	P	6.1	44500	51243	P	6.3
1600	0	140[illegible]	17770	P	6.0	38500	45602	P	6.1

Test Metrics		
1. Data rate requirement: 9 out of 10 test cases must pass	10 Test cases passed	**PASS**
2. Noise margin requirement: No reported noise margins < 4dB (upstream and downstream)	0 reported NM < 4dB	**PASS**
3. Noise margin requirement: Reported noise margins > 4dB and < 5dB on at most 10% of the test points (upstream and downstream) [1 test point for this table]	0 reported NM > 4dB and < 5dB	**PASS**
4. Noise margin requirement: Reported noise margins > 5dB on at least 90% of test points (upstream and downstream) [9 test points for this table]	10 reported NM > 5dB	**PASS**
5. Noise margin requirement: Report noise margins > 5.8 dB on at least 75% of downstream test points(downstream only) [4 test points for this table]	[illegible] reported DS NM > [illegible]dB	**PASS**
6. Connectivity requirement: all 10 test cases must connect	[illegible] test cases did not connect	**PASS**

Comments on Test Results

Test Section	Results
A.8.2 – Rate adaptive tests with bridged tap loops (AK Section ID: 2665)	PASSED
Purpose: This test is designed to measure the rate vs. reach capabilities of the DUT operating in profile AA17a under combinations of -140 dBm/Hz AWGN, self and alien crosstalk impairment. All test metrics must be passed. See Annex A of this document for more information.	

Results

Test Profile AA17a_RA_I_150_096

Loop l ngtn (ft. 26 G loo	ngth o. fap 6 AWG loop)	Forced kl0 value	Upstream				Downstream			
			Sync Rate			Noise Margin, Rept. (dB)	Sync Rate			Noise Margin, Rept. (dB)
			Expected	Measured	Pass/Fail		Expected	Measured	Pass/Fail	
Noise Profile: 24-self + -140 dBm/Hz AWGN										
300	20	0	20000	24839	P	6.0	51500	60050	P	6.1
600	1		1 00	23122	P	6.1	42000	50026	P	6.0
900	200	0	18 0	22564	P	6.1	35500	43548	P	6.0
1200	50	0	12000	15654	P	6.0	33000	40477	P	6.1
1600	100	0	9	12307	P	6.0	27500	35066	P	6.2

Test Metrics		
1. Data rate requirement: 9 out of 10 te as mu pass	10 Test cases passed	PASS
2. Noise margin requirement: No repor d nois margins < 4dB (upstream and downstream)	0 reported NM < 4dB	PASS
3. Noise margin requirement: Reported noise margi 4dB d < 5dB on at most 10% of the test points (upstream and dow trea [1 t point for this table]	0 reported NM > 4dB and < 5dB	PASS
4. Noise margin requirement: Reported noise margin > 5d n at ast 90% of test points (upstream and downstream) [9 test poi or t table]	10 reported NM > 5dB	PASS
5. Noise margin requirement: Report noise margins > 5.8 d n at 75% of downstream test points (downstream only) [4 test points t table]	5 reported DS NM > dB	PASS
6. Connectivity requirement: all 10 test cases must connect	est es did not connect	PASS
Comments on Test Results		

Annex A: Broadband Forum TR-114 Pass/Fail Criteria

Data rate pass/fail requirements: Tests are performed at consecutive loop lengths identified in tables of the region-specific annexes.

Tests are initiated by placing the VDSL2 port of the DSLAM out of service. Then the loop simulator is set with the appropriate noise impairments and loop length, after which the VDSL2 port of the DSLAM is placed in servi

- At each test point, the line SHALL reach showtime within a total of 90 seconds, starting from the time that the DSLAM port line was placed in service.
- If the line fails to reach showtime within this 90-second period, a result of "no connect" SHALL be recorded as the result for that test point. No retrain is allowed after the expiry of the 90-second timer.
- If the line retrains after the 90-second period, then a result of "no connect" SHALL be recorded as the result for that test point.

When showtime is reached, a 60 second waiting time SHALL be started, to settle bitswap, etc. At the end of the 60- second waiting time the data rate and noise margins for the test point SHALL be recorded.

The DSLAM port / line SHALL then be placed out of service, the loop simulator and noise generator are then configured for the next test point. The DSLAM line / port is placed back in service, modem trained, and the 90 second timer is restarted. This sequence SHALL continue until all loop lengths defined in the table are complete.

The CPE SHALL NOT be power cycled, rebooted or otherwise reinitialized between test points.

Any section containing a result of "no connect" SHALL result in the failure of the section.

To obtain a result for each individual test, each test SHALL be performed once. In rate adaptive testing, any test point that fails to meet the requirement in downstream direction by 128 kbps or less or in the upstream direction by 64 kbps SHALL be re-tested, but no more than 3 times. If a re-test is performed, then the first passing value achieved, SHALL be recorded. If none of the retests provides a passing value then the highest re-passing value SHALL be recorded.

Noise margin pass/fail requirements: All measurements shall be from the DSLAM. Violation of any of the requirements in the noise margin chart (Table39) shall constitute a test section failure (TR-114 Section A.1.4). Table 40 lists the allowable reported noise margin deviations according to the 10% and 25% limits per section (TR- 114 Section A.1.4).

Reported Noise Margin (dB)	Requirement
< 4	On no test point
>= 4 and < 5	On at most 10% of the test points
>= 5	On at least 90% of the test points
>= 5.8	On at least 75% of the downstream test points

Table 39: Noise margin pass/rail requirement chart

Section Number	Number of test points in section	10% limit	25% limit (applies to downstream margins only
A.2.1	32	3	4
A.2.2	24	2	3
A.6.1	32	3	4
A.6	32	3	4
A.7	12	1	1
A.7	12	1	1
A.8	10	1	1
A.8	10	1	1

Table 40: Reported noise margin pass/fail limits per test section

Overall pass/fail criteria for each adaptive rate test section is then as follows:

- If any reported noise margin is less than 4dB, then the DSLAM/CPE pair fails the noise margin requirements of that section.
- If more than 10% of the reported noise margins are less than 5dB in a section, then the DSLAM/CPE pair fails the noise margin requirements of that section.

  If more than 25% of the reported downstream noise margins are less than 5.8 dB in a section, then the DSLAM/CPE pair fails the noise margin requirements of that section.
- If more than 10% of the net data rates are less than the data rate requirements in a section, then the DSLAM/CPE pair fails the data rate requirements of that section.

Overall pass/fail criteria for the fixed rate testing is as follows:

- If any of the reported noise margin is less than 5.8dB, then the DSLAM/CPE pair fails the noise margin requirements.
- If any of the data rates are less than the data rate requirements, then the DSLAM/CPE pair fails the data rate requirements.

If the VTU-O/VTU-R pair passes both the data rate and noise margin requirements, it passes the section; otherwise, it fails the section.

Annex B: Raw Results for Rate Adaptive Tests

A.2.1

Test A.2.1									
Length(ft)		300		600		900		1200	
Exp. UBR		5500		5800		5700		5600	
Exp. DBR		48000		43400		40400		38200	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	7008	7388	6533	7450	6474	7593	6265	7269
	DBR	49015	50590	47983	46065	47760	43099	47631	40895
	UNM	5.9	6.0	5.9	6.0	5.9	5.9	6.0	6.0
	DNM	6.0	6.1	6.0	6.1	5.9	6.1	6.0	6.1
	Time	16	30	16	29	16	17	16	26
	Mode	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.2.1									
Length(ft)		1600		2000		2400		2800	
Exp. UBR		5500		5400		5300		4800	
Exp. DBR		36200		34100		31400		26300	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	UBR	6059	7598	5836	7269	5592	7370	5613	7328
	DBR	47408	38730	46874	36840	44389	34571	38946	30715
	UNM	6.0	6.0	5.9	6.1	6.0	6.1	6.0	6.1
	DNM	6.0	6.1	6.1	6.1	6.1	6.1	6.1	6.1
	Time	16	27	16	27	16	27	16	31
	Mode	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d
Iteration 2	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.2.1									
Length(ft)		3200		3600		4000		4500	
Exp. UBR		3200		1400		800		700	
Exp. DBR		22300		20300		16500		13000	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	UBR	4155	5169	2503	3236	1062	1762	1039	1109
	DBR	33128	26186	29693	23791	24847	20357	19785	16149
	UNM	5.9	6.0	5.8	5.9	6.8	5.9	6.2	6.4
	DNM	6.2	6.3	6.3	6.3	6.2	6.2	6.1	6.1
	Time	16	31	18	15	16	16	16	33
	Mode	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d
Iteration 2	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.2.1									
Length(ft)		5500		6500		7500		8500	
Exp. UBR		700		500		500		500	
Exp. DBR		8000		5500		6000		3500	
		Up	Down	Up	Down	Up	Down	Up	Down
Iterat	UBR	1005	1078	967	1078	1165	1161	1126	1123
	DBR	14374	11787	10804	8716	9650	9678	7020	7028
	UNM	6.1	7.0	6.1	6.6	6.8	6.7	6.7	6.8
	DNM	6.3	6.1	6.2	6.1	6.3	6.3	6.2	6.2
	ne	16	26	15	28	15	15	16	15
	Mode	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d
Iteration 2	UBR	NT	NT	NT	NT	NT	NT	NT	NT
		NT	NT	NT	NT	NT	NT	NT	NT
	UN	N	NT	NT	NT	NT	NT	NT	NT
		N	NT	NT	NT	NT	NT	NT	NT
	Time	NT	T	NT	NT	NT	NT	NT	NT
	Mode	N	N	NT	NT	NT	NT	NT	NT
Iteration 3	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	N	NT	NT	NT	NT	NT	NT
	UNM	NT	T	NT	NT	NT	NT	NT	NT
	DNM	NT	T	NT	NT	NT	NT	NT	NT
	Time	NT	NT	T	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	UBR	NT	NT	T	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	T	T	NT	NT	NT
	DNM	NT	NT	NT	NT	T	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	T	T	NT	NT

A.2.2

Test A.2.2							
Main Length(ft)		300		600		900	
Tap Length(ft)		20		100		200	
Exp. UBR		4500		3500		4200	
Exp. DBR		41000		36500		33300	
		Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	6010	6492	4243	5365	4712	6394
	DBR	49001	44521	47847	39759	47652	36185
	UNM	5.9	5.9	5.9	5.8	5.9	5.9
	DNM	6.0	6.2	6.1	5.9	6.0	6.0
	Time	26	26	16	16	16	16
	Mode	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT

Test A.2.2							
Main Length(ft)		1200		2000		2800	
Tap Length(ft)		50		100		100	
Exp. UBR		4300		3200		2500	
Exp. DBR		32000		27500		17500	
		Up	Down	Up	Down	Up	Down
Ver	**UBR**	4720	6708	3797	5704	3720	5532
	DBR	47568	34494	45487	30921	30715	22989
	UNM	6.0	5.9	6.0	6.0	5.9	5.8
	[illegible]	5.9	6.1	6.1	6.1	6.3	6.1
	Tim	16	32	16	27	16	27
	M e	[illegible] 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT

Test A.2.2							
Main Length(ft)		3200		3000		4500	
Tap Length(ft)		200		100		50	
Exp. UBR		1800		800		700	
Exp. DBR		16400		12300		8700	
		Up	Down	Up	Down	Up	Down
Ver	**UBR**	1929	4199	1071	1316	1032	1109
	DBR	25900	19436	22954	16376	15933	12809
	UNM	6.0	6.0	6.4	6.1	6.2	6.5
		6.3	6.1	6.1	6.1	6.1	6.1
	Tim	16	16	15	25	15	29
	M e	2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT

Test A.2.2							
Main Length(ft)		5500		6500		7500	
Tap Length(ft)		100		100		200	
Exp. UBR		600		600		400	
Exp. DBR		4500		3500		1000	
		Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	994	1105	949	1078	1168	1168
	DBR	11233	8569	8772	6237	7421	8165
	UNM	6.1	6.3	6.0	6.5	7.1	7.0
	DNM	6.1	5.9	6.1	6.2	6.1	6.2
	Time	15	25	15	26	15	15
	Mode	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT

A.2.3

Test A.2.3									
		AA8d_FX_I_027_002				AA8d_FX_I_014_001			
Length(ft)		2000		2400		3600		4000	
Exp. UBR		2000		2000		1000		1000	
Exp. DBR		27000		27000		14000		14000	
		Up	Down	Up	Down	Up	Down	Up	Down
Iter	UBR	2067	2067	2122	2122	1092	1092	1074	1120
	R	27105	27105	27136	27136	14104	14104	14134	14134
	NM	15.3	19.1	14.8	18.8	11.5	13.8	6.4	9.3
	DNM	15.3	9.6	14.4	8.9	19.1	13.7	15.4	10.6
	T	16	16	16	29	16	16	15	25
	Mo		VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d	VDSL2 8d

A.6.1

Test A.6.1									
Length(ft)		300		600		900		1200	
Exp. UBR		8400		7500		7300		7000	
Exp. DBR		41000		40500		39000		37000	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	9734	9430	8653	9570	8845	9675	8217	9371
	DBR	47942	50245	47526	45762	47300	42809	47174	40369
	UNM	6.0	6.2	6.0	6.2	6.0	6.2	6.0	6.1
	DNM	6.3	6.1	6.0	6.0	5.9	6.1	5.9	6.1
	Time	16	16	16	16	16	16	16	16
	Mode	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.6.1									
Length(ft)		1600		2000		2400		2800	
Exp. UBR		6600		6000		4900		4000	
Exp. DBR		34500		33000		24500		22000	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	UBR	8047	9490	7844	9350	6638	8357	5529	7213
	DBR	46686	38266	45428	36384	41983	33452	37004	29704
	UNM	6.0	6.3	6.0	6.2	6.0	6.1	6.0	6.0
	DNM	6.0	6.1	6.1	6.0	6.1	6.1	6.1	5.9
	Time	16	16	16	17	16	16	18	16
	Mode	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a
Iteration 2	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.6.1									
Length(ft)		3200		3600		4000		4500	
Exp. UBR		2500		1000		875		850	
Exp. DBR		21200		19000		16000		14500	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	UBR	3929	5077	2350	3145	1065	1666	1045	1119
	DBR	31482	25158	28030	22383	24133	20113	21222	17655
	UNM	6.0	5.9	5.9	5.9	6.5	6.0	6.3	6.4
	DNM	6.1	6.1	6.3	6.3	6.1	6.1	6.0	6.1
	Time	16	16	16	15	15	16	15	16
	Mode	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a
Iteration 2	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.6.1									
Length(ft)		5500		6500		7500		8500	
Exp. UBR		830		790		750		725	
Exp. DBR		9800		6100		7000		5100	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	UBR	1012	1119	977	1112	1168	1168	1105	1105
	DBR	15880	13255	12077	10044	10567	10487	8029	8005
	UNM	6.3	6.5	6.2	6.2	6.8	6.9	6.5	6.5
	DNM	6.1	6.2	6.2	6.1	6.2	6.3	6.3	6.4
	Time	15	15	17	15	16	15	15	16
	Mode	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a
Iteration 2	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

A.6.2

Test A.6.2									
Main Length(ft)		300		600		900		1200	
Tap Length(ft)		20		100		200		50	
Exp. UBR		7700		6200		6600		6600	
Exp. DBR		37500		35000		32000		30000	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	10093	10372	7660	9459	8026	9727	7834	9950
	DBR	47823	43981	47387	39413	47164	35816	46756	34271
	UNM	6.0	6.0	6.0	6.0	6.0	6.2	6.1	6.1
	DNM	5.9	6.3	6.1	5.9	6.0	6.1	6.1	5.9
	Time	16	16	17	16	16	16	16	16
	Mode	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.6.2									
Main Length(ft)		300		600		900		1200	
Tap Length(ft)		100		100		50		100	
Exp. UBR		5200		3700		3200		2000	
Exp. DBR		28000		21500		18800		16300	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	6826	9793	5561	8712	5170	7736	3605	5254
	DBR	45637	32322	41355	29857	35585	26409	30004	22365
	UNM	6.0	6.1	6.0	6.1	6.1	6.0	5.9	6.0
	DNM	6.0	6.0	6.1	6.0	6.1	6.1	6.1	6.0
	Time	16	16	16	16	16	16	16	31
	Mode	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.6.2									
Main Length(ft)		300		600		900		1200	
Tap Length(ft)		200		50		100		50	
Exp. UBR		1700		925		875		850	
Exp. DBR		14400		13300		11800		9400	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	2579	3908	1746	2557	1056	1177	1042	1126
	DBR	25517	18140	19865	16539	22756	16257	17272	14277
	UNM	6.1	5.8	6.0	5.9	6.4	6.2	6.4	6.4
	DNM	6.3	5.9	6.2	6.1	6.1	6.1	6.1	6.1
	Time	16	15	16	16	15	16	15	15
	Mode	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a
Iteration 2		NT	NT	NT	NT	NT	NT	NT	NT
	DBR		NT	NT	NT	NT	NT	NT	NT
			NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time		N	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	N	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	T	N	NT	NT	NT	NT	NT
	DNM	NT	N		NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	T	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT		T	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	N	T	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

Test A.6.2									
Main Length(ft)		300		600		900		1200	
Tap Length(ft)		100		100		200		100	
Exp. UBR		830		790		725		700	
Exp. DBR		4800		4200		2900		1500	
		Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	UBR	1005	1116	967	1105	1157	1161	1078	1078
	DBR	12363	9880	9818	8141	9260	9378	7865	7872
	UNM	6.2	6.5	6.4	6.3	6.9	6.8	6.7	6.8
	DNM	6.2	5.7	6.3	6.1	5.9	6.2	6.3	6.3
	Time	15	15	15	15	15	15	15	15
	Mode	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a	VDSL2 8a
Iteration 2	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 4	UBR	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT

A.7.1

Test A.7.1							
Main Length(ft)		300		600		900	
Exp. UBR		23000		21400		19800	
Exp. DBR		42700		39000		37000	
		Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	23375	22950	21078	23817	20327	25291
	DBR	48103	50224	47122	45286	46911	42284
	UNM	6.1	6.1	6.1	6.2	6.0	6.3
	DNM	6.0	6.1	6.1	6.0	6.0	6.1
	Time	28	17	17	16	16	16
	Mode	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a
Iteration 2	**UBR**	22960	NT	NT	NT	NT	NT
	DBR	47982	NT	NT	NT	NT	NT
	UNM	6.3	NT	NT	NT	NT	NT
	DNM	6.1	NT	NT	NT	NT	NT
	Time	16	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	22969	NT	NT	NT	NT	NT
	DBR	47982	NT	NT	NT	NT	NT
	UNM	6.3	NT	NT	NT	NT	NT
	DNM	6.1	NT	NT	NT	NT	NT
	Time	16	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	22969	NT	NT	NT	NT	NT
	DBR	47982	NT	NT	NT	NT	NT
	UNM	6.3	NT	NT	NT	NT	NT
	DNM	6.1	NT	NT	NT	NT	NT
	Time	16	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT

Test A.7.1							
Main Length(ft)		1200		1600		2000	
Exp. UBR		16300		12300		9800	
Exp. DBR		36000		34000		31500	
		Up	Down	Up	Down	Up	Down
	UBR	19337	25141	16677	22933	12697	15790
	DBR	46673	40074	46447	37956	45429	36485
	UNM	6.0	7.0	6.0	6.1	5.9	6.0
	DNM	6.0	6.1	6.0	6.2	6.0	6.1
	Time	16	16	20	16	17	16
	Mode	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT

A.7.2

Test A.7.2							
Main Length(ft)		300		600		900	
Tap Length(ft)		20		100		200	
Exp. UBR		21000		18500		18400	
Exp. DBR		37000		33500		31100	
		Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	20366	26381	19771	28423	20019	29820
	DBR	48130	43665	47031	39231	46686	35559
	UNM	6.0	6.2	6.7	6.2	6.0	6.5
	DNM	6.1	6.6	6.0	5.9	6.1	6.0
	Time	16	16	17	17	17	18
	Mode	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT

Test A.7.2							
Main Length(ft)		1200		1600		2000	
Tap Length(ft)		50		100		100	
Exp. UBR		10500		8700		5000	
Exp. DBR		29600		26900		24000	
		Up	Down	Up	Down	Up	Down
Ver	**UBR**	15147	25396	12342	20639	8580	12938
	DBR	45996	33985	44955	32427	40550	29850
	UNM	6.0	6.1	6.0	6.2	5.9	6.0
	[illegible]	6.0	6.0	6.0	6.1	6.1	6.1
	Tim	16	16	16	16	16	16
	M e	[illegible] 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a	VDSL2 12a
Iteration 2	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT

A.8.1

Test A.8.1										
Main Length(ft)		300		600		900		1200		1600	
Exp. UBR		25000		21500		20000		18500		14000	
Exp. DBR		60000		53000		49000		44500		38500	
		Up	Down	Up	Down	Up	Down	Up	Down	Up	Down
Iteration 1	UBR	27801	26699	23	2884	23632	28651	22173	27337	17770	23007
	DBR	66429	69776	6521		64998	56399	64584	51243	57487	45602
	UNM	6.1	6.1	6.0	6.1	6.1	6.2	6.1	6.8	6.0	6.4
	DNM	6.1	6.2	6.1		6.1	6.1	6.1	6.3	6.2	6.1
	Time	17	17	18	18	18	17	18	18	17	18
	Mode	VDSL2 17a	VDSL2 17a	VDSL2 17a	VDS a	VDSL2 17a	VDSL2 17a	VDSL2 17a	VDSL2 17a	VDSL2 17a	VDSL2 17a
Iteration 2	UBR	NT	NT	NT	NT	N	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	T	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	N	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT		NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Iteration 3	UBR	NT	NT	NT	NT	NT		NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT		NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT		NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	T	NT	NT	NT
Iteration 4	UBR	NT	NT	NT	NT	NT	NT	N	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	T	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	T	NT	NT

A.8.2

Test A.8.2										
Main Length(ft)		300		600		900		1200		1600	
Tap Length(ft)		20		100		200		50		100	
Exp. UBR		20000		9000		18000		12000		9000	
Exp. DBR		51500		42[illegible]		35500		33000		27500	
		Up	Down		Down	Up	Down	Up	Down	Up	Down
Iteration 1	**UBR**	24839	31161	2312[illegible]	[illegible]	22564	31172	15654	26061	12307	20259
	DBR	66027	60050	65282	[illegible]026	64655	43548	59317	40477	48719	35066
	UNM	6.0	6.1	6.1	6.[illegible]	6.1	6.3	6.0	6.2	6.0	6.3
	DNM	6.1	6.1	6.1	6.0	6.1	6.0	6.1	6.1	6.3	6.2
	Time	18	18	17	[illegible]	17	18	18	18	18	18
	Mode	VDSL2 17a	VDSL2 17a	VDSL2 17a	VDSL2 [illegible]	VD[illegible]	VDSL2 17a	VDSL2 17a	VDSL2 17a	VDSL2 17a	VDSL2 17a
Iteration 2	**UBR**	NT	NT	NT	NT	[illegible]T	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	N[illegible]	NT	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	[illegible]	NT	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	[illegible]	NT	NT	NT	NT
Iteration 3	**UBR**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	DBR	NT	NT	NT	NT	NT	N[illegible]	NT	NT	NT	NT
	UNM	NT	NT	NT	NT	NT	[illegible]	NT	NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	[illegible]	NT	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	N[illegible]	NT	NT	NT
Iteration 4	**UBR**	NT	NT	NT	NT	NT	NT	NT	[illegible]T	NT	NT
	DBR	NT	NT	NT	NT	NT	NT	NT	[illegible]T	NT	NT
	UNM	NT	NT	NT	NT	NT	NT	NT	[illegible]NT	NT	NT
	DNM	NT	NT	NT	NT	NT	NT	NT	N[illegible]	NT	NT
	Time	NT	NT	NT	NT	NT	NT	NT	[illegible]NT	NT	NT
	Mode	NT	NT	NT	NT	NT	NT	NT	NT	[illegible]T	NT