



UNH-IOL
DSL Consortium
ADSL Rate vs. Reach Interoperability
Test Suite (ARR) Report Revision 1.0

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22 March 2007

Mr. Mike Vendor
DSL Consortium
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Mr. Vendor,

Enclosed are the Rate vs. Reach Interoperability Test Suite results for the DSL Consortium Model A CPE and DSL Consortium Model AB DSLAM. The testing was performed according to Version 3.4.0 of the ADSL Rate vs. Reach Interoperability Test Suite for ADSL over POTS, which may be downloaded from the following address:

ftp://ftp.iol.unh.edu/pub/dsl/testsuites/ARRv340_test_suite.pdf

If you have any questions about the test procedures or results, please contact me via email at joe@iol.unh.edu, or by phone at +1-603-862-2911.

Sincerely,

Joe Tester

Joe Tester

Report reviewed by

Jane Tester

Jane Tester

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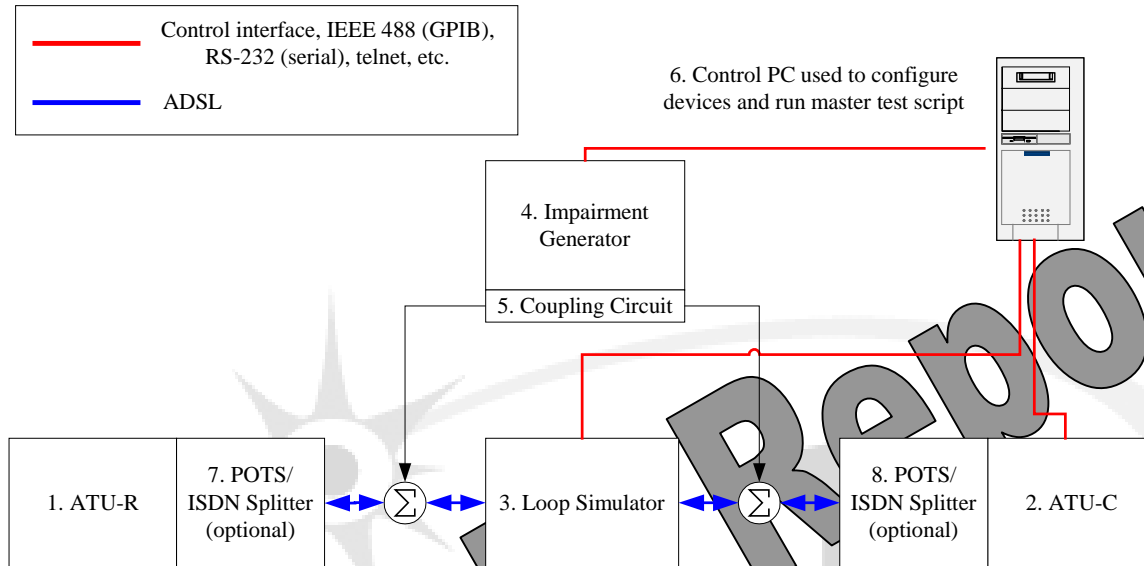
MD5 Fingerprint: A303 D24B 3F7D 0E0D 27F2 B8BC 5FA0 1FC6
SHA-1 Fingerprint: 7BD1 A2EE 89DC AB98 2E32 F36A A9E6 E865 A0EE 88EE

Sample Report



Test Setups

Test Setup 1: Basic Test Setup



Equipment List

1. DSL Consortium Model A (IOL ID: 9999).
 - Chipset Make: DSL Consortium.
 - Chipset Model: DC1.
 - Chipset Firmware Version: 1.2.3.
 - The Model A was set to train in multimode.
2. Company A Model 10.
 - Line-card: Model 10; port 1 (IOL ID: 4587).
 - Chipset Make: DSL.
 - Chipset Hardware Version: 2.0.
 - Chipset Firmware Version: 2.2.
 - Vendor Firmware Version: 1.2.23
 - Profile parameters used for each section of this test are displayed in appendix A of this document.
 - Net data rates were taken from the ATU-C configuration interface.
3. Loop simulator: DSL Line Simulator.
 - Loop simulator serial #: 99999
 - Compensated loops were not applied in this test setup.
4. Impairment generator: Company C Noise Generator.
 - DSL noise file package version 1.0.
 - Noise 1.
 - Noise 2.
 - Noise 3.
 - Compensated noise levels were not applied in this test setup.
5. Coupling Circuit: Company C internal coupling circuit.
6. Testing station 3 with LASI (Lasi Automation with Standard Interfaces) version 2005.08.11.
7. Splitter Information: No CPE Splitter Installed.
8. Splitter Information: No CO Splitter Installed.

Sample Report

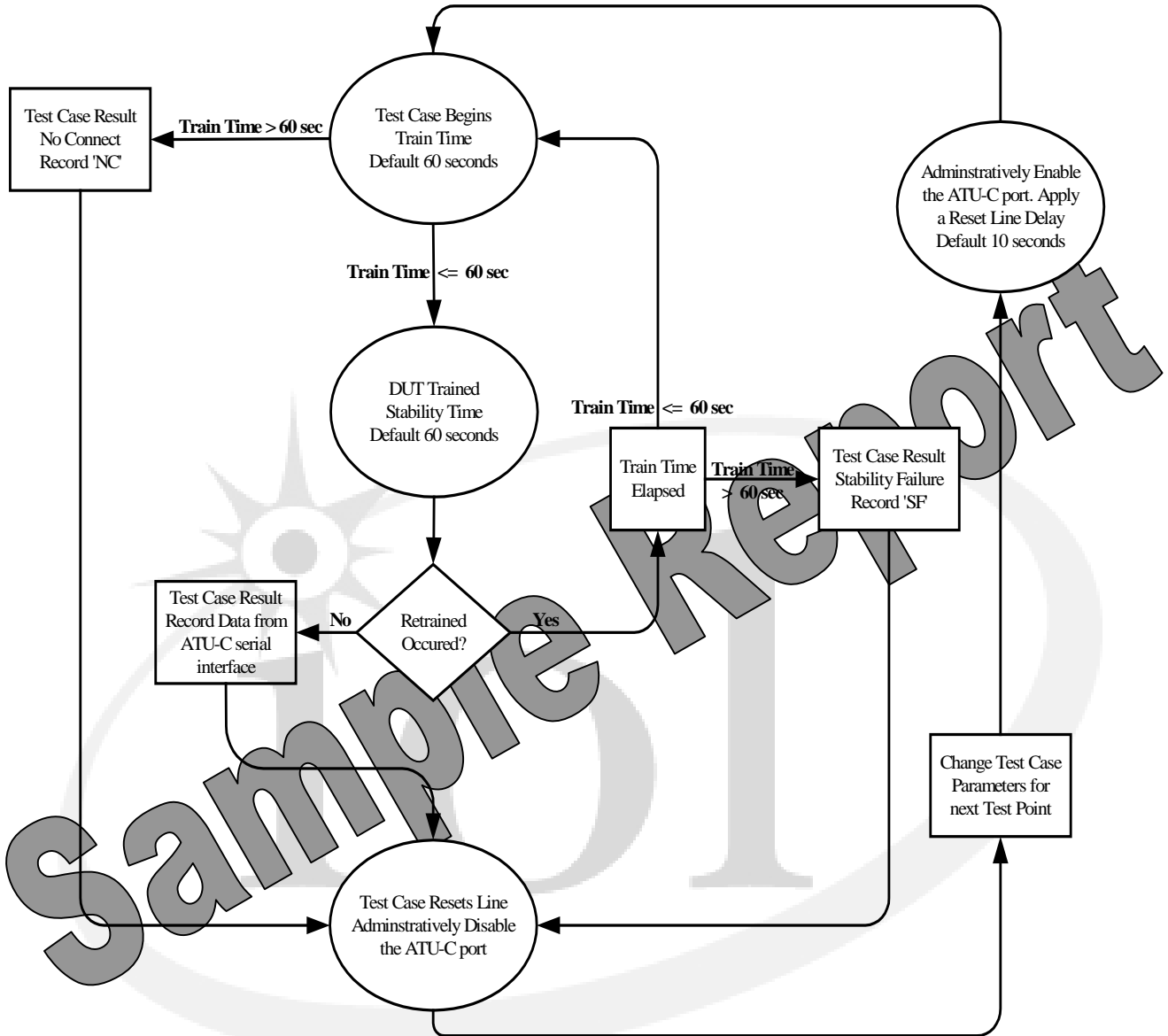
Terminology and Abbreviations

Term	Description
NT	Not Tested (By request of vendor)
NC	No Connection
SF	Stability Failure
NA	Not Available
UDR	Upstream Data Rate
UNM	Upstream Noise Margin
DDR	Downstream Data Rate
DNM	Downstream Noise Margin
Time	Time = Time in seconds required to reach SHOWTIME
Mode	Mode = ANSI (ANSI T1.413-1998), DMT (ITU-T G.992.1 Annex A/B), LITE (ITU-T G.992.2), A2 (ITU-T G.992.3 Annex A/B), A2 L (ITU-T G.992.3 Annex L) or A2+ (ITU-T G.992.5).

Sample Report



Graphical Representation of the Test Procedure



1. If the ATU-C and the ATU-R do not train within 60 seconds, the trial is considered a failure and “NC” is recorded.
2. After the DUT achieves a connection, the net data rate and noise margin are recorded after a 60 second stability period. During the 60-second stability period, if the DUT re-trains the trial is considered a failure and “SF” is recorded.
3. A line-reset delay of 10 seconds is applied between each test case.

Test Detail

Group 1: Rate vs. Reach Tests for ADSL over POTS

Test RR.1.1, -140 dBm/Hz AWGN Impairment, Low Latency Path, IOL Test ID: 5555														
Length (feet)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	
Iteration 1	UDR	1211	SF	1248	1215	1208	1211	1248	1227	1211	1171	1119	1063	967
	DDR	23996	SF	21980	22100	21320	19884	16832	13476	10928	8456	6495	4903	3907
	UNM	6	SF	6	6	6	6.5	6	6.5	6	6.5	6.5	6.5	7
	DNM	8	SF	8.5	8.5	8	8.5	7.5	7	6	5.5	6	6	5.5
	Time	42	SF	42	42	41	42	41	36	42	36	36	36	60
	Mode	A2+	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 2	UDR	1211	1219	1227	1219	1203	1255	1215	1227	1211	1159	1107	1067	943
	DDR	23996	23096	22308	22508	21348	19808	16980	13416	10752	8572	6456	4871	3887
	UNM	6	6	6	6	6.5	6	6	6.5	6	6.5	6	6	7
	DNM	8	8.5	9	8.5	8.5	8	7.5	6.5	6	5.5	6	5.5	5.5
	Time	41	42	41	60	42	37	42	42	42	37	41	37	59
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 3	UDR	1219	1248	1199	1215	SF	SF	1243	1219	1203	1144	1103	1027	943
	DDR	23996	23292	22368	22180	SF	SF	16708	13428	10752	8512	6427	4827	3955
	UNM	6	6	6.5	6	SF	SF	6.5	6.5	6	6	6	6.5	6.5
	DNM	8.5	8	9	8.5	SF	SF	7	7	6	5.5	6	6	5.5
	Time	35	42	41	41	SF	SF	38	41	37	42	36	36	54
	Mode	A2+	A2+	A2+	A2+	SF	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Length (feet)	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	CSA #4	ANSI #13	
Iteration 1	UDR	883	760	679	383	275	223	155	75	NC	NC	NC	1055	779
	DDR	3147	2323	1679	1400	967	643	391	212	NC	NC	NC	9132	2968
	UNM	6.5	6.5	6.5	7	6.5	6.5	7.5	8.5	NC	NC	NC	6	7
	DNM	5.5	5.5	5.5	5.5	5.5	6	5.5	6	NC	NC	NC	6	5.5
	Time	36	42	42	42	41	36	36	42	NC	NC	NC	59	54
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	NC	NC	NC	A2+	A2+
Iteration 2	UDR	863	779	667	363	280	191	155	75	NC	NC	NC	1067	775
	DDR	3107	2311	1663	1375	984	623	399	237	NC	NC	NC	9116	2996
	UNM	6.5	6.5	6	6	6.5	8	7	6.5	NC	NC	NC	6	7
	DNM	5.5	5.5	5.5	5.5	6	5.5	6	5	NC	NC	NC	6	5.5
	Time	37	41	42	41	42	41	42	42	NC	NC	NC	54	60
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	NC	NC	NC	A2+	A2+
Iteration 3	UDR	843	747	664	371	271	210	138	91	NC	NC	NC	1059	795
	DDR	3135	2328	1684	1391	967	635	403	204	NC	NC	NC	9124	3099
	UNM	7	6.5	6	6.5	6.5	6.5	7	7	NC	NC	NC	6.5	6.5
	DNM	6	5.5	5.5	5.5	5.5	5.5	5.5	6	NC	NC	NC	5.5	5.5
	Time	42	42	42	42	36	42	42	41	NC	NC	NC	55	59
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	NC	NC	NC	A2+	A2+

ADSL Rate vs. Reach Interoperability Test Suite (RR) v. 3.4.0
 DSL Consortium Model A (IOL ID: 9999)

Test RR.1.1, -140 dBm/Hz AWGN Impairment, High Latency Path, IOL Test ID: 5555														
Length (feet)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	
Iteration 1	UDR	1214	1248	SF	1229	SF	1221	1229	1248	1210	1183	1110	1052	957
	DDR	23032	23032	SF	21663	SF	19624	16762	13636	10671	8190	6055	4613	3556
	UNM	6	6	SF	6	SF	6	6.5	6	6.5	6	6.5	6.5	6.5
	DNM	9.5	9	SF	9	SF	8.5	7.5	6.5	6	5.5	5.5	5	5.5
	Time	36	41	SF	37	SF	42	36	42	36	42	42	42	60
	Mode	A2+	A2+	SF	A2+	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 2	UDR	1206	SF	1218	1229	1218	1268	1245	1229	1210	1168	1087	1045	946
	DDR	23032	SF	21976	21980	20695	19606	16485	13523	10689	8277	6082	4610	3583
	UNM	6.5	SF	6	6	6.5	6	6.5	6.5	6.5	6	6.5	6.5	6.5
	DNM	9.5	SF	9.5	9.5	9	8	7.5	6.5	5.5	5.5	5.5	5.5	5.5
	Time	35	SF	42	36	42	59	42	41	37	42	42	41	59
	Mode	A2+	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 3	UDR	1210	1214	1202	1214	1218	1260	1245	1248	1248	1159	1114	1071	NC
	DDR	23032	23032	21995	21929	20810	19650	16485	13432	10428	8197	6079	4600	NC
	UNM	6	6.5	6	6	6	6	6	6	6.5	6	6.5	6	NC
	DNM	8.5	9	9	9.5	9	8	7.5	6.5	6	5.5	5.5	5.5	NC
	Time	41	42	41	42	36	55	41	37	36	42	41	41	NC
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	NC
Length (feet)	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	CSA #4	ANSI #13	
Iteration 1	UDR	881	781	696	SF	297	NC	NC	NC	NC	NC	1079	SF	
	DDR	2782	1817	1078	SF	192	NC	NC	NC	NC	NC	8973	SF	
	UNM	6.5	6.5	7	SF	6.5	NC	NC	NC	NC	NC	6	SF	
	DNM	5.5	5.5	6.5	SF	5.5	NC	NC	NC	NC	NC	5.5	SF	
	Time	36	37	41	SF	41	NC	NC	NC	NC	NC	41	SF	
	Mode	A2+	A2+	A2+	SF	A2+	NC	NC	NC	NC	NC	NC	A2+	SF
Iteration 2	UDR	866	788	688	SF	290	NC	NC	NC	NC	NC	NC	797	
	DDR	2753	1800	1091	SF	193	NC	NC	NC	NC	NC	NC	2773	
	UNM	6.5	6	6.5	SF	6.5	NC	NC	NC	NC	NC	NC	6.5	
	DNM	5.5	5.5	5.5	SF	5.5	NC	NC	NC	NC	NC	NC	5.5	
	Time	36	42	42	SF	42	NC	NC	NC	NC	NC	NC	59	
	Mode	A2+	A2+	A2+	SF	A2+	NC	NC	NC	NC	NC	NC	NC	A2+
Iteration 3	UDR	896	797	680	404	298	NC	NC	NC	NC	NC	NC	808	
	DDR	2773	1854	1105	716	189	NC	NC	NC	NC	NC	NC	2636	
	UNM	6.5	6.5	6.5	6.5	6.5	NC	NC	NC	NC	NC	NC	6	
	DNM	5.5	5.5	5.5	5.5	5.5	NC	NC	NC	NC	NC	NC	5.5	
	Time	42	36	41	42	41	NC	NC	NC	NC	NC	NC	58	
	Mode	A2+	A2+	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	A2+

ADSL Rate vs. Reach Interoperability Test Suite (RR) v. 3.4.0
 DSL Consortium Model A (IOL ID: 9999)

Test RR.1.2, 24-disturber DSL NEXT Impairment, Low Latency Path, IOL Test ID: 5555														
Length (feet)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	
Iteration 1	UDR	SF	1211	NC	SF	1208	1176	1139	1063	991	899	799	703	591
	DDR	SF	23420	NC	SF	21572	20052	16908	13264	10632	8075	6068	4371	3699
	UNM	SF	6	NC	SF	6	6	6	6.5	6	6	6.5	6	6.5
	DNM	SF	8	NC	SF	8.5	8.5	7	6	5.5	6	5.5	5.5	5.5
	Time	SF	42	NC	SF	41	36	36	37	41	42	42	42	59
	Mode	SF	A2+	NC	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 2	UDR	NC	1211	SF	1199	SF	1176	1139	1067	991	891	783	691	575
	DDR	NC	23440	SF	22672	SF	19636	16784	13396	10584	8047	6067	4319	3455
	UNM	NC	6	SF	6	SF	6.5	6	6	6	6.5	6.5	6.5	6.5
	DNM	NC	8.5	SF	8.5	SF	8	7	6.5	5.5	6	5.5	5.5	6
	Time	NC	42	SF	59	SF	41	42	42	42	42	36	36	58
	Mode	NC	A2+	SF	A2+	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 3	UDR	1211	1195	1227	1240	SF	1176	1123	1063	995	891	795	691	583
	DDR	23996	23460	22256	22392	SF	19868	16944	13420	10648	8039	6059	4331	3695
	UNM	6	6	6.5	6	SF	6	6	6	6	6.5	6.5	6	6.5
	DNM	8.5	8.5	9	9	SF	8	7	6	5.5	6	6	6	5.5
	Time	35	42	41	59	SF	37	41	42	41	42	42	42	59
	Mode	A2+	A2+	A2+	A2+	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Length (feet)	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	CSA #4	ANSI #13	
Iteration 1	UDR	483	379	275	34	NC	NC	NC	NC	NC	NC	NC	899	411
	DDR	2595	1771	1144	679	NC	NC	NC	NC	NC	NC	NC	8684	2727
	UNM	6.5	6.5	6	7	NC	NC	NC	NC	NC	NC	NC	6	6
	DNM	5.5	5.5	6.5	6	NC	NC	NC	NC	NC	NC	NC	5.5	5.5
	Time	36	36	36	41	NC	NC	NC	NC	NC	NC	NC	61	58
	Mode	A2+	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	A2+	A2+
Iteration 2	UDR	483	383	275	32	NC	NC	NC	NC	NC	NC	NC	NC	395
	DDR	2611	1771	1131	675	NC	NC	NC	NC	NC	NC	NC	NC	2707
	UNM	6	6.5	6	7.5	NC	NC	NC	NC	NC	NC	NC	NC	6.5
	DNM	5.5	5.5	5.5	6	NC	NC	NC	NC	NC	NC	NC	NC	5.5
	Time	37	36	38	41	NC	NC	NC	NC	NC	NC	NC	NC	58
	Mode	A2+	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	A2+
Iteration 3	UDR	483	371	283	32	NC	NC	NC	NC	NC	NC	NC	907	383
	DDR	2616	1775	1127	683	NC	NC	NC	NC	NC	NC	NC	8680	2667
	UNM	6	6.5	6	7	NC	NC	NC	NC	NC	NC	NC	6	7
	DNM	5.5	5.5	5.5	6	NC	NC	NC	NC	NC	NC	NC	5.5	5.5
	Time	37	42	37	42	NC	NC	NC	NC	NC	NC	NC	42	54
	Mode	A2+	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	A2+	A2+

ADSL Rate vs. Reach Interoperability Test Suite (RR) v. 3.4.0
 DSL Consortium Model A (IOL ID: 9999)

Test RR.1.2, 24-disturber DSL NEXT Impairment, High Latency Path, IOL Test ID: 5555															
Length (feet)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000		
Iteration 1	UDR	NC	SF	1198	SF	1225	1183	1151	1079	1003	915	824	SF	609	
	DDR	NC	SF	21944	SF	20961	20034	16526	13389	10449	7766	5894	SF	3543	
	UNM	NC	SF	6	SF	6	6	6	6	6.5	6	6.5	SF	6.5	
	DNM	NC	SF	9	SF	9.5	8.5	7	6	5.5	5.5	5.5	SF	5.5	
	Time	NC	SF	42	SF	36	60	42	36	41	42	36	SF	54	
	Mode	NC	SF	A2+	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	SF	A2+
Iteration 2	UDR	1206	1206	1241	NC	1221	1187	1137	1075	1003	919	832	713	605	
	DDR	23032	23032	21936	NC	20462	19687	16681	13411	10533	7720	5880	4047	3543	
	UNM	6.5	6	6	NC	6	6	6	6.5	6	6	6	6.5	7	
	DNM	9.5	9	9	NC	9	8	7	6	5.5	5.5	5.5	5.5	5.5	
	Time	42	41	36	NC	37	59	37	41	42	41	41	42	54	
	Mode	A2+	A2+	A2+	NC	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 3	UDR	1218	1206	1194	1241	1218	1191	1147	1087	1010	915	SF	725	609	
	DDR	23032	23032	21929	21976	21208	19595	16684	13443	10533	7814	SF	4088	3549	
	UNM	6	6.5	6	6	6.5	6	6	6	6	6.5	SF	6	6.5	
	DNM	9	9	9	9.5	9	8	7	6	5.5	5.5	SF	5	5.5	
	Time	40	43	42	37	58	37	42	42	42	42	36	SF	41	54
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	SF	A2+	A2+
Length (feet)	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	CSA #4	ANSI #13		
Iteration 1	UDR	515	408	309	NC	NC	NC	NC	NC	NC	NC	NC	930	424	
	DDR	2174	1234	516	NC	NC	NC	NC	NC	NC	NC	NC	8486	2252	
	UNM	7	6.5	6.5	NC	NC	NC	NC	NC	NC	NC	NC	6.5	6.5	
	DNM	5.5	6	5	NC	NC	NC	NC	NC	NC	NC	NC	5.5	5.5	
	Time	58	42	41	NC	NC	NC	NC	NC	NC	NC	NC	41	54	
	Mode	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	A2+	A2+	
Iteration 2	UDR	511	412	309	NC	NC	NC	NC	NC	NC	NC	NC	923	SF	
	DDR	2235	1234	568	NC	NC	NC	NC	NC	NC	NC	NC	8535	SF	
	UNM	6.5	6.5	6.5	NC	NC	NC	NC	NC	NC	NC	NC	6.5	SF	
	DNM	5.5	5.5	5	NC	NC	NC	NC	NC	NC	NC	NC	5.5	SF	
	Time	54	42	42	NC	NC	NC	NC	NC	NC	NC	NC	65	SF	
	Mode	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	A2+	SF	
Iteration 3	UDR	519	408	310	NC	NC	NC	NC	NC	NC	NC	NC	915	429	
	DDR	2241	1279	568	NC	NC	NC	NC	NC	NC	NC	NC	8510	2268	
	UNM	6.5	6.5	6.5	NC	NC	NC	NC	NC	NC	NC	NC	6	7	
	DNM	5.5	5.5	5	NC	NC	NC	NC	NC	NC	NC	NC	5.5	5.5	
	Time	58	36	42	NC	NC	NC	NC	NC	NC	NC	NC	65	54	
	Mode	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	A2+	A2+	

ADSL Rate vs. Reach Interoperability Test Suite (RR) v. 3.4.0
 DSL Consortium Model A (IOL ID: 9999)

Test RR.1.3, 24-disturber HDSL NEXT Impairment, Low Latency Path, IOL Test ID: 5555														
Length (feet)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	
Iteration 1	UDR	1208	1179	SF	1112	1039	967	883	NC	NC	568	459	351	271
	DDR	23996	23064	SF	22504	21052	19548	16336	NC	NC	6927	4783	3348	2411
	UNM	6	6.5	SF	6	6.5	6	6	NC	NC	6	6.5	6.5	6.5
	DNM	7.5	8	SF	8.5	8	7.5	6.5	NC	NC	5.5	6	5.5	6
	Time	42	42	SF	60	37	41	36	NC	NC	42	36	37	59
	Mode	A2+	A2+	SF	A2+	A2+	A2+	A2+	NC	NC	A2+	A2+	A2+	A2+
Iteration 2	UDR	1219	1187	1159	1103	SF	NC	875	775	664	571	459	NC	NC
	DDR	23996	23504	22204	22488	SF	NC	16360	12508	9488	6863	4739	NC	NC
	UNM	6	6	6.5	6	SF	NC	6.5	6	6.5	6.5	6.5	NC	NC
	DNM	8	8.5	8.5	8.5	SF	NC	6.5	6	5.5	6	6	NC	NC
	Time	41	36	41	41	SF	NC	37	36	43	41	36	NC	NC
	Mode	A2+	A2+	A2+	A2+	SF	NC	A2+	A2+	A2+	A2+	A2+	NC	NC
Iteration 3	UDR	1208	1187	SF	NC	SF	975	883	775	664	NC	NC	351	275
	DDR	23996	23364	SF	NC	SF	19596	16300	12528	9496	NC	NC	3352	2363
	UNM	6.5	6	SF	NC	SF	6	6	6	6.5	NC	NC	6.5	6
	DNM	8.5	8.5	SF	NC	SF	7.5	6.5	6	5.5	NC	NC	5.5	5.5
	Time	35	54	SF	NC	SF	36	36	42	36	NC	NC	36	59
	Mode	A2+	A2+	SF	NC	SF	A2+	A2+	A2+	A2+	NC	NC	A2+	A2+
Length (feet)	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	CSA #4	ANSI #13	
Iteration 1	UDR	SF	135	59	NC	NC	NC	NC	NC	NC	NC	619	SF	
	DDR	SF	643	283	NC	NC	NC	NC	NC	NC	NC	7476	SF	
	UNM	SF	6.5	7.5	NC	NC	NC	NC	NC	NC	NC	6	SF	
	DNM	SF	5.5	6.5	NC	NC	NC	NC	NC	NC	NC	6	SF	
	Time	SF	35	37	NC	NC	NC	NC	NC	NC	NC	53	SF	
	Mode	SF	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	A2+	SF
Iteration 2	UDR	191	131	88	NC	NC	NC	NC	NC	NC	NC	619	NC	
	DDR	1327	655	255	NC	NC	NC	NC	NC	NC	NC	7451	NC	
	UNM	6.5	6.5	7	NC	NC	NC	NC	NC	NC	NC	6.5	NC	
	DNM	5.5	6	5.5	NC	NC	NC	NC	NC	NC	NC	5.5	NC	
	Time	54	42	36	NC	NC	NC	NC	NC	NC	NC	60	NC	
	Mode	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	A2+	NC
Iteration 3	UDR	NC	131	59	NC	NC	NC	NC	NC	NC	NC	619	142	
	DDR	NC	635	269	NC	NC	NC	NC	NC	NC	NC	7403	1656	
	UNM	NC	7.5	7.5	NC	NC	NC	NC	NC	NC	NC	6.5	7	
	DNM	NC	6	5.5	NC	NC	NC	NC	NC	NC	NC	6	5.5	
	Time	NC	37	35	NC	NC	NC	NC	NC	NC	NC	59	60	
	Mode	NC	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	A2+	A2+

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 DSL Consortium Model A (IOL ID: 9999)

Test RR.1.3, 24-disturber HDSL NEXT Impairment, High Latency Path, IOL Test ID: 5555															
Length (feet)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000		
Iteration 1	UDR	1218	1194	NC	1114	1056	991	896	800	693	601	500	373	290	
	DDR	23032	23032	NC	21725	21353	19240	16024	12618	9332	6579	4549	3168	2110	
	UNM	6	6.5	NC	6	6.5	6	6.5	6	6.5	6.5	6.5	6.5	7	
	DNM	9.5	9	NC	9	8.5	8	6.5	5.5	5.5	5.5	5.5	5.5	5.5	
	Time	41	35	NC	48	54	42	42	37	41	42	42	42	38	58
	Mode	A2+	A2+	NC	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 2	UDR	1214	SF	1155	1114	1056	991	904	804	700	NC	484	393	285	
	DDR	23032	SF	21951	21921	20861	19292	15990	12599	9387	NC	4569	3211	2115	
	UNM	6.5	SF	6.5	6.5	6.5	6.5	6	6	6	NC	6.5	6.5	6.5	
	DNM	9.5	SF	9	9	8.5	8	6.5	5.5	5.5	NC	5.5	5.5	5.5	
	Time	35	SF	41	36	59	36	42	42	42	NC	36	42	56	
	Mode	A2+	SF	A2+	A2+	A2+	A2+	A2+	A2+	A2+	NC	A2+	A2+	A2+	
Iteration 3	UDR	1218	1191	1156	NC	1060	999	896	808	696	601	484	388	301	
	DDR	23032	22556	21803	NC	20865	19248	16079	12643	9377	6632	4620	3211	2120	
	UNM	6.5	6	6.5	NC	6	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
	DNM	9	9	9	NC	8.5	8	6.5	5.5	5.5	5.5	5.5	5.5	5.5	
	Time	36	41	42	NC	59	42	42	37	42	36	41	42	58	
	Mode	A2+	A2+	A2+	NC	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Length (feet)	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	CSA #4	ANSI #13		
Iteration 1	UDR	206	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	154	
	DDR	899	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1219	
	UNM	7	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	7	
	DNM	5.5	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	5.5	
	Time	55	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	36	
	Mode	A2+	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	A2+	
Iteration 2	UDR	217	142	NC	NC	NC	NC	NC	NC	NC	NC	NC	652	NC	
	DDR	952	124	NC	NC	NC	NC	NC	NC	NC	NC	NC	7330	NC	
	UNM	6.5	7.5	NC	NC	NC	NC	NC	NC	NC	NC	NC	6.5	NC	
	DNM	5.5	5	NC	NC	NC	NC	NC	NC	NC	NC	NC	5.5	NC	
	Time	59	66	NC	NC	NC	NC	NC	NC	NC	NC	NC	58	NC	
	Mode	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	NC	A2+	NC	
Iteration 3	UDR	NC	142	NC	NC	NC	NC	NC	NC	NC	NC	NC	648	NC	
	DDR	NC	123	NC	NC	NC	NC	NC	NC	NC	NC	NC	7320	NC	
	UNM	NC	6.5	NC	NC	NC	NC	NC	NC	NC	NC	NC	6.5	NC	
	DNM	NC	5	NC	NC	NC	NC	NC	NC	NC	NC	NC	5.5	NC	
	Time	NC	60	NC	NC	NC	NC	NC	NC	NC	NC	NC	60	NC	
	Mode	NC	A2+	NC	NC	NC	NC	NC	NC	NC	NC	NC	A2+	NC	

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Test RR.1.4, 5-disturber T1 Impairment, Low Latency Path, IOL Test ID: 5555														
Length (feet)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	
Iteration 1	UDR	1203	1255	1215	1259	1243	1240	1240	SF	1167	1135	1080	1011	931
	DDR	23996	23368	21837	20156	16428	12592	8191	SF	3375	2459	1799	1287	1019
	UNM	6	6	6	6	6	6.5	6.5	SF	6.5	6.5	6	6.5	7
	DNM	7	7	6.5	6	6	5.5	6	SF	5.5	5.5	5.5	6	6
	Time	35	41	36	54	38	36	37	SF	59	36	41	42	35
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	SF	A2+	A2+	A2+	A2+	A2+
Iteration 2	UDR	1219	1251	1219	1243	1255	1243	1235	1219	1183	1135	SF	1011	920
	DDR	23996	23316	21696	20108	16596	12952	8143	4295	3399	2527	SF	1443	1055
	UNM	6	6	6	6.5	6	6	6	6	6	6.5	SF	6	7.5
	DNM	7	6.5	6.5	6	6	5.5	5.5	6	5.5	5.5	SF	5.5	5.5
	Time	41	42	42	60	36	36	42	42	59	42	SF	36	42
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	SF	A2+	A2+
Iteration 3	UDR	1219	1255	1199	NC	1231	1251	1215	1211	1171	1131	NC	995	911
	DDR	23996	23440	21572	NC	16432	12768	8023	4395	3375	2523	NC	1275	1048
	UNM	6	6.5	6.5	NC	6.5	6	6	6	6	6.5	NC	7	6.5
	DNM	7	7	6.5	NC	6	5.5	5.5	6	5.5	5.5	NC	6	5.5
	Time	36	64	42	NC	54	41	42	41	53	42	NC	36	36
	Mode	A2+	A2+	A2+	NC	A2+	A2+	A2+	A2+	A2+	A2+	NC	A2+	A2+
Length (feet)	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	CSA #4	ANSI #13	
Iteration 1	UDR	847	771	639	559	408	NC	NC	NC	NC	NC	NC	1011	783
	DDR	703	419	195	136	64	NC	NC	NC	NC	NC	NC	2403	263
	UNM	7.5	6.5	6.5	6.5	7.5	NC	NC	NC	NC	NC	NC	6	7.5
	DNM	5.5	5	6.5	5	5.5	NC	NC	NC	NC	NC	NC	6	6
	Time	36	42	42	41	36	NC	NC	NC	NC	NC	NC	41	37
	Mode	A2+	A2+	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	A2+	A2+
Iteration 2	UDR	831	735	NC	499	383	NC	NC	NC	NC	NC	NC	1023	751
	DDR	683	440	NC	108	59	NC	NC	NC	NC	NC	NC	2459	227
	UNM	6.5	6.5	NC	6.5	6.5	NC	NC	NC	NC	NC	NC	6.5	6.5
	DNM	5.5	6	NC	5.5	6	NC	NC	NC	NC	NC	NC	6	6.5
	Time	36	41	NC	36	36	NC	NC	NC	NC	NC	NC	42	41
	Mode	A2+	A2+	NC	A2+	A2+	NC	NC	NC	NC	NC	NC	A2+	A2+
Iteration 3	UDR	847	739	647	NC	NC	NC	NC	NC	NC	NC	NC	991	743
	DDR	696	404	208	NC	NC	NC	NC	NC	NC	NC	NC	2459	267
	UNM	6.5	6.5	6	NC	NC	NC	NC	NC	NC	NC	NC	6.5	6.5
	DNM	5.5	5	6	NC	NC	NC	NC	NC	NC	NC	NC	6	5.5
	Time	41	36	36	NC	NC	NC	NC	NC	NC	NC	NC	41	42
	Mode	A2+	A2+	A2+	NC	NC	NC	NC	NC	NC	NC	NC	A2+	A2+

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Test RR.1.4, 5-disturber T1 Impairment, High Latency Path, IOL Test ID: 5555														
Length (feet)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	
Iteration 1	UDR	1221	1218	1264	NC	1252	1256	1225	1218	1187	1144	1091	1022	930
	DDR	23032	23032	21223	NC	16189	12992	8330	4623	3229	2051	1215	779	312
	UNM	6.5	6.5	6	NC	6	6	6.5	6.5	6	6	6	6.5	6.5
	DNM	8	7.5	6.5	NC	6	5.5	6	5.5	5	5.5	5.5	5.5	5
	Time	41	41	42	NC	58	36	42	43	58	59	41	37	41
	Mode	A2+	A2+	A2+	NC	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+
Iteration 2	UDR	1210	NC	1218	1260	1264	1256	1256	1206	1187	1151	NC	999	946
	DDR	23032	NC	21382	19229	16367	12978	8396	4640	3223	2104	NC	576	318
	UNM	6	NC	6	6	6	6	6	6.5	6	6.5	NC	6.5	6
	DNM	8	NC	6.5	6	6	5.5	5.5	5.5	5.5	5.5	NC	5.5	5.5
	Time	36	NC	42	61	41	41	42	36	54	60	NC	36	36
	Mode	A2+	NC	A2+	A2+	A2+	A2+	A2+	A2+	A2+	A2+	NC	A2+	A2+
Iteration 3	UDR	1210	1260	1218	1260	1248	1256	1241	NC	1183	1147	1079	1026	950
	DDR	23032	23032	21430	19137	16223	13152	8336	NC	3412	2043	1224	774	318
	UNM	6	6	6	6	6.5	6	6	NC	6	6	6	6.5	6
	DNM	8	7	6.5	6	5.5	5.5	5.5	NC	5	5.5	5.5	5	5.5
	Time	35	41	42	58	42	42	37	NC	54	59	37	41	36
	Mode	A2+	A2+	A2+	A2+	A2+	A2+	A2+	NC	A2+	A2+	A2+	A2+	A2+
Length (feet)	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	CSA #4	ANSI #13	
Iteration 1	UDR	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1037	NC
	DDR	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2193	NC
	UNM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	6	NC
	DNM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	5	NC
	Time	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	41	NC
	Mode	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	A2+	NC
Iteration 2	UDR	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1010	NC
	DDR	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2193	NC
	UNM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	6.5	NC
	DNM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	5	NC
	Time	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	42	NC
	Mode	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	A2+	NC
Iteration 3	UDR	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1048	NC
	DDR	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2142	NC
	UNM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	6.5	NC
	DNM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	5	NC
	Time	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	36	NC
	Mode	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	A2+	NC

Appendix A: Profile Parameters

Profile used in Low Latency Test Cases for Test RR.1.1 through Test RR.1.4		Profile used in High Latency Test Cases for Test RR.1.1 through Test RR.1.4	
Channel Configuration Parameters	Value	Channel Configuration Parameters	Value
Minimum Upstream Data Rate (kbps)	32	Minimum Upstream Data Rate (kbps)	32
Maximum Upstream Data Rate (kbps)	2048	Maximum Upstream Data Rate (kbps)	2048
Minimum Downstream Data Rate (kbps)	32	Minimum Downstream Data Rate (kbps)	32
Maximum Downstream Data Rate (kbps)	24000	Maximum Downstream Data Rate (kbps)	24000
Maximum Upstream Interleave Delay (ms)	1	Maximum Upstream Interleave Delay (ms)	1
Maximum Downstream Interleave Delay (ms)	1	Maximum Downstream Interleave Delay (ms)	1
Upstream Impulse Noise Protection	0	Upstream Impulse Noise Protection	0
Downstream Impulse Noise Protection	0	Downstream Impulse Noise Protection	0
Line Configuration Parameters	Value	Line Configuration Parameters	Value
Modulation	G.992.5	Modulation	G.992.5
Minimum Upstream SNR (dB)	0	Minimum Upstream SNR (dB)	0
Maximum Upstream SNR (dB)	31	Maximum Upstream SNR (dB)	31
Target Upstream SNR (dB)	6	Target Upstream SNR (dB)	6
Maximum Upstream Power (dBm)	13	Maximum Upstream Power (dBm)	13
Minimum Downstream SNR (dB)	0	Minimum Downstream SNR (dB)	0
Maximum Downstream SNR (dB)	31	Maximum Downstream SNR (dB)	31
Target Downstream SNR (dB)	6	Target Downstream SNR (dB)	6
Maximum Downstream Power (dBm)	20	Maximum Downstream Power (dBm)	20
Rate Mode	Adaptive	Rate Mode	Adaptive
Miscellaneous Parameters	Value	Miscellaneous Parameters	Value
Trellis Coding	Enabled	Trellis Coding	Enabled
Bit Swapping	Enabled	Bit Swapping	Enabled