
Project: ADSL

Title: Evaluation of the European ADSL Test Loop Insertion Losses

Source: FTW

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Abstract:

This paper describes our simulation results for the insertion numbers (and reaches) for the current update of the ETSI ADSL standard.

Distribution: ETSI STC TM6 working group members

Status: For information

1. Introduction

For the current revision of the ETSI ADSL document a set of new performance requirements is needed. During spring and summer a set of simulation assumptions has been established [3,4]. Using these assumptions, the current ADSL draft [1], and the ITU recommendation G.992.1 [2] new reaches and insertion loss numbers been calculated.

These simulation results were generated using the publicly available FTW xDSL simulator [5]. Two minor changes to the simulator have been done to support the “side dependent” noise assumption and the tone usage specification [3]. (These additions will be made publicly available with the next release of the simulator.)

In addition to the assumptions in [3] a 1.5 dB implementation loss has been assumed for all loops.

In the tables below we show the reach for each case and the resulting insertion loss numbers.

2. Results

The tables below show the simulation results for all cases considered:

EC/FDD Echo cancelled or frequency divided duplexing mode
ISDN/POTS Over ISDN or over POTS
Noise A-D Various FSAN noises
DS/US Downstream or upstream rates

The upper values are the reaches in meters and the lower values, in parenthesis, are the insertion loss numbers in dB.

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ADSL-ECoverISDN Noise A DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	2728	3500	3054	3186	3343	3183	4852	2425
	(38.8)	(37.4)	(38.1)	(37.8)	(38.0)	(38.0)	(37.2)	(43.4)
768	2670	3405	2994	3124	3279	3118	4774	2332
	(38.0)	(36.4)	(37.3)	(36.9)	(37.1)	(37.1)	(36.1)	(42.1)
1024	2613	3335	2939	3068	3221	3062	4718	2297
	(37.2)	(35.7)	(36.5)	(36.1)	(36.3)	(36.3)	(35.3)	(41.6)
1544	2491	3192	2817	2949	3104	2944	4602	2141
	(35.4)	(34.1)	(34.8)	(34.5)	(34.6)	(34.6)	(33.7)	(39.4)
2048	2343	3008	2680	2813	2965	2805	4458	1999
	(33.3)	(32.2)	(32.8)	(32.5)	(32.6)	(32.6)	(31.6)	(37.3)
3072	2082	2663	2407	2541	2686	2534	0	1719
	(29.6)	(28.5)	(28.9)	(28.6)	(28.7)	(28.8)	(0.0)	(33.3)
4096	1717	2151	2025	0	2269	2136	0	1357
	(24.4)	(23.0)	(23.5)	(0.0)	(22.7)	(23.1)	(0.0)	(28.1)
5120	1201	1425	0	0	0	0	0	0
	(17.1)	(15.2)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
6144	667	753	0	0	0	0	0	0
	(9.5)	(8.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-ECoverISDN Noise A US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	2580	3617	3017	3187	3333	3171	5005	2147
	(36.7)	(38.7)	(37.6)	(37.8)	(37.9)	(37.8)	(39.4)	(39.5)
128	2463	3419	2870	3035	3181	3020	4837	2025
	(35.0)	(36.5)	(35.5)	(35.7)	(35.7)	(35.7)	(37.0)	(37.7)
256	2251	3091	2658	2836	2979	2820	4592	1731
	(32.0)	(33.0)	(32.5)	(32.8)	(32.9)	(32.8)	(33.5)	(33.5)
384	1921	2679	2354	2520	2663	2504	4294	1465
	(27.3)	(28.6)	(28.2)	(28.3)	(28.3)	(28.3)	(29.3)	(29.8)
512	1620	2240	2041	2209	2351	2190	0	1157
	(23.0)	(24.0)	(23.7)	(23.9)	(23.9)	(23.8)	(0.0)	(25.5)
640	1331	1827	1743	0	2049	1890	0	0
	(18.9)	(19.5)	(19.5)	(0.0)	(19.6)	(19.6)	(0.0)	(0.0)

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ADSL-ECoverISDN Noise B DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	3037	3920	3369	3510	3660	3497	5182	2702
	(43.2)	(41.9)	(42.6)	(42.4)	(42.5)	(42.5)	(41.9)	(47.4)
768	2958	3788	3286	3421	3574	3412	5078	2608
	(42.1)	(40.5)	(41.5)	(41.2)	(41.3)	(41.3)	(40.5)	(46.0)
1024	2894	3708	3225	3356	3512	3350	5018	2563
	(41.2)	(39.6)	(40.6)	(40.2)	(40.4)	(40.4)	(39.6)	(45.4)
1544	2787	3569	3117	3249	3405	3242	4908	2424
	(39.7)	(38.2)	(39.0)	(38.7)	(38.9)	(38.8)	(38.0)	(43.4)
2048	2652	3419	2986	3124	3277	3115	4795	2319
	(37.7)	(36.5)	(37.2)	(36.9)	(37.1)	(37.0)	(36.4)	(41.9)
3072	2453	3148	2787	2919	3074	2913	4577	2073
	(34.9)	(33.7)	(34.3)	(34.0)	(34.2)	(34.2)	(33.3)	(38.4)
4096	2192	2809	2523	2654	2806	2648	4291	1830
	(31.2)	(30.0)	(30.6)	(30.3)	(30.4)	(30.4)	(29.3)	(35.0)
5120	1882	2406	2189	2337	2482	2324	0	1507
	(26.8)	(25.7)	(25.8)	(25.8)	(25.8)	(25.8)	(0.0)	(30.4)
6144	1448	1827	1760	0	1995	1878	0	1120
	(20.6)	(19.5)	(19.7)	(0.0)	(18.8)	(19.4)	(0.0)	(24.8)

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ADSL-ECoverISDN Noise B US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	3044	4291	3467	3637	3783	3621	5457	2623
	(43.3)	(45.9)	(44.0)	(44.2)	(44.3)	(44.2)	(45.9)	(46.2)
128	2903	4044	3318	3495	3641	3478	5295	2468
	(41.3)	(43.2)	(41.9)	(42.2)	(42.3)	(42.2)	(43.5)	(44.0)
256	2698	3700	3104	3263	3409	3248	5041	2178
	(38.4)	(39.6)	(38.9)	(38.9)	(39.0)	(38.9)	(39.9)	(39.9)
384	2382	3301	2801	2966	3110	2951	4741	1901
	(33.9)	(35.3)	(34.5)	(34.7)	(34.7)	(34.7)	(35.7)	(35.9)
512	2076	2893	2492	2668	2818	2654	4458	1597
	(29.5)	(30.9)	(30.1)	(30.5)	(30.5)	(30.5)	(31.6)	(31.6)
640	1782	2496	2211	2380	2523	2359	0	1285
	(25.3)	(26.7)	(26.1)	(26.4)	(26.4)	(26.3)	(0.0)	(27.1)

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ADSL-ECoverISDN Noise C DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	2551	3365	2913	3064	3209	3050	4762	2139
	(36.3)	(36.0)	(36.1)	(36.1)	(36.1)	(36.1)	(35.9)	(39.4)
768	2447	3206	2801	2947	3093	2933	4646	1998
	(34.8)	(34.3)	(34.5)	(34.4)	(34.5)	(34.4)	(34.3)	(37.3)
1024	2284	2999	2647	2793	2936	2778	4483	1875
	(32.5)	(32.1)	(32.3)	(32.2)	(32.2)	(32.2)	(31.9)	(35.6)
1544	2072	2699	2413	2562	2706	2549	4247	1670
	(29.5)	(28.9)	(29.0)	(28.9)	(29.0)	(29.0)	(28.6)	(32.6)
2048	1908	2461	2244	2379	2534	2375	0	1531
	(27.1)	(26.3)	(26.6)	(26.4)	(26.5)	(26.5)	(0.0)	(30.7)
3072	1648	2121	1978	0	2268	2109	0	1296
	(23.4)	(22.7)	(22.8)	(0.0)	(22.7)	(22.7)	(0.0)	(27.3)
4096	1433	1841	1765	0	2052	1895	0	0
	(20.4)	(19.7)	(19.8)	(0.0)	(19.7)	(19.6)	(0.0)	(0.0)
5120	1208	1549	1539	0	1818	0	0	0
	(17.2)	(16.6)	(16.6)	(0.0)	(16.3)	(0.0)	(0.0)	(0.0)
6144	973	1232	0	0	0	0	0	0
	(13.8)	(13.2)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-ECoverISDN Noise C US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	3044	4291	3467	3637	3783	3621	5457	2623
	(43.3)	(45.9)	(44.0)	(44.2)	(44.3)	(44.2)	(45.9)	(46.2)
128	2903	4044	3318	3495	3641	3478	5295	2468
	(41.3)	(43.2)	(41.9)	(42.2)	(42.3)	(42.2)	(43.5)	(44.0)
256	2698	3700	3104	3263	3409	3248	5041	2178
	(38.4)	(39.6)	(38.9)	(38.9)	(39.0)	(38.9)	(39.9)	(39.9)
384	2382	3301	2801	2966	3110	2951	4741	1901
	(33.9)	(35.3)	(34.5)	(34.7)	(34.7)	(34.7)	(35.7)	(35.9)
512	2076	2893	2492	2668	2818	2654	4458	1597
	(29.5)	(30.9)	(30.1)	(30.5)	(30.5)	(30.5)	(31.6)	(31.6)
640	1782	2496	2211	2380	2523	2359	0	1285
	(25.3)	(26.7)	(26.1)	(26.4)	(26.4)	(26.3)	(0.0)	(27.1)

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ADSL-ECoverISDN Noise D DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	3552	4532	3880	4014	4165	4006	5661	3145
	(50.5)	(48.4)	(49.9)	(49.6)	(49.7)	(49.7)	(48.8)	(53.7)
768	3421	4369	3748	3883	4035	3875	5532	3048
	(48.7)	(46.7)	(48.0)	(47.8)	(47.9)	(47.9)	(46.9)	(52.3)
1024	3285	4215	3620	3752	3910	3745	5407	2934
	(46.7)	(45.1)	(46.2)	(45.9)	(46.1)	(46.0)	(45.1)	(50.7)
1544	3094	3982	3422	3560	3717	3553	5224	2730
	(44.0)	(42.6)	(43.4)	(43.2)	(43.4)	(43.3)	(42.5)	(47.8)
2048	2942	3783	3278	3413	3567	3404	5059	2593
	(41.9)	(40.4)	(41.3)	(41.1)	(41.2)	(41.2)	(40.2)	(45.8)
3072	2649	3393	2985	3118	3268	3112	4758	2306
	(37.7)	(36.3)	(37.2)	(36.9)	(37.0)	(37.0)	(35.9)	(41.7)
4096	2269	2930	2608	2742	2884	2729	4305	1933
	(32.3)	(31.3)	(31.8)	(31.5)	(31.5)	(31.5)	(29.5)	(36.4)
5120	1724	2136	2014	0	2242	2127	0	1405
	(24.5)	(22.8)	(23.3)	(0.0)	(22.3)	(23.0)	(0.0)	(28.8)
6144	1047	1228	0	0	0	0	0	0
	(14.9)	(13.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-ECoverISDN Noise D US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	2854	4027	3278	3447	3594	3433	5268	2433
	(40.6)	(43.0)	(41.3)	(41.6)	(41.6)	(41.6)	(43.2)	(43.5)
128	2704	3779	3131	3303	3449	3288	5099	2271
	(38.5)	(40.4)	(39.2)	(39.5)	(39.5)	(39.5)	(40.8)	(41.2)
256	2490	3434	2902	3070	3217	3056	4845	1992
	(35.4)	(36.7)	(36.0)	(36.2)	(36.2)	(36.2)	(37.1)	(37.2)
384	2190	3029	2595	2762	2907	2745	4544	1702
	(31.1)	(32.4)	(31.6)	(31.8)	(31.8)	(31.8)	(32.8)	(33.1)
512	1879	2610	2301	2474	2622	2460	4261	1404
	(26.7)	(27.9)	(27.4)	(27.7)	(27.8)	(27.7)	(28.8)	(28.8)
640	1584	2212	2002	0	2329	2168	0	1108
	(22.5)	(23.6)	(23.2)	(0.0)	(23.6)	(23.5)	(0.0)	(24.6)

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ADSL-ECoverPOTS Noise A DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	2893	3852	3267	3424	3574	3414	5177	2456
	(41.2)	(41.2)	(41.2)	(41.2)	(41.3)	(41.3)	(41.9)	(43.9)
768	2783	3663	3144	3290	3443	3277	5019	2405
	(39.6)	(39.2)	(39.4)	(39.3)	(39.5)	(39.3)	(39.6)	(43.1)
1024	2706	3514	3039	3176	3328	3170	4900	2331
	(38.5)	(37.6)	(37.9)	(37.7)	(37.8)	(37.8)	(37.9)	(42.1)
1544	2593	3349	2931	3068	3223	3063	4746	2234
	(36.9)	(35.8)	(36.4)	(36.1)	(36.3)	(36.3)	(35.7)	(40.7)
2048	2491	3229	2832	2969	3121	2962	4651	2112
	(35.4)	(34.5)	(35.0)	(34.7)	(34.9)	(34.9)	(34.4)	(39.0)
3072	2245	2925	2597	2739	2889	2730	4413	1862
	(31.9)	(31.3)	(31.6)	(31.5)	(31.6)	(31.5)	(31.0)	(35.4)
4096	1980	2570	2328	2468	2614	2458	0	1574
	(28.2)	(27.5)	(27.8)	(27.6)	(27.6)	(27.7)	(0.0)	(31.3)
5120	1610	2040	1924	0	2185	2047	0	1207
	(22.9)	(21.8)	(22.1)	(0.0)	(21.5)	(21.8)	(0.0)	(26.3)
6144	1140	1410	0	0	0	0	0	0
	(16.2)	(15.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-ECoverPOTS Noise A US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	3688	5489	4177	4385	4560	4372	6538	2876
	(52.5)	(58.7)	(54.1)	(54.9)	(55.4)	(54.9)	(61.3)	(49.8)
128	3444	5061	3903	4109	4296	4104	6226	2529
	(49.0)	(54.1)	(50.2)	(51.0)	(51.6)	(51.1)	(56.8)	(44.9)
256	3070	4520	3543	3748	3901	3733	5777	2240
	(43.7)	(48.3)	(45.1)	(45.8)	(46.0)	(45.8)	(50.4)	(40.8)
384	2610	3842	3098	3300	3455	3282	5364	1801
	(37.1)	(41.1)	(38.8)	(39.5)	(39.6)	(39.4)	(44.5)	(34.6)
512	2158	3187	2640	2850	3005	2833	4923	1349
	(30.7)	(34.1)	(32.3)	(33.0)	(33.2)	(33.0)	(38.2)	(27.9)
640	1733	2545	2212	2410	2591	2394	4469	0
	(24.6)	(27.2)	(26.2)	(26.8)	(27.3)	(26.8)	(31.8)	(0.0)

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ADSL-ECoverPOTS Noise B DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	3257	4328	3633	3783	3940	3775	5530	2789
	(46.3)	(46.3)	(46.4)	(46.3)	(46.5)	(46.4)	(46.9)	(48.6)
768	3122	4122	3484	3629	3784	3618	5375	2708
	(44.4)	(44.1)	(44.3)	(44.1)	(44.3)	(44.2)	(44.7)	(47.4)
1024	3008	3962	3366	3514	3670	3508	5240	2653
	(42.8)	(42.4)	(42.6)	(42.5)	(42.7)	(42.6)	(42.8)	(46.7)
1544	2895	3751	3234	3375	3528	3365	5064	2533
	(41.2)	(40.1)	(40.7)	(40.5)	(40.7)	(40.6)	(40.3)	(44.9)
2048	2797	3613	3134	3273	3430	3265	4958	2396
	(39.8)	(38.6)	(39.3)	(39.1)	(39.3)	(39.2)	(38.8)	(43.0)
3072	2582	3354	2927	3070	3222	3060	4755	2192
	(36.7)	(35.9)	(36.3)	(36.2)	(36.3)	(36.2)	(35.9)	(40.1)
4096	2364	3071	2711	2849	3003	2841	4536	1963
	(33.6)	(32.8)	(33.3)	(33.0)	(33.2)	(33.1)	(32.7)	(36.8)
5120	2124	2753	2472	2609	2760	2600	4278	1734
	(30.2)	(29.4)	(29.9)	(29.6)	(29.7)	(29.7)	(29.1)	(33.6)
6144	1844	2364	2176	2307	2451	2294	0	1442
	(26.2)	(25.3)	(25.6)	(25.3)	(25.3)	(25.3)	(0.0)	(29.4)

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ADSL-ECoverPOTS Noise B US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	4262	6340	4727	4931	5141	4920	7119	3453
	(60.7)	(67.8)	(62.0)	(62.7)	(63.6)	(62.7)	(69.5)	(58.1)
128	3959	5913	4454	4653	4827	4635	6778	3085
	(56.3)	(63.2)	(58.1)	(58.7)	(59.2)	(58.7)	(64.7)	(52.8)
256	3586	5312	4073	4279	4434	4264	6301	2838
	(51.0)	(56.8)	(52.7)	(53.4)	(53.6)	(53.4)	(57.9)	(49.3)
384	3154	4654	3635	3842	4012	3826	5905	2315
	(44.9)	(49.7)	(46.4)	(47.2)	(47.6)	(47.2)	(52.2)	(41.8)
512	2696	3992	3183	3385	3555	3370	5464	1934
	(38.4)	(42.7)	(40.0)	(40.7)	(41.1)	(40.7)	(45.9)	(36.4)
640	2289	3392	2768	2971	3149	2968	5031	1472
	(32.6)	(36.3)	(34.1)	(34.8)	(35.3)	(34.9)	(39.8)	(29.9)

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ADSL-ECoverPOTS Noise C DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	2952	4246	3409	3583	3748	3572	5501	2361
	(42.0)	(45.4)	(43.2)	(43.5)	(43.8)	(43.5)	(46.5)	(42.5)
768	2725	3758	3106	3278	3430	3263	5143	2226
	(38.8)	(40.2)	(38.9)	(39.1)	(39.3)	(39.1)	(41.4)	(40.6)
1024	2611	3487	2983	3141	3289	3126	4890	2145
	(37.1)	(37.3)	(37.1)	(37.2)	(37.3)	(37.2)	(37.8)	(39.4)
1544	2382	3180	2759	2921	3069	2908	4667	1938
	(33.9)	(34.0)	(33.9)	(34.1)	(34.1)	(34.1)	(34.6)	(36.5)
2048	2174	2888	2549	2700	2851	2690	4432	1734
	(30.9)	(30.9)	(31.0)	(30.9)	(31.0)	(31.0)	(31.2)	(33.6)
3072	1863	2431	2212	2359	2504	2346	0	1450
	(26.5)	(26.0)	(26.2)	(26.1)	(26.1)	(26.1)	(0.0)	(29.6)
4096	1633	2117	1980	0	2270	2108	0	1251
	(23.2)	(22.6)	(22.8)	(0.0)	(22.7)	(22.7)	(0.0)	(26.8)
5120	1431	1857	1776	0	2068	1909	0	0
	(20.3)	(19.9)	(20.0)	(0.0)	(19.9)	(19.8)	(0.0)	(0.0)
6144	1222	1579	1560	0	1845	0	0	0
	(17.4)	(16.9)	(16.9)	(0.0)	(16.7)	(0.0)	(0.0)	(0.0)

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ADSL-ECoverPOTS Noise C US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	4262	6340	4727	4931	5141	4920	7119	3453
	(60.7)	(67.8)	(62.0)	(62.7)	(63.6)	(62.7)	(69.5)	(58.1)
128	3959	5913	4454	4653	4827	4635	6778	3085
	(56.3)	(63.2)	(58.1)	(58.7)	(59.2)	(58.7)	(64.7)	(52.8)
256	3586	5312	4073	4279	4434	4264	6301	2838
	(51.0)	(56.8)	(52.7)	(53.4)	(53.6)	(53.4)	(57.9)	(49.3)
384	3154	4654	3635	3842	4012	3826	5905	2315
	(44.9)	(49.7)	(46.4)	(47.2)	(47.6)	(47.2)	(52.2)	(41.8)
512	2696	3992	3183	3385	3555	3370	5464	1934
	(38.4)	(42.7)	(40.0)	(40.7)	(41.1)	(40.7)	(45.9)	(36.4)
640	2289	3392	2768	2971	3149	2968	5031	1472
	(32.6)	(36.3)	(34.1)	(34.8)	(35.3)	(34.9)	(39.8)	(29.9)

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ADSL-ECoverPOTS Noise D DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	4792	6377	5154	5308	5460	5293	7045	4334
	(68.2)	(68.2)	(68.1)	(68.1)	(68.2)	(68.1)	(68.5)	(70.6)
768	4560	6053	4925	5081	5226	5066	6825	4091
	(64.9)	(64.7)	(64.8)	(64.8)	(64.9)	(64.8)	(65.3)	(67.1)
1024	4378	5821	4744	4896	5042	4880	6625	3927
	(62.3)	(62.2)	(62.2)	(62.2)	(62.2)	(62.2)	(62.5)	(64.8)
1544	4067	5367	4427	4575	4721	4561	6295	3626
	(57.9)	(57.4)	(57.7)	(57.6)	(57.7)	(57.6)	(57.8)	(60.5)
2048	3810	5023	4168	4319	4466	4309	6014	3337
	(54.2)	(53.7)	(54.0)	(54.0)	(54.0)	(54.0)	(53.8)	(56.4)
3072	3367	4406	3717	3865	4019	3856	5559	2946
	(47.9)	(47.1)	(47.6)	(47.5)	(47.7)	(47.6)	(47.3)	(50.8)
4096	3014	3917	3363	3499	3654	3495	5150	2621
	(42.9)	(41.9)	(42.5)	(42.3)	(42.5)	(42.4)	(41.5)	(46.2)
5120	2680	3464	3024	3158	3310	3152	4780	2313
	(38.1)	(37.0)	(37.7)	(37.4)	(37.6)	(37.6)	(36.2)	(41.8)
6144	2236	2793	2535	2662	2777	2654	0	1887
	(31.8)	(29.9)	(30.8)	(30.4)	(30.0)	(30.5)	(0.0)	(35.8)

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ADSL-ECoverPOTS Noise D US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	4186	6188	4635	4839	5086	4837	7042	3362
	(59.6)	(66.1)	(60.7)	(61.4)	(62.9)	(61.6)	(68.4)	(56.8)
128	3876	5752	4349	4559	4755	4549	6658	3009
	(55.2)	(61.5)	(56.6)	(57.4)	(58.1)	(57.5)	(63.0)	(51.7)
256	3461	5134	3951	4155	4308	4137	6206	2772
	(49.3)	(54.9)	(50.9)	(51.6)	(51.8)	(51.6)	(56.5)	(48.3)
384	3042	4462	3525	3728	3895	3711	5787	2195
	(43.3)	(47.7)	(44.9)	(45.6)	(45.9)	(45.5)	(50.6)	(40.1)
512	2575	3838	3068	3271	3444	3256	5326	1832
	(36.6)	(41.0)	(38.3)	(39.0)	(39.5)	(39.0)	(44.0)	(35.0)
640	2160	3201	2641	2845	3010	2827	4897	1312
	(30.7)	(34.2)	(32.3)	(33.0)	(33.3)	(32.9)	(37.9)	(27.4)

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ADSL-FDDoverISDN Noise A DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	2733	3470	3047	3177	3330	3170	4822	2433
	(38.9)	(37.1)	(38.0)	(37.7)	(37.8)	(37.8)	(36.8)	(43.5)
768	2697	3415	3013	3139	3295	3135	4780	2382
	(38.4)	(36.5)	(37.6)	(37.2)	(37.3)	(37.3)	(36.2)	(42.8)
1024	2653	3365	2970	3099	3254	3092	4740	2338
	(37.7)	(36.0)	(37.0)	(36.6)	(36.8)	(36.7)	(35.6)	(42.2)
1544	2502	3167	2817	2943	3098	2938	4575	2170
	(35.6)	(33.9)	(34.8)	(34.4)	(34.5)	(34.5)	(33.3)	(39.8)
2048	2338	2952	2650	2774	2927	2769	4435	2015
	(33.3)	(31.6)	(32.4)	(32.0)	(32.1)	(32.1)	(31.3)	(37.6)
3072	2032	2578	2347	2480	2624	2469	0	1671
	(28.9)	(27.6)	(28.1)	(27.8)	(27.8)	(27.8)	(0.0)	(32.6)
4096	1518	1825	1783	0	1974	1857	0	1223
	(21.6)	(19.5)	(20.1)	(0.0)	(18.5)	(19.1)	(0.0)	(26.5)
5120	855	926	0	0	0	0	0	0
	(12.1)	(9.9)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
6144	324	333	0	0	0	0	0	0
	(4.6)	(3.6)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-FDDoverISDN Noise A US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	2777	3900	3221	3391	3538	3376	5198	2349
	(39.5)	(41.7)	(40.5)	(40.7)	(40.8)	(40.8)	(42.2)	(42.3)
128	2677	3703	3085	3249	3396	3235	5037	2240
	(38.1)	(39.6)	(38.6)	(38.7)	(38.8)	(38.7)	(39.9)	(40.8)
256	2307	3218	2720	2897	3042	2883	4703	1873
	(32.8)	(34.4)	(33.4)	(33.7)	(33.7)	(33.7)	(35.1)	(35.6)
384	1896	2665	2328	2496	2643	2481	4305	1494
	(27.0)	(28.5)	(27.8)	(28.0)	(28.1)	(28.0)	(29.5)	(30.2)
512	1529	2126	1962	0	2267	2108	0	1118
	(21.7)	(22.7)	(22.6)	(0.0)	(22.7)	(22.7)	(0.0)	(24.8)
640	1132	1560	1545	0	1848	0	0	0
	(16.1)	(16.7)	(16.7)	(0.0)	(16.7)	(0.0)	(0.0)	(0.0)

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ADSL-FDDoverISDN Noise B DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	3017	3837	3334	3465	3619	3457	5114	2704
	(42.9)	(41.0)	(42.1)	(41.8)	(42.0)	(41.9)	(41.0)	(47.4)
768	2954	3754	3274	3400	3559	3396	5050	2601
	(42.0)	(40.1)	(41.3)	(40.9)	(41.1)	(41.0)	(40.1)	(45.9)
1024	2891	3678	3212	3342	3497	3335	4990	2573
	(41.1)	(39.3)	(40.4)	(40.0)	(40.2)	(40.2)	(39.2)	(45.5)
1544	2769	3525	3092	3223	3376	3216	4870	2413
	(39.4)	(37.7)	(38.7)	(38.4)	(38.5)	(38.5)	(37.5)	(43.2)
2048	2625	3369	2950	3088	3239	3080	4752	2270
	(37.3)	(36.0)	(36.7)	(36.4)	(36.6)	(36.5)	(35.8)	(41.2)
3072	2381	3042	2707	2837	2993	2831	4492	2026
	(33.9)	(32.5)	(33.2)	(32.9)	(33.0)	(33.0)	(32.1)	(37.7)
4096	2078	2663	2413	2546	2693	2537	0	1721
	(29.6)	(28.5)	(29.0)	(28.7)	(28.8)	(28.8)	(0.0)	(33.4)
5120	1683	2096	1984	0	2218	2093	0	1342
	(23.9)	(22.4)	(22.9)	(0.0)	(22.0)	(22.5)	(0.0)	(27.8)
6144	1044	1203	0	0	0	0	0	0
	(14.8)	(12.9)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-FDDoverISDN Noise B US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	3188	4489	3612	3782	3929	3767	5601	2754
	(45.4)	(48.0)	(46.1)	(46.3)	(46.4)	(46.3)	(47.9)	(48.1)
128	3055	4237	3463	3634	3781	3618	5446	2618
	(43.5)	(45.3)	(44.0)	(44.2)	(44.3)	(44.2)	(45.7)	(46.2)
256	2687	3785	3120	3295	3442	3279	5104	2267
	(38.2)	(40.5)	(39.1)	(39.4)	(39.4)	(39.4)	(40.8)	(41.2)
384	2303	3225	2736	2910	3057	2896	4719	1890
	(32.8)	(34.5)	(33.6)	(33.9)	(34.0)	(33.9)	(35.3)	(35.8)
512	1943	2705	2358	2528	2677	2515	4338	1520
	(27.6)	(28.9)	(28.2)	(28.5)	(28.5)	(28.5)	(30.0)	(30.6)
640	1558	2172	1985	0	2300	2139	0	1131
	(22.1)	(23.2)	(22.9)	(0.0)	(23.2)	(23.1)	(0.0)	(25.1)

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ADSL-FDDoverISDN Noise C DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	2418	3093	2744	2882	3030	2871	4536	2000
	(34.4)	(33.1)	(33.7)	(33.5)	(33.6)	(33.6)	(32.7)	(37.3)
768	2265	2912	2599	2733	2884	2723	4389	1827
	(32.2)	(31.1)	(31.7)	(31.4)	(31.5)	(31.4)	(30.7)	(34.9)
1024	2109	2712	2434	2577	2723	2566	4247	1715
	(30.0)	(29.0)	(29.3)	(29.2)	(29.2)	(29.2)	(28.6)	(33.3)
1544	1904	2428	2227	2359	2511	2351	0	1546
	(27.1)	(26.0)	(26.4)	(26.1)	(26.2)	(26.2)	(0.0)	(30.9)
2048	1751	2228	2071	2206	2354	2196	0	1385
	(24.9)	(23.8)	(24.2)	(23.8)	(23.9)	(23.9)	(0.0)	(28.5)
3072	1516	1923	1834	0	2115	1956	0	1176
	(21.6)	(20.6)	(20.8)	(0.0)	(20.5)	(20.5)	(0.0)	(25.8)
4096	1261	1593	1575	0	1855	0	0	0
	(17.9)	(17.0)	(17.1)	(0.0)	(16.8)	(0.0)	(0.0)	(0.0)
5120	1001	1259	0	0	0	0	0	0
	(14.2)	(13.5)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
6144	711	861	0	0	0	0	0	0
	(10.1)	(9.2)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-FDDoverISDN Noise C US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	3186	4487	3609	3779	3925	3763	5599	2753
	(45.3)	(48.0)	(46.1)	(46.3)	(46.3)	(46.3)	(47.9)	(48.1)
128	3052	4233	3461	3632	3779	3615	5443	2616
	(43.4)	(45.3)	(43.9)	(44.2)	(44.2)	(44.2)	(45.6)	(46.1)
256	2685	3782	3119	3293	3440	3277	5102	2265
	(38.2)	(40.4)	(39.1)	(39.4)	(39.4)	(39.3)	(40.8)	(41.1)
384	2300	3221	2735	2907	3053	2892	4716	1888
	(32.7)	(34.4)	(33.6)	(33.9)	(33.9)	(33.9)	(35.3)	(35.8)
512	1942	2702	2355	2527	2675	2514	4337	1518
	(27.6)	(28.9)	(28.2)	(28.4)	(28.5)	(28.5)	(30.0)	(30.6)
640	1556	2168	1984	0	2297	2136	0	1129
	(22.1)	(23.2)	(22.9)	(0.0)	(23.1)	(23.1)	(0.0)	(25.0)

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ADSL-FDDoverISDN Noise D DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	3555	4537	3884	4016	4171	4011	5661	3147
	(50.6)	(48.5)	(50.0)	(49.7)	(49.8)	(49.8)	(48.8)	(53.7)
768	3424	4372	3753	3889	4040	3880	5533	3054
	(48.7)	(46.7)	(48.1)	(47.8)	(48.0)	(47.9)	(46.9)	(52.4)
1024	3295	4216	3625	3759	3915	3751	5410	2939
	(46.9)	(45.1)	(46.3)	(46.0)	(46.2)	(46.1)	(45.2)	(50.7)
1544	3100	3972	3432	3566	3720	3559	5214	2735
	(44.1)	(42.5)	(43.5)	(43.2)	(43.4)	(43.3)	(42.4)	(47.8)
2048	2947	3772	3276	3407	3567	3403	5052	2602
	(41.9)	(40.3)	(41.3)	(41.0)	(41.2)	(41.1)	(40.1)	(45.9)
3072	2641	3370	2966	3097	3252	3091	4687	2298
	(37.6)	(36.0)	(36.9)	(36.6)	(36.7)	(36.7)	(34.9)	(41.6)
4096	2215	2733	2507	2621	2745	2611	0	1894
	(31.5)	(29.2)	(30.4)	(29.8)	(29.5)	(29.9)	(0.0)	(35.8)
5120	1432	1571	1571	0	0	0	0	1210
	(20.4)	(16.8)	(17.0)	(0.0)	(0.0)	(0.0)	(0.0)	(26.3)
6144	590	615	0	0	0	0	0	0
	(8.4)	(6.6)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-FDDoverISDN Noise D US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	4816	6909	5277	5460	5606	5443	7297	4438
	(68.6)	(73.8)	(69.8)	(70.2)	(70.3)	(70.2)	(72.1)	(72.1)
128	4568	6511	5013	5200	5338	5174	7024	4195
	(65.0)	(69.6)	(66.1)	(66.5)	(66.4)	(66.4)	(68.2)	(68.6)
256	4167	5847	4607	4774	4920	4759	6557	3756
	(59.3)	(62.5)	(60.3)	(60.5)	(60.5)	(60.4)	(61.5)	(62.4)
384	3734	5258	4167	4347	4492	4331	6141	3314
	(53.1)	(56.2)	(54.0)	(54.4)	(54.4)	(54.3)	(55.6)	(56.1)
512	3362	4683	3783	3948	4093	3932	5726	2952
	(47.8)	(50.1)	(48.5)	(48.7)	(48.7)	(48.7)	(49.7)	(50.9)
640	2946	4065	3358	3524	3667	3509	5245	2529
	(41.9)	(43.5)	(42.5)	(42.6)	(42.7)	(42.6)	(42.8)	(44.9)

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ADSL-FDDoverPOTS Noise A DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	2736	3531	3069	3205	3354	3195	4881	2427
	(38.9)	(37.7)	(38.4)	(38.1)	(38.2)	(38.2)	(37.6)	(43.4)
768	2697	3431	3016	3146	3301	3140	4793	2381
	(38.4)	(36.7)	(37.6)	(37.3)	(37.4)	(37.4)	(36.4)	(42.8)
1024	2658	3386	2980	3110	3265	3104	4760	2350
	(37.8)	(36.2)	(37.1)	(36.7)	(36.9)	(36.9)	(35.9)	(42.3)
1544	2515	3222	2840	2969	3122	2963	4640	2185
	(35.8)	(34.4)	(35.1)	(34.8)	(34.9)	(34.9)	(34.2)	(40.0)
2048	2388	3085	2726	2864	3013	2856	4521	2036
	(34.0)	(33.0)	(33.5)	(33.2)	(33.3)	(33.3)	(32.5)	(37.9)
3072	2141	2704	2453	2578	2727	2572	0	1772
	(30.5)	(28.9)	(29.6)	(29.2)	(29.3)	(29.3)	(0.0)	(34.1)
4096	1775	2242	2090	2214	2341	2209	0	1413
	(25.2)	(24.0)	(24.4)	(24.0)	(23.8)	(24.1)	(0.0)	(29.0)
5120	1281	1509	1507	0	0	0	0	0
	(18.2)	(16.1)	(16.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
6144	702	790	0	0	0	0	0	0
	(10.0)	(8.4)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-FDDoverPOTS Noise A US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	3825	5707	4316	4522	4704	4510	6669	2993
	(54.4)	(61.0)	(56.1)	(56.9)	(57.4)	(56.9)	(63.1)	(51.5)
128	3572	5309	4065	4264	4435	4246	6374	2697
	(50.8)	(56.8)	(52.6)	(53.2)	(53.6)	(53.1)	(58.9)	(47.3)
256	3202	4735	3693	3893	4055	3875	5944	2351
	(45.6)	(50.6)	(47.2)	(47.9)	(48.2)	(47.9)	(52.8)	(42.4)
384	2708	4013	3192	3395	3569	3381	5478	1953
	(38.5)	(42.9)	(40.1)	(40.8)	(41.3)	(40.8)	(46.2)	(36.7)
512	2262	3310	2739	2948	3107	2931	5028	1412
	(32.2)	(35.4)	(33.7)	(34.4)	(34.7)	(34.4)	(39.8)	(29.0)
640	1823	2689	2312	2505	2660	2485	4535	1112
	(25.9)	(28.7)	(27.6)	(28.1)	(28.3)	(28.1)	(32.7)	(24.7)

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ADSL-FDDoverPOTS Noise B DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	3046	3940	3382	3522	3673	3513	5198	2712
	(43.3)	(42.1)	(42.8)	(42.6)	(42.7)	(42.7)	(42.2)	(47.5)
768	2977	3806	3305	3434	3591	3429	5090	2630
	(42.4)	(40.7)	(41.7)	(41.4)	(41.6)	(41.5)	(40.6)	(46.3)
1024	2924	3748	3254	3387	3542	3381	5046	2600
	(41.6)	(40.1)	(41.0)	(40.7)	(40.9)	(40.8)	(40.0)	(45.9)
1544	2807	3598	3134	3269	3425	3260	4931	2444
	(39.9)	(38.5)	(39.3)	(39.0)	(39.2)	(39.1)	(38.4)	(43.7)
2048	2682	3465	3018	3156	3312	3150	4829	2315
	(38.2)	(37.0)	(37.6)	(37.4)	(37.6)	(37.5)	(36.9)	(41.8)
3072	2472	3155	2797	2928	3083	2923	4580	2095
	(35.2)	(33.7)	(34.5)	(34.2)	(34.3)	(34.3)	(33.4)	(38.7)
4096	2210	2838	2543	2680	2829	2672	4323	1850
	(31.4)	(30.3)	(30.9)	(30.6)	(30.7)	(30.7)	(29.7)	(35.2)
5120	1904	2417	2215	2351	2493	2340	0	1548
	(27.1)	(25.8)	(26.2)	(26.0)	(25.9)	(26.0)	(0.0)	(31.0)
6144	1471	1859	1776	0	2025	1904	0	1149
	(20.9)	(19.9)	(20.0)	(0.0)	(19.3)	(19.8)	(0.0)	(25.4)

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ADSL-FDDoverPOTS Noise B US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	4345	6461	4834	5040	5224	5028	7212	3535
	(61.8)	(69.1)	(63.5)	(64.2)	(64.8)	(64.3)	(70.8)	(59.2)
128	4087	6066	4579	4781	4940	4763	6874	3200
	(58.2)	(64.8)	(59.9)	(60.6)	(60.8)	(60.5)	(66.0)	(54.4)
256	3691	5455	4166	4360	4542	4348	6429	2862
	(52.5)	(58.3)	(54.0)	(54.6)	(55.1)	(54.6)	(59.7)	(49.6)
384	3201	4758	3688	3884	4070	3869	5973	2419
	(45.5)	(50.9)	(47.2)	(47.8)	(48.4)	(47.8)	(53.2)	(43.3)
512	2761	4086	3246	3455	3616	3441	5522	1904
	(39.3)	(43.7)	(40.9)	(41.7)	(41.9)	(41.7)	(46.8)	(36.0)
640	2324	3427	2803	3001	3161	2983	5070	1527
	(33.1)	(36.6)	(34.6)	(35.2)	(35.4)	(35.2)	(40.3)	(30.7)

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ADSL-FDDoverPOTS Noise C DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	2589	3397	2948	3097	3241	3082	4786	2146
	(36.8)	(36.3)	(36.6)	(36.6)	(36.6)	(36.6)	(36.3)	(39.4)
768	2453	3199	2796	2945	3095	2936	4626	2019
	(34.9)	(34.2)	(34.5)	(34.4)	(34.5)	(34.5)	(34.0)	(37.6)
1024	2304	3013	2658	2805	2951	2792	4493	1914
	(32.8)	(32.2)	(32.5)	(32.4)	(32.4)	(32.4)	(32.1)	(36.1)
1544	2084	2694	2422	2566	2714	2554	4242	1676
	(29.6)	(28.8)	(29.1)	(29.0)	(29.1)	(29.0)	(28.5)	(32.7)
2048	1905	2458	2243	2381	2532	2373	0	1538
	(27.1)	(26.3)	(26.6)	(26.4)	(26.5)	(26.5)	(0.0)	(30.8)
3072	1647	2111	1976	0	2261	2104	0	1296
	(23.4)	(22.6)	(22.8)	(0.0)	(22.6)	(22.6)	(0.0)	(27.3)
4096	1430	1833	1759	0	2045	1885	0	0
	(20.3)	(19.6)	(19.7)	(0.0)	(19.5)	(19.5)	(0.0)	(0.0)
5120	1202	1530	1525	0	1805	0	0	0
	(17.1)	(16.4)	(16.4)	(0.0)	(16.1)	(0.0)	(0.0)	(0.0)
6144	963	1215	0	0	0	0	0	0
	(13.7)	(13.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

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ADSL-FDDoverPOTS Noise C US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	4358	6491	4854	5058	5226	5042	7231	3555
	(62.0)	(69.4)	(63.8)	(64.5)	(64.8)	(64.5)	(71.1)	(59.5)
128	4088	6067	4582	4782	4941	4764	6875	3209
	(58.2)	(64.8)	(59.9)	(60.6)	(60.8)	(60.5)	(66.0)	(54.6)
256	3691	5465	4174	4381	4554	4368	6429	2873
	(52.5)	(58.4)	(54.1)	(54.9)	(55.3)	(54.9)	(59.7)	(49.8)
384	3208	4759	3688	3890	4071	3880	5976	2419
	(45.7)	(50.9)	(47.2)	(47.9)	(48.4)	(47.9)	(53.2)	(43.3)
512	2769	4106	3262	3460	3617	3442	5531	1927
	(39.4)	(43.9)	(41.1)	(41.7)	(41.9)	(41.7)	(46.9)	(36.3)
640	2324	3427	2808	3001	3162	2983	5070	1536
	(33.1)	(36.6)	(34.6)	(35.2)	(35.4)	(35.2)	(40.3)	(30.8)

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ADSL-FDDoverPOTS Noise D DS

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
512	4768	6333	5142	5290	5435	5275	6992	4317
	(67.9)	(67.7)	(67.9)	(67.8)	(67.8)	(67.8)	(67.7)	(70.4)
768	4541	5993	4902	5055	5201	5042	6749	4076
	(64.6)	(64.1)	(64.5)	(64.5)	(64.5)	(64.5)	(64.3)	(66.9)
1024	4359	5721	4709	4862	5006	4847	6544	3910
	(62.0)	(61.1)	(61.7)	(61.7)	(61.7)	(61.7)	(61.3)	(64.6)
1544	4030	5250	4377	4521	4663	4506	6198	3601
	(57.4)	(56.1)	(57.0)	(56.8)	(56.8)	(56.8)	(56.4)	(60.2)
2048	3761	4873	4116	4253	4398	4241	5899	3320
	(53.5)	(52.1)	(53.3)	(53.0)	(53.1)	(53.1)	(52.2)	(56.2)
3072	3289	4229	3630	3770	3922	3763	5373	2897
	(46.8)	(45.2)	(46.3)	(46.1)	(46.3)	(46.3)	(44.7)	(50.1)
4096	2905	3708	3232	3361	3516	3357	4960	2571
	(41.3)	(39.6)	(40.7)	(40.3)	(40.5)	(40.5)	(38.8)	(45.5)
5120	2508	3132	2812	2930	3073	2925	4266	2194
	(35.7)	(33.5)	(34.7)	(34.2)	(34.2)	(34.3)	(28.9)	(40.1)
6144	1694	1777	1774	0	1794	1781	0	1554
	(24.1)	(19.0)	(19.9)	(0.0)	(16.0)	(18.0)	(0.0)	(31.1)

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ADSL-FDDoverPOTS Noise D US

Rate	Loop1	Loop2	Loop3	Loop4	Loop5	Loop6	Loop7	Loop8
64	6362	9457	6860	7062	7252	7048	9268	5544
	(90.6)	(101.1)	(92.4)	(93.0)	(93.7)	(93.0)	(100.1)	(87.8)
128	6062	8954	6548	6752	6941	6749	8873	5200
	(86.3)	(95.7)	(87.9)	(88.6)	(89.3)	(88.8)	(94.5)	(82.9)
256	5402	8068	5897	6101	6274	6087	8269	4582
	(76.9)	(86.2)	(78.6)	(79.4)	(79.8)	(79.4)	(85.9)	(74.1)
384	4892	7270	5388	5587	5746	5569	7671	4063
	(69.6)	(77.7)	(71.4)	(72.0)	(72.3)	(72.0)	(77.4)	(66.7)
512	4385	6537	4871	5073	5240	5056	7153	3595
	(62.4)	(69.9)	(64.0)	(64.7)	(65.0)	(64.7)	(70.0)	(60.1)
640	3934	5838	4412	4617	4800	4601	6670	3138
	(56.0)	(62.4)	(57.5)	(58.2)	(58.8)	(58.2)	(63.1)	(53.6)

3. Conclusions

In this contribution, we have calculated the performance requirements, as reaches and insertion loss values. These numbers should be considered for the current revision of the ETSI ADSL standard.

4. References

- [1] ETSI Document *RTS/TM-06006, Transmission and Multiplexing (TM); Access Networks; Asymmetrical Digital Subscriber Line (ADSL) - European specific requirements*, Draft revision 10a, May 2001.
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- [5] Nordström T., D. Bengtsson, *FTW xDSL simulation tool*, Version 2.2, 2001.
Version 2.2 is available at <<http://www.xdsl.ftw.at/xdslsimu/>>.