Annex 62B

(normative)

Performance guidelines for 10PASS-TS PMD profiles

Revision History:	
Draft 1.414 April 2003	Draft for IEEE P802.3ah Task Force review.
Draft 1.732 June 2003	Draft for IEEE P802.3ah Task Force review.
Draft 1.9 July 2003	Draft for IEEE 802.3 Working Group preview, incorporating comments received at June, 2003 meeting in Ottawa, Canada. Draft will be precirculated prior to the July 2003 Plenary, in accordance with the 802.3 rules.
Draft 2.0 July 2003	Draft for IEEE 802.3 Working Group Ballot, incorporating WG review at the July, 2003 Plenary meeting in San Francisco, California. Draft will be balloted in accordance with the 802.3 rules.
Draft 2.1 September 2003	Revised draft for IEEE 802.3 Working Group Ballot Recirculation, incorporating comments resolved at the September, 2003 Interim meeting in Portonovo, Italy.
Draft 2.2 November 2003	In preparation.

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62B.1 Introduction and rationale

Annex 62B defines performance guidelines for 10PASS-TS PMD profiles. The definition of these guidelines is challenging due to the varying nature of the access network. The access network has large variations in cable characteristics from region to region. In addition, the make-up of a cable can encompass multiple cable gauges and/or different configuration of bridged taps. Finally, services may vary from region to region creating different noise scenarios. Typically, deployment guidelines are a function of the telecommunications operator, which is operating a loop and the regional spectrum management policies, which govern deployment on that loop.

Given that one cannot test every possible combination of loop make-up and noise conditions, the performance guidelines are covered from two perspectives. Firstly, 62B.3 lists a suite of artificial tests crafted to test the 10PASS-TS PHYs under representative worst-case noise and loop conditions. Secondly, 62B.4 defines a deployment guideline rule which allows a service provider to determine whether a given loop will support a given profile.

62B.2 Relationship to other clauses

Annex 62A lists a set of PMD profiles for 10PASS-TS. Clause 30 [see Clause 30] describes how the selection of Annex 62A profiles is exported to a management entity. ~~Clause45~~ Clause 45 registers describe an optional mechanism for configuring a 10PASS-TS PHY to use a particular profile. The register settings for each profile are contained in 62A.4.

62B.3 Performance test cases

Table 62B-1—Test cases for 10PASS-TS

Test	Test loop	L (m)	Band plan and PSD mask profile	Payload rate profile	Band notch profile	UPBO reference PSD profile	Noise Model[a]
1	VDSL1, TP1	750	13	10/10	—	5	AWGN
2	VDSL1, TP1	575	18	10/10	—	9	ETSI F
3	VDSL1, TP2	750	13	10/10	—	5	ETSI A
4	VDSL1, TP1	400	2	10/10	—	3	T1.424 F
5	VDSL1, TP2	500	1	10/10	—	1	T1.424 A
6	VDSL1, TP1	475	18	10/10	2, 5, 9, 11	9	ETSI F
7	VDSL1, TP2	500	1	10/10	2, 6, 10, 11	1	T1.424 A
8	VDSL1, TP1	350	2	10/10	2, 6, 10, 11	3	T1.424 F
9	VDSL1, TP2	450	1	10/10	2, 6, 10, 11	1	T1.424 A
10	VDSL1, TP2	100	8	100/35	—	no UPBO	Self
11	VDSL1, TP2	150	16	50/50	—	no UPBO	AWGN
12	VDSL1, TP2	250	16	35/25	—	8	Self
13	VDSL1, TP1	650	6	25/5	—	3	Self
14	VDSL1, TP2	800	17	15/15	—	no UPBO	Self
15	VDSL1, TP1	1000	8	15/2.5	—	4	Self
16	VDSL1, TP2	500	4	12.5/12.5	—	no UPBO	Self
17	VDSL1, TP2	750	4	7.5/7.5	—	4	Self
18	VDSL1, TP2	1200	23	5/5	—	8	Self
19	VDSL1, TP2	1800	23	2.5/2.5	—	8	Self
20	VDSL1, TP2	100	8	100/35	2, 6, 10, 11	no UPBO	Self
21	VDSL1, TP2	200	8	75/35	2, 6, 10, 11	no UPBO	Self
22	VDSL1, TP2	150	16	50/50	2, 5, 9, 11	no UPBO	AWGN
23	VDSL1, TP2	250	16	35/25	2, 5, 9, 11	8	Self
24	VDSL1, TP1	650	6	25/5	2, 6, 10, 11	3	Self
25	VDSL1, TP2	800	17	15/15	2, 5, 9, 11	no UPBO	Self
26	VDSL1, TP1	1000	8	15/2.5	2, 6, 10, 11	4	Self
27	VDSL1, TP2	500	4	12.5/12.5	2, 6, 10, 11	no UPBO	Self
28	VDSL1, TP2	750	4	7.5/7.5	2, 6, 10, 11	4	Self
29	VDSL1, TP2	1200	23	5/5	2, 5, 9, 11	8	Self
30	VDSL1, TP2	1800	23	2.5/2.5	2, 5, 9, 11	8	Self

[a]'AWGN' means that only white gaussian noise at -140dBm/Hz is present. 'T1.424 A' or 'T1.424 F' means that T1.424/Trial-Use Noise Model A or F respectively is present in addition to white gaussian noise at -140dBm/Hz. 'ETSI A' or 'ETSI F' means that ETSI TS 101 270-1 Noise Model A or F respectively is present in addition to white gaussian noise at -140dBm/Hz. 'Self' means that the equivalent crosstalk generated by 20 10PASS-TS transceivers operating in the same mode (assuming the same loop length and the same UPBO configuration) as the device under test is present in addition to white gaussian noise at -140dBm/Hz.

The performance test cases are derived from the standard definition of test loops in T1.424/Trial-Use, part 1, section 13.2, the noise models are defined in T1.424/Trial-Use, part 1, section 13.3 and the profiles are defined in 62A.3.1. In all cases the PHYs shall attain link in the specified profile in the presence of noise and impairments and maintain link with a Bit Error Ratio less than 10^{-7} with the noise raised by 6dB.

During the test the PHY shall meet the requirements of the bandplan, PSD and Upstream Power Back Off (where appropriate) specified. The control of the profile shall be through the Clause 30 [see Clause 30] MIB if supported. If the PHY under test includes any implementation options defined in the reference document (but out of scope for this standard) these options shall be disabled in such a manner as to render the behavior identical to implementations without such options.

If a PHY is capable of operating as both CO-subtype and CPE-subtype then both modes of operation shall be tested. If the PHY is capable of supporting PMI aggregation then each PMI shall be capable of passing the performance tests independently.

Table 62B-1 lists the performance test cases. The test loops are described in T1.424/Trial-Use, part 1, section 13.2. For tests using test loop "VDSL1" the table specifies which of the two cable types (TP1 or TP2) is used. The length value refers to the dimension "x", "y", "z", "u" or "v" depending on the test loop. If "notch" is specified to be "on" then the RF notches specified in T1.424/Trial-Use, part 1, Annex 1 are applied as described in section 13.3.3. If "UPBO" is specified to be "on" then the Power Back Off specified in 62.3.4.1 is applied. The noise model applied will be noise model "A" or "F" as described in T1.424/Trial-Use, part 1, section 13.3.1.1 (also 13.3.1.4.2). The definition of self crosstalk is in section 13.3.1.4.1).

For G.993.1 Annex A band plans, the noise model applied will be noise model "A" or "F" as described in T1.424/Trial-Use, part 1, section 13.3.1.1 (also 13.3.1.4.2); the definition of self crosstalk is in section 13.3.1.4.1. For G.993.1 Annex B band plans, the noise model applied will be noise model "A" or "F" as described in TS 101 270-1, section 9.3.4.1.2; the definition of self crosstalk is in section 9.3.4.1.1.

62B.3.1 Additional tests

Additional testing to prove the requirements for link establishment, UPBO, burst noise immunity, link state and error reporting, etc. may be performed using any test scenarios from Table 62B-1.

62B.4 Deployment guidelines

The relationship between specific cable parameters and performance is complex and cannot be guaranteed. The performance tests described in section 62B.3 are designed to ensure that compliant PHYs will achieve a similar level of performance when applied in similar environments. The tests are designed to represent realistic worst case conditions but real world installations may sometimes experience worse performance for apparently similar conditions.

Reference specification TS 101 270, part 1, Annex A contains some additional information regarding performance expectations related to cable parameters.

62B.5 Protocol Implementation Conformance Statement (PICS) proforma for Annex 62B, Performance guidelines for 10PASS-TS PMD profiles

62B.5.1 Introduction

62B.5.2 Identification

62B.5.2.1 Implementation identification

Supplier	
Contact point for enquiries about the PICS	
Implementation Name(s) and Version(s)	
Other information necessary for full identification--e.g., names and versions for machines and/or operating systems; System Name(s)	
Only the first three items are required for all implementations; other information may be completed as appropriate in meeting the requirements for the identification. The terms Name and Version should be interpreted appropriately to correspond with a supplier's terminology (e.g., Type, Series, Model).	

62B.5.2.2 Protocol summary

Identification of protocol standard	IEEE Std 802.3ah-200x, Performance guidelines for 10PASS-TS PMD profiles.
Identification of amendments and corrigenda to this PICS proforma that have been completed as part of this PICS	
Have any Exception items been required? No [ ] Yes [ ] (See Clause 21 [see Clause 21]: the answer Yes means that the implementation does not conform to IEEE Std 802.3ah-200x.)	
Date of Statement	

62B.5.3 Major capabilities/options

Item	Feature	Subclause	Value/Comment	Status	Support
10PPerf	Performance guidelines for 10PASS-TS PMD profiles	Annex 62B	The performance guidelines listed in Annex 62B are supported.	10PASS-TS: M	Yes [ ]

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62B.5.4 PICS proforma tables for Performance guidelines for 10PASS-TS PMD profiles

Item	Feature	Subclause	Value/Comment	Status	Support
10PPerf-1	Performance test cases	62B.3	In all cases the PHY attains link in the specified profile in the presence of noise and impairments and maintains link with a Bit Error Ratio less than 10^{-7} with the noise raised by 6dB.	M	Yes [ ]
10PPerf-2	Performance test cases	62B.3	During the test the PHY meets the requirements of the bandplan, PSD and Upstream Power Back Off specified.	M	Yes [ ]
10PPerf-3	Performance test cases	62B.3	The control of the profile is through the Clause 30 MIB if supported.	MDIO: M	Yes [ ] No [ ]
10PPerf-4	Performance test cases	62B.3	If the PHY under test includes any implementation options defined in the reference document these options are disabled in such a manner as to render the behavior identical to implementations without such options.	M	Yes [ ]
10PPerf-5	Performance test cases	62B.3	If a PHY is capable of operating as both CO-subtype and CPE-subtype then both modes of operation are tested.	M	Yes [ ]
10PPerf-6	Performance test cases	62B.3	If the PHY is capable of supporting PMI aggregation then each PMI is capable of passing the performance tests independently.	M	Yes [ ]

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