

ITU-T

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STANDARDIZATION SECTOR
OF ITU

G.997.1

Amendment 1

(12/2012)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Digital sections and digital line system – Access networks

Physical layer management for digital subscriber
line (DSL) transceivers

Amendment 1

Recommendation ITU-T G.997.1 (2012) –
Amendment 1

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Recommendation ITU-T G.997.1

Physical layer management for digital subscriber line (DSL) transceivers

Amendment 1

Summary

Amendment 1 to Recommendation ITU-T G.997.1 (2012) contains the following additions and changes:

- Additional parameter for the reporting of the actually used AELE method.
- Changes for the control of the INP of ROC.
- Add support for changes to PSD masks of ITU-T G.993.2 Annex B.
- Add line status parameters for ITU-T G.993.5.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.997.1	1999-07-02	15
2.0	ITU-T G.997.1	2003-05-22	15
2.1	ITU-T G.997.1 (2003) Amd. 1	2003-12-14	15
2.2	ITU-T G.997.1 (2003) Amd. 2	2005-01-13	15
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4.1	ITU-T G.997.1 (2006) Cor. 1	2006-12-14	15
4.2	ITU-T G.997.1 (2006) Amd. 1	2006-12-14	15
4.3	ITU-T G.997.1 (2006) Amd. 2	2007-11-22	15
4.4	ITU-T G.997.1 (2006) Amd. 3	2008-08-22	15
5.0	ITU-T G.997.1	2009-04-22	15
5.1	ITU-T G.997.1 (2009) Cor. 1	2009-11-13	15
5.2	ITU-T G.997.1 (2009) Amd. 1	2010-06-11	15
5.3	ITU-T G.997.1 (2009) Amd. 2	2010-11-29	15
5.4	ITU-T G.997.1 (2009) Amd. 3	2011-06-22	15
5.5	ITU-T G.997.1 (2009) Cor. 2	2011-10-29	15
5.6	ITU-T G.997.1 (2009) Amd. 4	2011-12-16	15
5.7	ITU-T G.997.1 (2009) Amd. 5	2012-02-13	15
6.0	ITU-T G.997.1	2012-06-13	15
6.1	ITU-T G.997.1 (2012) Amd. 1	2012-12-07	15

FOREWORD

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Recommendation ITU-T G.997.1

Physical layer management for digital subscriber line (DSL) transceivers

Amendment 1

1) Addition of reporting of actual alternative electrical length estimation method

1.1) Clause 7.5.1.23.7

Add new clause 7.5.1.23.7:

7.5.1.23.7 "Actual Alternative Electrical Length Estimation Mode" (ACT-AELE-MODE)

This parameter reports the actual AELE-MODE used in clause 7.2.1.3.2.1 of [ITU-T G.993.2]. The value of this parameter is 0, 1, 2 or 3.

1.2) Table 7-28

Add row to Table 7-28

Table 7-28 – Line test, diagnostic and status parameters

Category/Element	Defined in clause:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface	G-Interface
...						
<i>Upstream power back-off</i>						
UPBOKLE	7.5.1.23.1	R (M)	R (O)			R (O)
UPBOKLE-R	7.5.1.23.2	R (O)	R (O)			R (O)
UPBOKLE-pb	7.5.1.23.3	R (O)	R (O)			
UPBOKLE-R-pb	7.5.1.23.4	R (O)	R (O)			R (O)
RXTHRSHds	7.5.1.23.5	R (O)	R (O)			R (O)
RXTHRSHus	7.5.1.23.6	R (O)	R (O)			
<u>ACT-AELE-MODE</u>	<u>7.5.1.23.7</u>	<u>R (O)</u>				
...						

1.3) Table 7-29

Add row to Table 7-29

Table 7-29 – Support of line test, diagnostic and status parameters per Recommendation

Category/Element	ITU-T G.992.1	ITU-T G.992.2	ITU-T G.992.3	ITU-T G.992.4	ITU-T G.992.5	ITU-T G.993.2	ITU-T G.998.4	ITU-T G.993.5
...								
<i>Upstream power back-off</i>								

Table 7-29 – Support of line test, diagnostic and status parameters per Recommendation

Category/Element	ITU-T G.992.1	ITU-T G.992.2	ITU-T G.992.3	ITU-T G.992.4	ITU-T G.992.5	ITU-T G.993.2	ITU-T G.998.4	ITU-T G.993.5
UPBOKLE						Y		
UPBOKLE-R						Y		
UPBOKLE-pb						Y		
UPBOKLE-R-pb						Y		
RXTHRSHds						Y		
RXTHRSHus						Y		
<u>ACT-AELE-MODE</u>						<u>Y</u>		
...								

2) Changes for the control of the INP of ROC

2.1) Clauses 7.3.1.10.11 and 7.3.1.10.12

Modify clauses 7.3.1.10.11 and 7.3.1.10.12 as follows:

7.3.1.10.11 Downstream minimum INP of ROC (INPMIN-ROC-ds)

This parameter contains the minimum impulse noise protection to apply on the ROC in the downstream direction expressed in multiples of equivalent 4k DMT symbol length (denoted T_{4k} , see clause 10.4.4 of [ITU-T G.993.2]). The minimum impulse noise protection is an integer ranging from 0 to ~~168~~.

7.3.1.10.12 Upstream minimum INP of ROC (INPMIN-ROC-us)

This parameter contains the minimum impulse noise protection to apply on the robust ROC in the upstream direction expressed in multiples of T_{4k} . The minimum impulse noise protection is an integer ranging from 0 to ~~168~~.

2.2) Clause 7.5.1.34

Modify clause 7.5.1.34 as shown:

7.5.1.34 Actual impulse noise protection of ROC

7.5.1.34.1 Downstream actual impulse noise protection of ROC (ACTINP-ROC-ds)

This parameter reports the actual impulse noise protection (INP) of the ROC in the downstream direction expressed in multiples of T_{4k} in the L0 state.

In the L1 or L2 states, the parameter contains the value in the previous L0 state.

The value is coded in fractions of T_{4k} with a granularity of 0.1. The range is from 0 to 25.4. A special value indicates an ACTINP-ROC-ds higher than 25.4. The format and usage is identical to the channel status parameter ACTINP (see clause 7.5.2.4).

7.5.1.34.2 Upstream actual impulse noise protection of ROC (ACTINP-ROC-us)

This parameter reports the actual impulse noise protection (INP) of the ROC in the upstream direction expressed in multiples of T_{4k} in the L0 state.

In the L1 or L2 states, the parameter contains the value in the previous L0 state.

The value is coded in fractions of T_{4k} with a granularity of 0.1. The range is from 0 to 25.4. A special value indicates an ACTINP-ROC-us higher than 25.4. The format and usage is identical to the channel status parameter ACTINP (see clause 7.5.2.4).

3) Add support for changes to ITU-T G.993.2 Annex B PSD masks

3.1) Clause 7.3.1.2.15

Modify clause 7.3.1.2.15 as follows:

7.3.1.2.15 VDSL2 PSD mask class selection (CLASSMASK)

In order to reduce the number of configuration possibilities, the limit power spectral density masks (limit PSD masks) are grouped in the following PSD mask classes:

- Class 998 Annex A of [ITU-T G.993.2]: D-32, D-48, D-64, D-128.
- Class 997-M1c Annex B of [ITU-T G.993.2]: 997-M1c-A-7.
- Class 997-M1x Annex B of [ITU-T G.993.2]: 997-M1x-M.
- Class 997-M2x Annex B of [ITU-T G.993.2]: 997E17-M2x-NUS0, 997E30-M2x-NUS0.
- ~~– Class 998-M1x Annex B of [ITU-T G.993.2]: 998-M1x-A, 998-M1x-B, 998-M1x-NUS0.~~
- Class 998-M2x Annex B of [ITU-T G.993.2]: 998-M2x-A, 998-M2x-M, 998-M2x-B, 998-M2x-NUS0, 998E17-M2x-NUS0, 998E17-M2x-NUS0-M, 998E30-M2x-NUS0, 998E30-M2x-NUS0-M.
- Class 998ADE-M2x Annex B of [ITU-T G.993.2]: 998-M2x-A, 998-M2x-M, 998-M2x-B, 998-M2x-NUS0, 998ADE17-M2x-A, 998ADE17-M2x-B, 998ADE17-M2x-M, 998ADE17-M2x-NUS0-M, 998ADE30-M2x-NUS0-A, 998ADE30-M2x-NUS0-M, HPEADE1230, HPEADE1730.
- Class 998-B Annex C: POTS-138b, POTS-276b (clause C.2.1.1 of [ITU-T G.993.2]), TCM-ISDN (C.2.1.2/G.993.2).
- Class 998-CO Annex C of [ITU-T G.993.2]: POTS-138co, POTS-276co (clause C.2.1.1 of [ITU-T G.993.2]).
- Class HPE-M1 Annex B of [ITU-T G.993.2]: HPE17-M1-NUS0, HPE30-M1-NUS0, HPE1230-M1-NUS0, HPE1730-M1-NUS0.

Each class is designed such that the PSD levels of each limit PSD mask of a specific class are equal in their respective passband above 552 kHz.

One CLASSMASK parameter is defined per the ITU-T G.993.2 Annex enabled in the XTSE. It selects a single PSD mask class per the ITU-T G.993.2 Annex that is activated at the VTU-O. The coding is as indicated in Table 7-6.

Table 7-6 – Definition of values of CLASSMASK per ITU-T G.993.2 Annex

Parameter value	ITU-T G.993.2 Annex A	ITU-T G.993.2 Annex B	ITU-T G.993.2 Annex C
1	998	997-M1c	998-B
2		997-M1x	998-CO
3		997-M2x	
4		998-M1x	
5		998-M2x	
6		998ADE-M2x	
7		HPE	
NOTE – A single PSD mask class shall be selected per G.993.2 Annex.			

3.2) Clause 7.3.1.2.16

Modify clause 7.3.1.2.16 as follows:

7.3.1.2.16 VDSL2 limit PSD masks and band plans enabling (LIMITMASK)

This configuration parameter contains the ITU-T G.993.2 limit PSD masks of the selected PSD mask class, enabled by the near-end xTU on this line for each class of profiles. One LIMITMASK parameter is defined per the ITU-T G.993.2 Annex enabled in the XTSE.

The profiles are grouped in the following profile classes:

- Class 8: Profiles 8a, 8b, 8c, 8d
- Class 12: Profiles 12a, 12b
- Class 17: Profile 17a
- Class 30: Profile 30a

For each profile class, several limit PSD masks of the selected PSD mask class (CLASSMASK) may be enabled. The enabling parameter is coded in a bit-map representation (0 if the associated mask is not allowed, 1 if it is allowed).

The parameter has the bit definitions for each PSD mask class as indicated in Table 7-7.

Table 7-7 – Definition of bits of LIMITMASK for each CLASSMASK

Bit number	Profile class	PSD mask classes									
		Annex A	Annex B							Annex C	
		998 Annex A	998-M1x Annex B	998-M2x Annex B	998ADE-M2x Annex B	997-M1x Annex B	997-M1c Annex B	997-M2x Annex B	HPE-M1 Annex B	998-B Annex C	998-CO Annex C
Octet 1											
1	8	D-32	M1x-A	M2x-A	M2x-A		M1c-A-7			POTS-138b	POTS_138co
2	8	D-48	M1x-B	M2x-B	M2x-B					TCM-ISDN	POTS_276co
3	8			M2x-M	M2x-M	M1x-M				POTS_276b	
4	8		M1x-NUS0	M2x-NUS0	M2x-NUS0						
5	8										
6	8										
7	8										
8	8										
Octet 2											
1	8	D-64									
2	8	D-128									
3	8										
4	8										
5	8										
6	8										
7	8										
8	8										

Table 7-7 – Definition of bits of LIMITMASK for each CLASSMASK

Bit number	Profile class	PSD mask classes									
		Annex A	Annex B							Annex C	
		998 Annex A	998-M1x Annex B	998-M2x Annex B	998ADE-M2x Annex B	997-M1x Annex B	997-M1c Annex B	997-M2x Annex B	HPE-M1 Annex B	998-B Annex C	998-CO Annex C
Octet 3											
1	12	D-32	M1x-A	M2x-A	M2x-A					POTS-138b	POTS_138co
2	12	D-48	M1x-B	M2x-B	M2x-B					TCM-ISDN	POTS_276co
3	12			M2x-M	M2x-M	M1x-M				POTS_276b	
4	12		M1x-NUS0	M2x-NUS0	M2x-NUS0						
5	12										
6	12										
7	12										
8	12										
Octet 4											
1	12	D-64									
2	12	D-128									
3	12										
4	12										
5	12										
6	12										
7	12										
8	12										

Table 7-7 – Definition of bits of LIMITMASK for each CLASSMASK

Bit number	Profile class	PSD mask classes									
		Annex A	Annex B							Annex C	
		998 Annex A	998-M1x Annex B	998-M2x Annex B	998ADE-M2x Annex B	997-M1x Annex B	997-M1c Annex B	997-M2x Annex B	HPE-M1 Annex B	998-B Annex C	998-CO Annex C
Octet 5											
1	17	D-32		E17-M2x-NUS0	ADE17-M2x-A			E17-M2x-NUS0	17-M1-NUS0	POTS-138b	
2	17	D-48		E17-M2x-NUS0-M	ADE17-M2x-B					TCM-ISDN	
3	17				ADE17-M2x-NUS0-M					POTS_276b	
4	17				ADE17-M2x-M						
5	17										
6	17										
7	17										
8	17										
Octet 6											
1	17	D-64									
2	17	D-128									
3	17										
4	17										
5	17										
6	17										
7	17										
8	17										

Table 7-7 – Definition of bits of LIMITMASK for each CLASSMASK

Bit number	Profile class	PSD mask classes									
		Annex A	Annex B							Annex C	
		998 Annex A	998-M1x Annex B	998-M2x Annex B	998ADE-M2x Annex B	997-M1x Annex B	997-M1c Annex B	997-M2x Annex B	HPE-M1 Annex B	998-B Annex C	998-CO Annex C
Octet 7											
1	30	D-32		E30-M2x-NUS0	ADE30-M2x-NUS0-A			E30-M2x-NUS0	30-M1-NUS0	POTS-138b	
2	30	D-48		E30-M2x-NUS0-M	ADE30-M2x-NUS0-M				1230-M1-NUS0	TCM-ISDN	
3	30				<u>HPEADE1230-NUS0</u>				1730-M1-NUS0	POTS_276b	
4	30				<u>HPEADE1730-NUS0</u>						
5	30										
6	30										
7	30										
8	30										
Octet 8											
1	30	D-64									
2	30	D-128									
3	30										
4	30										
5	30										
6	30										
7	30										
8	30										
NOTE – All unassigned bits are reserved by ITU.											

4) Line status parameters for G.993.5

4.1) Clause 7.5.1.43

Add clause 7.5.1.43:

7.5.1.43 Line status parameters for G.993.5

7.5.1.43.1 Actual vectoring mode (ACTVECTORMODE)

This parameter reports the vectoring initialization type of the line.

If ACTVECTORMODE equals 0, the line is initialized in G.993.2 mode different from Annex X or Annex Y.

If ACTVECTORMODE equals 1, the line is initialized in G.993.2 Annex X.

If ACTVECTORMODE equals 2, the line is initialized in G.993.2 Annex Y.

If ACTVECTORMODE equals 3, the line is initialized in G.993.5.

4.2) Table 7-28

Add row in Table 7-28:

Table 7-28 – Line test, diagnostic and status parameters

Category/Element	Defined in clause:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface	G-Interface
...						
AGGACHNDR_FE	7.5.1.42.2	R(O)			R(O)	
<u>Line status parameters for ITU-T G.993.5</u>						
<u>ACTVECTORMODE</u>	<u>7.5.1.43.1</u>	<u>R(O)</u>			<u>R(O)</u>	
NOTE – These parameters are R (M) on the Q-interface for [ITU-T G.993.2] and R (O) for all other ITU-T Recommendations which support them.						

4.3) Table 7-29

Add row and Note in Table 7-29:

Table 7-29 – Support of line test, diagnostic and status parameters per Recommendation

Category/Element	ITU-T G.992.1	ITU-T G.992.2	ITU-T G.992.3	ITU-T G.992.4	ITU-T G.992.5	ITU-T G.993.2	ITU-T G.998.4	ITU-T G.993.5
...								
AGGACHNDR_FE								Y (Note 2)
<u>Line status parameters G.993.5</u>								
<u>ACTVECTORMODE</u>						<u>Y</u> (Note 3)		<u>Y</u>
NOTE 1 – Those parameters apply only to G.998.4 when used in conjunction with G.993.2. NOTE 2 – Those parameters apply only to G.998.4 when G.993.5 is selected. <u>NOTE 3 – This parameter applies only when Annex X or Annex Y is supported.</u>								

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