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Amendment 7
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SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

Digital sections and digital line system – Metallic access networks

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Physical layer management for digital subscriber line transceivers

Amendment 7

CAUTION !

PREPUBLISHED RECOMMENDATION

This prepublication is an unedited version of a recently approved Recommendation. It will be replaced by the published version after editing. Therefore, there will be differences between this prepublication and the published version.

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Amendment 7 to Recommendation ITU-T G.997.1 (2012)

Physical layer management for digital subscriber line transceivers: Amendment 7

Summary

Amendment 7 to Recommendation ITU-T G.997.1 (2012) includes:

- Management parameters for the support of G.993.5 Annex B (Vectored Long Reach VDSL) and G.993.2 Annex D (Unvectored Long Reach VDSL)

- Management parameters for the support of G.993.5 Annex A (Mitigating strong FEXT)

- Add missing parameter INM_INPEQ_FORMAT for the support of INM in G.993.2.

Amendment 7 to Recommendation ITU-T G.997.1 (2012)

Physical layer management for digital subscriber line transceivers: Amendment 7

1) Management parameters for the support of G.993.5 Annex B (Vectored Long Reach VDSL) and G.993.2 Annex D (Unvectored Long Reach VDSL)

Add definition in section3 :

3.16 VDSL2-LR mode : VDSL2-LR mode refers to operation according to G.993.2 Annex D or G.993.5 Annex B.

Add section 7.3.1.16

7.3.1.16 VDSL2-LR configuration parameter

7.3.1.16.1 VDSL2-LR ~~mode~~ enable (VDSL2-LR_~~MODE~~ENABLE)

This parameter specifies ~~if the~~which VDSL2-LR ~~mode is disabled, enabled, or forced to switch to the long loop operation~~operation types are allowed. The parameter ~~can take three values: 0 (disabled), 1 (enabled) and 2 (forced to long loop operation)~~is encoded as a bitmap representation (0 is not allowed, 1 is allowed):

Bit 0: short loop operation type~~.~~

Bit 1: medium loop operation type.

Bit 2: long loop operation type.

If no operation type is allowed, the VDSL2-LR mode is disabled. If at least one operation type is allowed, the VDSL2-LR mode is enabled.

For detailed specification of this parameter see G.993.5/B.10.1.1.

Add section 7.5.1.44

7.5.1.44 Line status parameter for VDSL2-LR

7.5.1.44.1 VDSL2-LR ~~actual mode~~actual operation type (VDSL2-LR_~~ACTMODE~~ACTOPTYPE)

This parameter reports the actual ~~mode~~ operation type of VDSL2-LR.

If VDSL2-LR_~~ACTMODE~~ ACTOPTTYPE equals 0, the line ~~is not initialized in the VDSL2-LR operation over long loop~~does not operate in VDSL2-LR mode.

If VDSL2-LR_~~ACTMODE~~ ACTOPTYPE equals 1, the line ~~is initialized in the VDSL2-LR operation over medium loop~~operates according to the short loop operation type of VDSL2-LR.

If VDSL2-LR_~~ACTMODE~~ ACTOPTYPE equals 2, the line ~~is initialized in the VDSL2-LR operation over long loop~~operates according to the medium loop operation type of VDSL2-LR.

If VDSL2-LR_~~ACTMODE~~ ACTOPTYPE equals 3, the line ~~is initialized in the VDSL2-LR operation over long loop~~operates according to the long loop operation type of VDSL2-LR.

For detailed specification of this parameter see G.993.5/B.10.2.1.

Add section 7.4.14:

7.4.14 Inventory information for VDSL2-LR

7.4.14.1 VTU-O VDSL2-LR support (VDSL2-LR_SUPPORT_O)

This parameter indicates the support of VDSL2-LR mode by the VTU-O. The parameter is set to 0 if VDSL2-LR mode is not supported and set to 1 if VDSL2-LR mode is supported.

7.4.14.2 VTU-R VDSL2-LR support (VDSL2-LR_SUPPORT_R)

This parameter indicates the support of VDSL2-LR mode by the VTU-R. The parameter is set to 0 if VDSL2-LR mode is not supported and set to 1 if VDSL2-LR mode is supported.

Modify table 7-14 as follows:

Table 7-14 – Line configuration profile

Category/Element	Defined in clause:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface
...					
ATTNDR_MDOSPLIT	7.3.1.15.2	R/W(O)			
VDSL2-LR configuration parameter					
VDSL2-LR_~~MODE~~ENABLE	7.3.1.16.1	R/W(M)			

Modify Table 7-15 as follows:

Table 7-15 – Support of line configuration 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
MAXNOMPSD ds			Y	Y	Y	Y (Note 5)		Y (Note 4)
MAXNOMPSD us			Y	Y	Y	Y (Note 5)		Y (Note 4)
...								
ATTNDR_ MDOSPLIT						Y		Y (Note 2)
VDSL2-LR configuration parameter								
VDSL2-LR_~~MODE~~ENABLE						Y (Note 5)		Y (Note 4)

NOTE 1 – In SNRM_MODE = 3 or 4 (Receiver referred virtual noise), this parameter is only defined for [ITU-T G.993.2].

NOTE 2 – Those parameters apply only to ITU-T G.998.4 when used in conjunction with ITU-T G.993.2.

NOTE 3– This parameter applies only when Annex X or Annex Y is supported.

NOTE 4 – This parameter applies only when Annex B is supported.

NOTE 5 – This parameter applies only when Annex D is supported

Modify Table 7-28 as follows:

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
...						
ACTVECTORMODE	7.5.1.43.1	R(O)			R(O)	
VDSL2-LR status parameter						
VDSL2-LR_ACT~~MODE~~OPTTYPE	7.5.1.44.1	R(M)			R(M)	
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.						

Modify Table 7-29 as follows:

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
...								
ACTVECTORMODE						Y (Note 3)		Y
VDSL2-LR status parameter								
VDSL2-LR_ACT~~MODE~~OPTTYPE						Y (Note 5)		Y (Note 4)
NOTE 1 – Those parameters apply only to ITU-T G.998.4 when used in conjunction with ITU-T G.993.2. NOTE 2 – Those parameters apply only to ITU-T G.998.4 when ITU-T G.993.5 is selected. NOTE 3 – This parameter applies only when Annex X or Annex Y is supported. NOTE 4 – This parameter applies only when Annex B is supported. NOTE 5 – This parameter applies only when Annex D is supported								

Modify table 7-20 as follows:

Table 7-20 – Line inventory

Category/Element	Defined in clause:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface
...					
VCE port index (VCE_port_index)	7.4.13.2	R (M)			
VDSL2-LR specific					
VTU-O VDSL2-LR_SUPPORT	7.4.14.1	R(M)			
VTU-R VDSL2-LR_SUPPORT	7.4.14.2	R(M)			

Modify Table 7-21 as follows:

Table 7-21 – Support of line inventory information 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.993.5
...							
VCE_port_index							Y
VDSL2-LR specific							
VTU-O VDSL2-LR_SUPPORT						Y (Note 2)	Y (Note 1)
VTU-R VDSL2-LR_SUPPORT						Y (Note 2)	Y (Note 1)
NOTE 1 – This parameter applies only when Annex B is supported. NOTE 2 – This parameter applies only when Annex D is supported							

2) Management parameters for the support of G.993.5 Annex A (Mitigating strong FEXT)

Add section 7.3.1.17:

7.3.1.17 STRONGFEXT MODE configuration parameter

7.3.1.17.1 STRONGFEXT mode (STRONGFEXT_MODE)

This parameter specifies if ~~the STRONGFEXT mode~~operation according to G.993.5 Annex A is disabled, preferred, forced, or forced ~~in 35b~~above 17MHz~~ only~~. The parameter can take four values: 0 (disabled), 1 (preferred), 2 (forced) and 3 (forced ~~in 35b only~~above 17MHz).

For detailed specification of this parameter see G.993.5/A.8.1.1.

Add section 7.5.1.45:

7.5.1.45 Line status parameter for STRONGFEXT MODE

7.5.1.45.1 Actual STRONGFEXT mode (STRONGFEXT_ACTMODE)

This parameter reports the use of STRONGFEXT mode.

If STRONGFEXT_ACTMODE equals 0, the line is not initialized ~~in the STRONGFEXT mode~~with operation according to G.993.5 Annex A.

If STRONGFEXT_ACTMODE equals 1, the line is initialized ~~in the STRONGFEXT mode~~with operation according to G.993.5 Annex A.

Add section 7.4.15:

7.4.15 Inventory information for STRONGFEXT MODE

7.4.15.1 VTU-O STRONGFEXT mode support (STRONGFEXT_MODE_SUPPORT_O)

This parameter indicates the support of ~~STRONGFEXT mode~~operation according to G.993.5 Annex A by the VTU-O. The parameter is set to 0 if STRONGFEXT mode is not supported and set to 1 if STRONGFEXT mode is supported.

7.4.15.2 VTU-R STRONGFEXT mode support (STRONGFEXT_MODE_SUPPORT_R)

This parameter indicates the support of ~~STRONGFEXT mode~~operation according to G.993.5 Annex A by the VTU-R. The parameter is set to 0 if STRONGFEXT mode is not supported and set to 1 if STRONGFEXT mode is supported.

Modify table 7-14 as follows:

Table 7-14 – Line configuration profile

Category/Element	Defined in clause:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface
...					
ATTNDR_MDOSPLIT	7.3.1.15.2	R/W(O)			
VDSL2-LR configuration parameter					
VDSL2-LR_MODE	7.3.1.16.1	R/W(M)			
STRONGFEXT MODE configuration parameter					
STRONGFEXT_MODE	7.3.1.17.1	R/W(M)			

Modify Table 7-15 as follows:

Table 7-15 – Support of line configuration 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
MAXNOMPSD ds			Y	Y	Y	Y (Note 5)		Y (Note 4)
MAXNOMPSD us			Y	Y	Y	Y (Note 5)		Y (Note 4)
...								
ATTNDR_ MDOSPLIT						Y		Y (Note 2)
VDSL2-LR configuration parameter								
VDSL2-LR_MODE						Y (Note 5)		Y (Note 4)
STRONGFEXT MODE configuration parameter								
STRONGFEXT_ MODE								Y (Note 6)
NOTE 1 – In SNRM_MODE = 3 or 4 (Receiver referred virtual noise), this parameter is only defined for [ITU-T G.993.2]. NOTE 2 – Those parameters apply only to ITU-T G.998.4 when used in conjunction with ITU-T G.993.2. NOTE 3– This parameter applies only when Annex X or Annex Y is supported. NOTE 4 – This parameter applies only when Annex B is supported. NOTE 5 – This parameter applies only when Annex D is supported NOTE 6 – This parameter applies only when Annex A is supported								

Modify Table 7-28 as follows:

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
...						
ACTVECTORMODE	7.5.1.43.1	R(O)			R(O)	

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
VDSL2-LR status parameter						
VDSL2-LR_ACTMODE	7.5.1.44.1	R(M)			R(M)	
STRONGFEXT MODE status parameter						
STRONGFEXT_ACTMODE	7.5.1.45.1	R(M)			R(M)	
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.						

Modify Table 7-29 as follows:

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
...								
ACTVECTORMODE						Y (Note 3)		Y
VDSL2-LR status parameter								
VDSL2-LR_ACTMODE						Y (Note 5)		Y (Note 4)
STRONGFEXT MODE status parameter								
STRONGFEXT_ACTMODE								Y (Note 6)
NOTE 1 – Those parameters apply only to ITU-T G.998.4 when used in conjunction with ITU-T G.993.2. NOTE 2 – Those parameters apply only to ITU-T G.998.4 when ITU-T G.993.5 is selected. NOTE 3 – This parameter applies only when Annex X or Annex Y is supported. NOTE 4 – This parameter applies only when Annex B is supported. NOTE 5 – This parameter applies only when Annex D is supported NOTE 6 – This parameter applies only when Annex A is supported.								

Modify table 7-20 as follows:

Table 7-20 – Line inventory

Category/Element	Defined in clause:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface
...					
VCE port index (VCE_port_index)	7.4.13.2	R (M)			
VDSL2-LR specific					
VTU-O VDSL2-LR_SUPPORT	7.4.14.1	R(M)			

Category/Element	Defined in clause:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface
VTU-R VDSL2-LR_SUPPORT	7.4.14.2	R(M)			
STRONGFEXT MODE specific					
VTU-O STRONGFEXT MODE support	7.4.15.1	R(M)			
VTU-R STRONGFEXT MODE support	7.4.15.2	R(M)			

Modify Table 7-21 as follows:

Table 7-21 – Support of line inventory information 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.993.5
...							
VCE_port_index							Y
VDSL2-LR specific							
VTU-O VDSL2-LR_SUPPORT						Y (Note 2)	Y (Note 1)
VTU-R VDSL2-LR_SUPPORT						Y (Note 2)	Y (Note 1)
STRONGFEXT MODE specific							
VTU-O STRONGFEXT MODE SUPPORT							Y (Note 3)
VTU-R STRONGFEXT MODE SUPPORT							Y (Note 3)
NOTE 1 – This parameter applies only when Annex B is supported. NOTE 2 – This parameter applies only when Annex D is supported NOTE 3 – This parameter applies only when Annex A is supported.							

3) Add missing parameter INM_INPEQ_FORMAT for the support of INM in G.993.2.

Add section 7.3.1.9.5 :

7.3.1.9.5 INM equivalent INP format (INM_INPEQ_FORMAT)

This is the INM equivalent INP format that the xTU receiver shall use in to scale the INPEQ historgram, as defined in the relevant ITU-T Recommendation. The valid values for INM_INPEQ_FORMAT are 0 (linear), 1 (logarithmic).

7.3.1.9.6 INM enable (INM_ENABLE)

This is the enable/disable of the INM facility in both directions, as defined in the relevant ITU-T Recommendation. The valid values for INM_ENABLE are 0 (disabled), 1 (enabled). If INM is disabled, all other configuration parameters for INM are not applicable.

NOTE - If INM is disabled in the MIB, the transceiver may use for the control parameters of INM vendor-discretionary values taken from the range of valid values or disable the INM functionality.

Modify Table 7.14 as follows:

Table 7-14 – Line configuration profile

Category/Element	Defined in clause:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface
…					
INM_INPEQ_MODEus	7.3.1.9.4	R/W (O)			
INM_INPEQ_FORMATds	7.3.1.9.5	R/W (O)			
INM_INPEQ_FORMATus	7.3.1.9.5	R/W (O)			
INM_ENABLE	7.3.1.9.6	R/W (O)			
SOS configuration parameters					
…					

Modify Table 7-15 as follows:

Table 7-15 – Support of line configuration 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
…								
INM_INPEQ_ MODEus						Y		
INM_INPEQ_FOR MATds						Y		
INM_INPEQ_FOR MATus						Y		
INM_ENABLE						Y		
SOS configuration parameters								
…								