



TECHNICAL REPORT

TR-272

BBF and TMF xDSL Management Specifications Alignment

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Executive Summary

TR-272 contains a gap analysis comparing BBF TR-252 xDSL management requirements with TeleManagement Forum (TMF) xDSL management requirements. The results of the gap analysis will be cooperatively worked with the TMF to effect industry alignment. In so doing, the goal is to leverage the TMF Multi-Technology Network Management (MTNM) 3.5 requirements and propose enhancements to the Layered and Performance Parameters defined in the TMF.

1 Purpose and Scope

1.1 Purpose

TR-272 proposes a disciplined approach for aligning xDSL element management requirements between the Broadband Forum (BBF) and the TeleManagement Forum (TMF). The purpose is to help ensure that the layered and performance parameters defined in TMF 513 SD1-16, TMF 513 SD1-28, and TMF 513 SD1-44, are aligned and up-to-date with those in BBF Technical Report TR-252. However, these TMF 513 documents were written in 2007 and have not been updated since. The BBF continues to enhance TR-252 with updates made to ITU-T G.997.1 and there is a need to compare industry specifications to help ensure that the industry has a consistent set of standards. As suppliers are utilizing the TMF's Multi-Technology Network Management (MTNM) 3.5 requirements in their implementations, it is critical that the TMF requirements are synchronized with the BBF requirements to avoid potential confusion in the industry.

TR-272 follows-up on the completion of TR-226 that harmonized BBF TR-101-related management requirements with the TeleManagement Forum. TR-226 highlighted a number of areas where TeleManagement Forum documentation has not kept pace with advancements in DSL-to-Ethernet aggregation in the BBF. It was discovered during the TR-226 gap analysis that portions of the TMF documentation on DSL are out of date. Hence, there is a need for the BBF and TeleManagement Forum to work more closely together to bridge gaps and ensure that both organizations' documentation are up-to-date.

A major goal of TR-272 is to facilitate cooperation with the TeleManagement Forum. TR-226 resulted in a multi-Standards Development Organization (SDO) effort starting in the third quarter of 2011 to align Carrier Ethernet terminology and requirements between the BBF, TMF, and the MetroEthernet Forum (MEF). While progress has been made on terminology mappings, much more work needs to be done to align requirements. It is intended that a similar effort be commenced between the BBF and TMF to review xDSL gaps identified within TR-272.

The major reasons for undertaking TR-272 are:

- The need for common terminology and requirements for xDSL management across the industry
- To enable removal of potentially obsolete xDSL requirements in TMF documentation
- To enable TMF documents to be updated and aligned with recently updated BBF TRs and ITU-T Recommendations

1.2 Scope

TR-272 considers all the parameters contained in the management models in Broadband Forum TR-252 and maps them to the layered and performance parameters defined in TeleManagement Forum's documents TMF 513 SD1-16, SD1-28, and SD1-44. Where the corresponding TR-252 parameters do not exist in these TMF documents, the gaps are identified in Section 4

2 References and Terminology

2.1 Conventions

In this Technical Report, several words are used to signify the requirements of the specification. These words are always capitalized. More information can be found in RFC 2119 [1].

MUST	This word, or the term “REQUIRED”, means that the definition is an absolute requirement of the specification.
MUST NOT	This phrase means that the definition is an absolute prohibition of the specification.
SHOULD	This word, or the term “RECOMMENDED”, means that there could exist valid reasons in particular circumstances to ignore this item, but the full implications need to be understood and carefully weighed before choosing a different course.
SHOULD NOT	This phrase, or the phrase "NOT RECOMMENDED" means that there could exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications need to be understood and the case carefully weighed before implementing any behavior described with this label.
MAY	This word, or the term “OPTIONAL”, means that this item is one of an allowed set of alternatives. An implementation that does not include this option MUST be prepared to inter-operate with another implementation that does include the option.

2.2 References

The following references are of relevance to this Technical Report. At the time of publication, the editions indicated were valid. All references are subject to revision; users of this Technical Report are therefore encouraged to investigate the possibility of applying the most recent edition of the references listed below. A list of currently valid Broadband Forum Technical Reports is published at www.broadband-forum.org.

Document	Title	Source	Year
[1] TR-169	<i>EMS to NMS Interface Requirements for Access Nodes Supporting TR-101</i>	BBF	2008
[2] TR-226	<i>XML Layered and Performance Parameters In Support of TR-169</i>	BBF	2010
[3] TR-252 Issue 2	<i>xDSL Protocol Independent Information Model</i>	BBF	2012
[4] TMF 513 SD1-16	<i>Supporting Document: Layered Parameters</i>	TMF	2007
[5] TMF 513 SD1-28	<i>Supporting Document: Performance Parameters</i>	TMF	2007
[6] TMF513 SD1-44	<i>Supporting Document: Connectionless Technology Management</i>	TMF	2007
[7] TMF 518_RPM (Version 1.2)	<i>Resource Performance Management – DDP BA</i>	TMF	2011
[8] TMF608	<i>Multi-Technology Network Management (MTNM) Information Agreement</i>	TMF	2007
[9] TMF864_NRB_XML	<i>Network Resource Basic - DDP IIS</i>	TMF	2008
[10] G.997.1	<i>Series G: Transmission Systems and Media, Digital Systems and Networks: Digital sections and digital line systems – Access networks: Physical layer management for digital subscriber line (DSL) transceivers</i>	ITU-T	2009
[11] G.997.1 Amendment 1	<i>Series G: Transmission Systems and Media, Digital Systems and Networks: Digital sections and digital line systems – Access networks: Physical layer management for digital subscriber line (DSL) transceivers</i>	ITU-T	2010
[12] G.997.1 Amendment 3	<i>Series G: Transmission Systems and Media, Digital Systems and Networks: Digital sections and digital line systems – Access networks: Physical layer management for</i>	ITU-T	2011

		<i>digital subscriber line (DSL) transceivers</i>		
[13]	G.997.4 Amendment 4	<i>Series G: Transmission Systems and Media, Digital Systems and Networks: Digital sections and digital line systems – Access networks: Physical layer management for digital subscriber line (DSL) transceivers</i>	ITU-T	2011

2.3 Definitions

The following terminology is used throughout this Technical Report.

Customer	An entity to which the service provider provides network services.
EMS	Element Management System. This entity is typically provided by a network element supplier and capable of managing multiple network elements of that supplier. An EMS can communicate with one or more NE(s) on an individual or collective basis (e.g., individually to a switch or collectively to a SONET ring). An EMS can have some network management layer capabilities, particularly, when an EMS manages multiple types of NE(s) and/or NE(s) from multiple suppliers.
MIB	Management Information Base. A set of data elements and capabilities made available by a system to enable it to be managed.
Network	One or more subnetworks connected by network links, providing end-to-end service to one or more customers. Each subnetwork is administered by an EMS and the network is administered by a service provider.
NMS	An entity responsible for end-to-end management of a network composed of network elements from multiple suppliers. Instead of directly managing network elements, it relies upon the capabilities of the EMS(s). An NMS can interface with one or more Service Management Systems and can include some service management functionality. An NMS can also include some element management layer capabilities that allow it to manage individual NE(s) or it can contain only network management layer functionality to manage one or more EMS(s).
Port	An access point on an NE to which a link or a customer access link is attached.

2.4 Abbreviations

This Technical Report uses the following abbreviations.

DDP	Document Delivery Package
EMS	Element Management System
FEC	Forward Error Correction
FEXT	Far End Cross Talk
IETF	Internet Engineering Task Force
IIS	Interface Implementation Specifications
INM	Impulse Noise Monitoring
INP	Impulse Noise Protection
IP	Internet Protocol
LAN	Local Area Network
LR	Layer Rate
NE	Network Element
NMS	Network Management System
OAM	Operations, Administration, and Maintenance
PTP	Physical Termination Point
ROC	Robust Overhead Channel
SOS	A VDSL2 technique to avoid DSL retrains in rapidly degrading noise conditions. SOS is not an acronym.
TMF	TeleManagement Forum
UNI	User-Network Interface
xDSL	DSL in general (i.e., ADSL, ADSL2, ADSL2plus, or VDSL2)

3 Technical Report Impact

3.1 Energy Efficiency

TR-272 has no impact on energy efficiency.

3.2 IPv6

TR-272 has no impact on IPv6 support and compatibility.

3.3 Security

There are no relevant security issues relating to TR-272.

3.4 Privacy

There are no relevant privacy issues relating to TR-272.

4 Mapping of TR-252 Requirements to MTNM 3.5

The TeleManagement Forum (TMF) is recognized as a key standards organization for the definition of multi-technology network management requirements and data models. DSL and Ethernet management requirements and data models produced by the Broadband Forum (BBF) need to build on the TMF's MTOSI Release 2.0 work when considering the EMS to NMS interface to help achieve industry compatibility. For example, BBF TR-226 mapped the BBF TR-169 DSL aggregation to Ethernet requirements with TMF MTNM 3.5 requirements. This was a first step towards:

- Future definition and development of protocol-specific models in the TeleManagement Forum and by Element Management System (EMS)/Network Management System (NMS) vendors.
- Aligning BBF Ethernet requirements and terminology with TMF requirements and terminology by identifying those deltas that need to be reflected in MTOSI Release 2.0 in support of a TR-169 based EMS-NMS information model.

4.1 xDSL Configuration Management Mapping

For xDSL configuration management,, Table 1 provides a mapping between TR-252 requirements/parameter names and MTNM 3.5 parameter names. The specific document where the MTNM 3.5 parameter can be found along with the source standards document for the TR-252 requirement are also cited in Table 1.

Table 1 identifies several gaps between TR-252 and TMF MTNM 3.5. When a gap exists, the following note appears in the MTNM 3.5 Parameter Name cell "NO MAPPING TO TM FORUM SPECIFICATIONS – GAP."

xDSL configuration management gaps exist between the Broadband Forum and MTNM 3.5 requirements in the following areas.

- Impulse Noise Monitoring (INM)
- Impulse Noise Protection (INP)
- SOS
- Upstream and downstream re-initialization policy
- Vectoring

Table 1 – xDSL Configuration Management Mapping between TR-252 and TMF MTNM

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xDSL Line	xDSL Line Identifier	xDSL Line parameters are modeled; xDSL Line Identifier is implied	SD1-16	G.997.1
xDSL Line	Pointer to xDSL Line Configuration Vector	SD1-16 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line	Pointer to xDSL Line ThresholdTemplate	SD1-16 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line	Power Management State Forced (PMSF)	“PowerManagementState Forced”	SD1-16	G.997.1
xDSL Line	Loop Diagnostics Mode Forced	“LoopDiagnosticsModeForced”	SD1-16	G.997.1
xDSL Line	Automode Cold Start Forced	“AutomaticColdStartForced”	SD1-16	G.997.1
xDSL Line	xDSL Transmission System	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xDSL Line	Power Management State	“PowerState” – EXCEPTION: TMF does not support line power management state value “L2”	SD1-16	G.997.1
xDSL Line	Initialization Success/Failure Cause	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xDSL Line	Update Request Flag for Near-	NO MAPPING TO TM FORUM	None	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	End Test Parameters (UPDATE-TEST-NE)	SPECIFICATIONS – GAP		
xDSL Line	Update Request Flag for Far-End Test Parameters (UPDATE-TEST-FE)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xDSL Channel	Channel Number	“<channel<n>”	SD1-16	G.997.1
xTU Termination Unit	xTU Identifier	xTU parameters are modeled; xTU Identifier is implied	SD1-16	G.997.1
xTU Termination Unit	xTU G.994.1 Vendor Id	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Termination Unit	xTU System Vendor Id	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Termination Unit	xTU Version Number	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Termination Unit	xTU Serial Number	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Termination Unit	xTU Self-Test Result	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Termination Unit	xTU xDSL Transmission System Capabilities	Parameter applies only to the Q-interface; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xTU Termination Unit	Current 15-minute Interval Elapsed Time (0 to 900 sec)	Not visible at the interface (i.e., no specific performance monitoring parameter exists) in the TM Forum specifications; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	RFC 3705
xTU Termination Unit	Number of previous 15-minute Intervals (0 to N)	“Granularity”	TMF518_R PM	RFC 3705
xTU Termination Unit	Number of previous Invalid 15-minute Intervals (0 to N)	“IntervalStatus” = Invalid	TMF518_R PM	RFC 3705
xTU Termination Unit	Current 1-Day Interval Elapsed Time (0 to 86400 sec)	Not visible at the interface (i.e., no specific performance monitoring parameter exists) in the TM Forum specifications; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	RFC 3705
xTU Termination Unit	Number of Previous 1-day Intervals (0 to M)	“Granularity”	TMF518_R PM	RFC 3705
xTU Termination Unit	Number of Previous Invalid 1-day Intervals (0 to M)	“IntervalStatus” = Invalid	TMF518_R PM	RFC 3705
xDSL Line Configuration Vector	xDSL Line Configuration Vector Identifier	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP		TR-252

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xDSL Line Configuration Vector	Pointer to Upstream Data Rate Profile for Channel Number 1	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to Downstream Data Rate Profile for Channel Number 1	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to INP Delay Profile for Channel Number 1	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to Upstream Data Rate Profile for Channel 2	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to Downstream Data Rate Profile for Channel 2	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to INP Delay Profile for Channel Number 2	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to Upstream Data Rate Profile for Channel 3	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS –	None	TR-252

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
		GAP		
xDSL Line Configuration Vector	Pointer to Downstream Data Rate Profile for Channel 3	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to INP Delay Profile for Channel Number 3	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to Upstream Data Rate Profile for Channel 4	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to Downstream Data Rate Profile for Channel 4	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to INP Delay Profile for Channel Number 4	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to Line Spectrum Profile	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to Noise Margin Profile	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM	None	TR-252

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
		SPECIFICATIONS – GAP		
xDSL Line Configuration Vector	Pointer to Virtual Noise Profile	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to UPBO Profile	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to DPBO Profile	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to RFI Profile	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to SOS Profile	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
xDSL Line Configuration Vector	Pointer to INM Profile	SD1-16 does not model pointers/relationships or vectors; NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	TR-252
Downstream Data Rate	Minimum Data Rate	“DownstreamMinimumDataRate-Channel<n>“	SD1-16 [7]	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	downstream	<n> = 1 2 3 4		
Downstream Data Rate	Minimum Reserved Data Rate downstream	“DownstreamMinimumReservedDataRate-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
Downstream Data Rate	Maximum Data Rate downstream	“DownstreamMaximumDataRate-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
Downstream Data Rate	Rate Adaptation Ratio downstream	“DownstreamRateAdaptationRatio-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
Downstream Data Rate	Minimum Data Rate in low power state downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Downstream Data Rate	Maximum Bit Error Ratio downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Downstream Data Rate	Data Rate Threshold Upshift downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Downstream Data Rate	Data Rate Threshold Downshift downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Downstream Data Rate	Minimum SOS Data Rate (MIN-SOS-DR-ds) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Downstream Data Rate	Minimum Expected Throughput for retransmission downstream (MINETR_RTX)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Downstream Data Rate	Maximum Expected Throughput for retransmission	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	downstream (MAXETR_RTX)			
Downstream Data Rate	Maximum Net Data Rate for retransmission downstream (MAXNDR_RT X)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Downstream Data Rate	Target net data rate (TARGET_NDR) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Downstream Data Rate	Target Expected Throughput for retransmission (TARGET_ETR)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Upstream Data Rate	Minimum Data Rate upstream	“UpstreamMinimumData Rate-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
Upstream Data Rate	Minimum Reserved Data Rate upstream	“UpstreamMinimumReser vedDataRate- Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
Upstream Data Rate	Maximum Data Rate upstream	“UpstreamMaximumData Rate-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
Upstream Data Rate	Rate Adaptation Ratio Upstream	“UpstreamRateAdaptation Ratio-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
Upstream Data Rate	Minimum Data Rate in low power state upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Upstream Data Rate	Maximum Bit Error Ratio upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Upstream Data Rate	Data Rate Threshold Upshift upstream	NO MAPPING TO TM FORUM SPECIFICATIONS –	None	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
		GAP		
Upstream Data Rate	Data Rate Threshold Downshift upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Upstream Data Rate	Minimum SOS Data Rate upstream (MIN-SOS-DR-us)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
Upstream Data Rate	Minimum Expected Throughput for retransmission upstream (MINETR_RTX)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Upstream Data Rate	Maximum Expected Throughput for retransmission upstream (MAXETR_RTX)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Upstream Data Rate	Maximum Net Data Rate for retransmission upstream (MAXNDR_RTX)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Upstream Data Rate	Target net data rate (TARGET_NDR) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Upstream Data Rate	Target Expected Throughput for retransmission (TARGET_ETR)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Line Spectrum	xTU Transmission System Enabling (XTSE)	xTUTransmissionSystem Enabling	SD1-16	G.997.1
Line Spectrum	Power Management	PowerManagementStateEnabling	SD1-16	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	State Enabling (PMMODE)			
Line Spectrum	L0-TIME	MinimumL0TimeIntervalBetweenL2ExitAndNextL2Entry	SD1-16	G.997.1
Line Spectrum	L2-TIME	MinimumL2TimeIntervalBetweenL2EntryAndFirstL2Trim	SD1-16	G.997.1
Line Spectrum	L2-ATPR	MaximumAggregateTransmitPowerReductionPerL2RequestOrL2PowerTrim	SD1-16	G.997.1
Line Spectrum	L2-ATPRT	TotalMaximumAggregateTransmitPowerReductionInL2	SD1-16	G.997.1
Line Spectrum	CARMASK downstream	DownstreamSubcarrierMasking	SD1-16	G.997.1
Line Spectrum	CARMASK upstream	UpstreamSubcarrierMasking	SD1-16	G.997.1
Line Spectrum	VDSL2-CARMASK	SubcarrierMasking	SD1-16	G.997.1
Line Spectrum	Minimum Overhead Rate Upstream (MSGMIN upstream)	MinimumOverheadRateUpstream	SD1-16	G.997.1
Line Spectrum	Minimum Overhead Rate Downstream (MSGMIN downstream)	MinimumOverheadRateDownstream	SD1-16	G.997.1
Line Spectrum	VDSL2 Profiles Enabling (PROFILES)	ProfilesEnabling	SD1-16	G.997.1
Line Spectrum	VDSL2 US0 PSD Masks Enabling (US0MASK)	US0PSDMasks	SD1-16	G.997.1
Line Spectrum	Optional Cyclic Extension Flag (CEFLAG)	CyclicExtensionFlag	SD1-16	G.997.1
Line Spectrum	Retransmission	NO MAPPING TO TM	None	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	MODE upstream (RTX_MODE_us)	FORUM SPECIFICATIONS - GAP		Amendment 1
Line Spectrum	Retransmission MODE downstream (RTX_MODE_ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
Mode Specific Power Spectral Density (PSD)	xDSL mode	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
Mode Specific PSD	Maximum Nominal Power Spectral Density (MAXNOMPSD downstream)	DownstreamMaximumNominalPowerSpectralDensity	SD1-16	G.997.1
Mode Specific PSD	Upstream Maximum Nominal Power Spectral Density (MAXNOMPSD upstream)	UpstreamMaximumNominalPowerSpectralDensity	SD1-16	G.997.1
Mode Specific PSD	Downstream Maximum Nominal Aggregate Transmit Power (MAXNOMATP downstream)	DownstreamMaximumNominalAggregateTransmitPower	SD1-16	G.997.1
Mode Specific PSD	Upstream Maximum Nominal Aggregate Transmit Power (MAXNOMATP upstream)	UpstreamMaximumNominalAggregateTransmitPower	SD1-16	G.997.1
Mode Specific PSD	Upstream Maximum Aggregate	UpstreamMaximumAggregateReceivePower	SD1-16	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	Receive Power (MAXRXPWR upstream)			
Mode Specific PSD	Downstream PSD Mask (PSDMASK downstream)	DownstreamPSDMask	SD1-16	G.997.1
Mode Specific PSD	Upstream PSD mask selection	UpstreamPSDMask	SD1-16	G.997.1
Mode Specific PSD	VDSL2 Limit PSD Masks and bandplans enabling (LIMITMASK)	LimitPSDMaskAndBandp lansEnabling	SD1-16	G.997.1
Mode Specific PSD	VDSL2 US0 Disabling (US0DISABLE)	US0Disabling	SD1-16	G.997.1
Mode Specific PSD	VDSL2 PSD Mask Class Selection (CLASSMASK)	PSDMaskClassSelection	SD1-16	G.997.1
UPBO	Upstream Power Back-Off electrical loop length (UPBOKL)	“UpstreamPowerBack- offElectricalLength”	SD1-16	G.997.1 Amendment 3
UPBO	Force CO-MIB electrical loop length (UPBOKLF)	“UpsteamPowerBack- offForceElectricalLength”	SD1-16	G.997.1 Amendment 3
UPBO	Upstream Power Back-Off reference PSD per band (Band number, UPBOPSD-pb parameters a and b)	“UpstreamPowerBack- offReferencePSDPerBand ”	SD1-16	G.997.1 Amendment 3
UPBO	Reference electrical length per band (Band number,	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	UPBOKLREF-pb)			
UPBO	Alternative Electrical Length Estimation Mode (AELE-MODE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
UPBO	UPBO Electrical Length Threshold Percentile (UPBOELMT)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
DPBO	Downstream Power Back-Off E-side Electrical Length (DPBOESEL)	“DownstreamPowerBack-offE-sideElectricalLength”	SD1-16	G.997.1
DPBO	Downstream Power Back-Off assumed Exchange PSD mask (DPBOEPSD)	“DownstreamPowerBack-offAssumedExchangePS DMask”	SD1-16	G.997.1
DPBO	Downstream Power Back-Off E-side Cable Model A (DPBOESCMA)	“DownstreamPowerBack-offE-SideCableModelA”	SD1-16	G.997.1
DPBO	Downstream Power Back-Off E-side Cable Model B (DPBOESCMB)	“DownstreamPowerBack-offE-SideCableModelB”	SD1-16	G.997.1
DPBO	Downstream Power Back-Off E-side Cable Model C (DPBOESCMC)	“DownstreamPowerBack-offE-SideCableModelC”	SD1-16	G.997.1
DPBO	Downstream Power Back-Off Minimum Usable Signal (DPBOMUS)	“DownstreamPowerBack-offMinimumUsableSignal”	SD1-16	G.997.1
DPBO	Downstream	“DownstreamPowerBack-	SD1-16	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	Power Back-Off span Minimum Frequency (DPBOFMIN)	offSpanMinimumFrequency”		
DPBO	Downstream Power Back-Off span maximum frequency (DPBOFMAX)	“DownstreamPowerBack-offSpanMaximumFrequency”	SD1-16	G.997.1
Re-initialization Policy	Downstream Re-Initialization Policy Selection (RIPOLICYds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
Re-initialization Policy	Upstream Re-Initialization Policy Selection (RIPOLICYus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
Re-initialization Policy	Downstream REINIT_TIME_THRESHOLDds	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
Re-initialization Policy	Upstream REINIT_TIME_THRESHOLDus	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
RFI	RFIBANDS	“RFIBands”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Downstream Minimum Noise Margin (MINSNRMds)	“DownstreamMinimumNoiseMargin”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Upstream Minimum Noise Margin (MINSNRMus)	“UpstreamMinimumNoiseMargin”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Downstream Target Noise Margin (TARSNRMds)	“DownstreamTargetNoiseMargin”	SD1-16	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
Signal-to-Noise Ratio (SNR) Margin	Upstream Target Noise Margin (TARSNRMus)	“UpstreamTargetNoiseMargin”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Downstream Maximum Noise Margin (MAXSNRMds)	“DownstreamMaximumNoiseMargin”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Upstream Maximum Noise Margin (MAXSNRMus)	“UpstreamMaximumNoiseMargin”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Downstream Signal-to-Noise Ratio Mode (SNRMODEds)	“DownstreamSignal-to-NoiseRatioMode”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Upstream Signal-to-Noise Ratio Mode (SNRMODEus)	“UpstreamSignal-to-NoiseRatioMode”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Downstream Rate Adaptation Mode (RA-MODEds)	“DownstreamRateAdaptationMode”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Upstream Rate Adaptation Mode (RA-MODEus)	“UpstreamRateAdaptationMode”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Downstream Upshift Noise Margin (RA-USNRMds)	“DownstreamUpshiftNoiseMargin”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Upstream Upshift Noise Margin (RA-USNRMus)	“UpstreamUpshiftNoiseMargin”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Downstream Downshift Noise Margin (RA-DSNRMds)	“DownstreamDownshiftNoiseMargin”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Upstream Downshift Noise Margin (RA-	“UpstreamDownshiftNoiseMargin”	SD1-16	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	DSNRMus)			
Signal-to-Noise Ratio (SNR) Margin	Downstream Minimum Time Interval for Upshift Rate Adaptation (RA-UTIMEs)	“DownstreamMinimumTimeIntervalForUpshiftRateAdaptation”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Upstream Minimum Time Interval for Upshift Rate Adaptation (RA-UTIMEs)	“UpstreamMinimumTimeIntervalForUpshiftRateAdaptation”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Downstream Minimum Time Interval for Downshift Rate Adaptation (RA-DTIMEs)	“DownstreamMinimumTimeIntervalForDownshiftRateAdaptation”	SD1-16	G.997.1
Signal-to-Noise Ratio (SNR) Margin	Upstream Minimum Time Interval for Downshift Rate Adaptation (RA-DTIMEs)	“UpstreamMinimumTimeIntervalForDownshiftRateAdaptation”	SD1-16	G.997.1
INP-Delay	Force framer setting for impulse noise protection (FORCEINP) downstream	“DownstreamForceFramerSettingForImpulseNoiseProtection-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
INP-Delay	Minimum Impulse Noise Protection (INPMIN) downstream	“DownstreamMinimumImpulseNoiseProtection-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
INP-Delay	Minimum Impulse Noise Protection 8kHz (INPMIN8)	“DownstreamMinimumImpulseNoiseProtectionFor8.625kHzSubcarrierSpacing-Channel<n>“	SD1-16	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	downstream	<n> = 1 2 3 4		
INP-Delay	Maximum Interleaving Delay downstream	“UpstreamMaximumInterleavingDelay-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
INP-Delay	Force framer setting for impulse noise protection (FORCEINP) upstream	“UpstreamForceFramerSettingForImpulseNoiseProtection-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
INP-Delay	Minimum Impulse Noise Protection (INPMIN) upstream	“UpstreamMinimumImpulseNoiseProtection-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
INP-Delay	Minimum Impulse Noise Protection 8kHz (INPMIN8) upstream	“UpstreamMinimumImpulseNoiseProtectionFor8.625kHzSubcarrierSpacing-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
INP-Delay	Maximum Interleaving Delay upstream	“UpstreamMaximumInterleavingDelay-Channel<n>“ <n> = 1 2 3 4	SD1-16	G.997.1
INP-Delay	Maximum Delay Variation (DVMAX)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
INP-Delay	Channel Initialization Policy Selection (CIPOLICY)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
INP-Delay	Maximum delay for retransmission (DELAYMAX_RTX) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Minimum delay for retransmission (DELAYMIN_RTX) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
INP-Delay	Minimum impulse noise protection against SHINE for retransmission (INPMIN_SHINE_RTX) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Minimum impulse noise protection against SHINE for retransmission 8khz (INPMIN8_SHINE_RTX) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	SHINERATIO_RT X downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Minimum impulse noise protection against REIN for Retransmission (INPMIN_REIN_RTX) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Minimum impulse noise protection against REIN for Retransmission 8khz (INPMIN8_REIN_RTX) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	REIN Inter-arrival Time for Retransmission (IAT_REIN_RTX) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Maximum delay for retransmission (DELAYMAX_RTX) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
INP-Delay	Minimum delay for retransmission (DELAYMIN_RT X) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Minimum impulse noise protection against SHINE for retransmission (INPMIN_SHINE_RT X) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Minimum impulse noise protection against SHINE for retransmission 8khz (INPMIN8_SHIN E_RT X) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	SHINERATIO_RT X upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Minimum impulse noise protection against REIN for Retransmission (INPMIN_REIN_RT X) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	Minimum impulse noise protection against REIN for Retransmission 8khz (INPMIN8_REIN_RT X) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	REIN Inter-arrival Time for Retransmission (IAT_REIN_RT X) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
INP-Delay	MAXDELAYOCT ET split parameter	NO MAPPING TO TM FORUM	None	G.997.1 Amendment

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	(MDOSPLIT)	SPECIFICATIONS – GAP		4
Vectoring	Vectoring frequency-band control upstream (VECTOR_BAND_CONTROLus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Vectoring	Vectoring frequency-band control downstream (VECTOR_BAND_CONTROLds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Vectoring	FEXT Cancellation Line Priorities upstream (FEXT_CANCEL_PRIORITYus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Vectoring	FEXT Cancellation Line Priorities downstream (FEXT_CANCEL_PRIORITYds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Vectoring	FEXT cancellation enabling/disabling upstream (FEXT_CANCEL_ENABLEus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Vectoring	FEXT cancellation enabling/disabling downstream (FEXT_CANCEL_ENABLEds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Vectoring	Downstream requested XLIN subcarrier group size (XLINGREQds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 4
Vectoring	Upstream requested XLIN subcarrier group	NO MAPPING TO TM FORUM SPECIFICATIONS –	None	G.997.1 Amendment 4

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	size (XLINGREQds)	GAP		
Virtual Noise	Downstream Transmitter Referred Virtual Noise (TXREFVNdS)	“DownstreamTransmitter”ReferredVirtualNoise”	SD1-16	G.997.1
Virtual Noise	Upstream Transmitter Referred Virtual Noise (TXREFVNus)	“UpstreamTransmitterRef erredVirtualNoise”	SD1-16	G.997.1
Virtual Noise	Far End Crosstalk Transmitter Referred Virtual Noise (FEXT TXREFVNdS)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
Virtual Noise	Near End Crosstalk Transmitter Referred Virtual Noise (NEXT TXREFVNdS)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
Virtual Noise	Downstream Virtual Noise (VNds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Virtual Noise	Upstream Virtual Noise (VNus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Virtual Noise	Downstream Virtual Noise Scaling Factor (VNSFds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
Virtual Noise	Upstream Virtual Noise Scaling Factor (VNSFus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
SOS	Downstream SOS time Window (SOS- TIME-ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Upstream SOS Time Window (SOS-TIME-us)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Downstream Minimum Percentage of Degraded Tones (SOS-NTONES- ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Upstream Minimum Percentage of Degraded Tones (SOS-NTONES- us)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Downstream Minimum Number of normalized CRC anomalies (SOS- CRC-ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Upstream Minimum Number of normalized CRC anomalies (SOS- CRC-us)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Downstream Maximum Number of SOS (MAX-SOS-ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Upstream Maximum Number of SOS (MAX-SOS-us)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
SOS	Downstream SNR Margin Offset of ROC (SNRMOFFSET-ROC-ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Upstream SNR Margin Offset of ROC (SNRMOFFSET-ROC-us)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Downstream Minimum INP of ROC (INPMIN-ROC-ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
SOS	Upstream Minimum INP of ROC (INPMIN-ROC-us)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
INM	INM Inter Arrival Time Offset (INMIATO) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
INM	INM Inter Arrival Time Step (INMIATS) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
INM	INM Cluster Continuation value (INMCC) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
INM	INM Equivalent INP Mode (INM_INPEQ_MODE) downstream	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
INM	INM Inter Arrival Time Offset (INMIATO)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1

TR-252 Object/ Profile	TR-252 Attribute/ Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	upstream			
INM	INM Inter Arrival Time Step (INMIATS) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
INM	INM Cluster Continuation value (INMCC) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
INM	INM Equivalent INP Mode (INM_INPEQ_MODE) upstream	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1

4.2 xDSL Status Monitoring Mapping

For xDSL status monitoring, Table 2 provides a mapping between TR-252 requirements/parameter names and MTNM 3.5 parameter names. The specific document where the MTNM 3.5 parameter can be found along with the source standards document for the TR-252 requirement are also cited in Table 2.

Table 2 identifies several gaps between TR-252 and TMF MTNM 3.5. When a gap exists, the following note appears in the MTNM 3.5 Parameter Name cell “NO MAPPING TO TM FORUM SPECIFICATIONS – GAP.”

Gaps exist between the Broadband Forum and MTNM 3.5 requirements in the area of xDSL status monitoring in the following areas.

- xTU Line Status
- xTU Band Status
- xTU Channel Status
- xTU Annex C G.992.3,5 FEXT and NEXT parameters

Table 2 – xDSL Status Monitoring Mapping between TR-252 and TMF MTNM

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xTU Line Status	xTU Current Status (Near-End Failures for xTU-C/ Far-End Failures for xTU-R)	NO MAPPING TO TM FORUM SPECIFICATIONS	None	G.997.1
xTU Line Status	Last State Transmitted (Downstream for xTU-C / Upstream for xTU-R)	NO MAPPING TO TM FORUM SPECIFICATIONS	None	G.997.1
xTU Line Status	Signal-to-Noise Ratio Margin (SNRMds for xTU-C / SNRMus for xTU-R)	“SnrMgn” for xTU-C “RU_SnrMgn” for xTU-R	SD1-16	G.997.1
xTU Line Status	Actual Signal-To-Noise Ratio mode (ACTSNRMODEds for xTU-C / ACTSNRMODEus for xTU-R)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Status	Maximum Attainable Data Rate (ATTNDRds for xTU-C / ATTNDRus for xTU-R)	“AttainableRate” for xTU-C “RU_AttainableRate” for xTU-R	SD1-16	G.997.1
xTU Line Status	Actual Power Spectrum Density (ACTPSDds for xTU-C /	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	ACTPSDus for ATU-R)			
xTU Line Status	Actual Aggregate Transmit Power (ACTATPds for xTU-R / ACTATPus for xTU-C)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Status	VDSL2 Profile	NO MAPPING TO TM FORUM SPECIFICATIONS	None	TR-252
xTU Line Status	VDSL2 Limit PSD Mask and Bandplan	“LimitPSDMaskAndBandplansEnabling”	SD1-16	G.997.1
xTU Line Status	VDSL2 US0 PSD Mask	“US0PSDMasks”	SD1-16	G.997.1
xTU Line Status	VTU-O Estimated Upstream Power Back-Off Electrical Loop Length (UPBOKLE)	NO MAPPING TO TM FORUM SPECIFICATIONS	None	G.997.1
xTU Line Status	VTU-R Estimated Upstream Power Back-Off Electrical length (UPBOKLE-R)	NO MAPPING TO TM FORUM SPECIFICATIONS	None	G.997.1
xTU Line Status	Trellis Use (TRELLISds /TRELLISus)	“TrellisCoding”	SD1-16	G.992.3 Annex C
xTU Line Status	Actual Cyclic Extension (ACTUALCE)	NO MAPPING TO TM FORUM SPECIFICATIONS	None	G.997.1
xTU Line Status	Actual Downstream Rate Adaptation Mode (ACT-RA-MODEds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xTU Line Status	Actual Upstream Rate Adaptation Mode (ACT-RA-MODEus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
xTU Line Status	Downstream Actual impulse noise protection of ROC (ACTINP-ROC-ds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Status	Upstream Actual impulse noise protection of ROC (ACTINP-ROC-us)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Status	Downstream Actual SNR Margin of ROC (SNRM-ROC-ds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Status	Upstream Actual SNR Margin of ROC (SNRM-ROC-us)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Status	Date/time-stamping of near-end test parameters (STAMP-TEST-NE)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Status	Date/time-stamping of far-end test parameters (STAMP-TEST-FE)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Status	Date/time-stamping of last successful downstream OLR operation	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	(STAMP-OLR-ds)			
xTU Line Status	VCE ID	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
xTU Line Status	VCE Port Index	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
xTU Line Status	Actual Downstream RIPOLICY (ACTRIPOLICY ds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 3
xTU Line Status	Actual Upstream RIPOLICY (ACTRIPOLICY us)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 3
xTU Line Status	Downstream XLIN subcarrier group size (XLINGds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 4
xTU Line Status	Upstream XLIN subcarrier group size (XLINGus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 4
xTU Line Status	Retransmission used downstream (RTX_USED_ds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
xTU Line Status	Retransmission used upstream (RTX_USED_us)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1 Amendment 1
xTU Line Status	Date/time-stamping of last successful upstream OLR operation	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	(STAMP-OLR-us)			
xTU Band Status	Band number (1, N)	"<band#>"	SD1-16	G.997.1
xTU Band Status	Line Attenuation per band (LATNds for xTU-R / LATNus for xTU-C)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Band Status	xTU-C Downstream Signal Attenuation per band (SATNds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Band Status	xTU-R Upstream Signal Attenuation per band (SATNus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Band Status	Signal-to-Noise Ratio Margin per band (SNRMpbds for xTU-R / SNRMpbus for xTU-C)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Channel Status	xTU-C Actual Data Rate (Downstream for xTU-C)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	xTU-R Actual Data Rate (Upstream for xTU-R)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	xTU-C Previous Data Rate (Downstream for xTU-C)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	xTU-R Previous Data Rate	NO MAPPING TO TM FORUM	None	G.997.1 Amendment

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
Status	(Upstream for xTU-R)	SPECIFICATIONS - GAP		1
xTU Channel Status	xTU-C Actual Delay (Downstream for xTU-C)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	xTU-R Actual Delay (Upstream for xTU-R)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual Impulse Noise Protection (ACTINP)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Impulse Noise Protection Report (INPREPORT)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual size of Reed-Solomon codeword (NFEC)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual number of Reed-Solomon redundancy bytes (RFEC)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual number of bits per symbol (LSYMB)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual interleaving depth (INTLVDEPTH)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual interleaving block length (INTLVBLOCK)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual Latency Path (LPATH)	NO MAPPING TO TM FORUM SPECIFICATIONS -	None	G.997.1 Amendment 1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
		GAP		
xTU Channel Status	Actual Net Data Rate Downstream (ACTNDR_ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual Net Data Rate Upstream (ACTNDR_us)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual Impulse Noise Protection Against REIN downstream (ACTINP_REIN_ds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Status	Actual Impulse Noise Protection Against REIN upstream (ACTINP_REIN_us)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Annex C G.992.3,5	FEXT Downstream Signal-to-Noise Ratio Margin (FEXT SNRMds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	NEXT Downstream Signal-to-Noise Ratio Margin (NEXT SNRMds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	FEXT Upstream Signal-to-Noise Ratio Margin (FEXT SNRMus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	NEXT Upstream Signal-to-Noise Ratio Margin (NEXT SNRMus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex	FEXT	NO MAPPING TO TM	None	G.992.3

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
C G.992.3,5	Downstream Maximum Attainable Data Rate (FEXT ATTNDRds)	FORUM SPECIFICATIONS - GAP		Annex C
xTU Annex C G.992.3,5	NEXT Downstream Maximum Attainable Data Rate (NEXT ATTNDRds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	FEXT Upstream Maximum Attainable Data Rate (FEXT ATTNDRus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	NEXT Upstream Maximum Attainable Data Rate (NEXT ATTNDRus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	FEXT Downstream Actual Power Spectral Density (FEXT ACTPSDds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	NEXT Downstream Actual Power Spectral Density (NEXT ACTPSDds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	FEXT Upstream Actual Power Spectral Density (FEXT ACTPSDus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	NEXT Upstream Actual Power Spectral Density	NO MAPPING TO TM FORUM SPECIFICATIONS -	None	G.992.3 Annex C

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	(NEXT ACTPSD _{us})	GAP		
xTU Annex C G.992.3,5	FEXT Downstream Actual Aggregate Transmit Power (FEXT ACTATP _{ds})	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	NEXT Downstream Actual Aggregate Transmit Power (NEXT ACTATP _{ds})	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	FEXT Upstream Actual Aggregate Transmit Power (FEXT ACTATP _{us})	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C
xTU Annex C G.992.3,5	NEXT Upstream Actual Aggregate Transmit Power (NEXT ACTATP _{us})	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.992.3 Annex C

4.3 xDSL Performance Management Mapping

For xDSL Performance Management, Table 3 provides a mapping between TR-252 requirements/parameter names and MTNM 3.5 parameter names. The specific document where the MTNM 3.5 parameter can be found along with the source standards document for the TR-252 requirement are also cited in Table 3.

Table 3 identifies several gaps between TR-252 and TMF MTNM 3.5. When a gap exists, the following note appears in the MTNM 3.5 Parameter Name cell “NO MAPPING TO TM FORUM SPECIFICATIONS – GAP.”

xDSL performance management gaps exist between the Broadband Forum and MTNM 3.5 requirements in the following areas.

- xTU Line Performance
- xTU Channel Performance

Table 3 – xDSL Performance Management Mapping between TR-252 and TMF MTNM

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xTu Line Performance	Interval Number	R_TMF518_RPM_II_0005	TMF518_RPM	TR-252
xTU Line Performance	Interval Status	“Interval Status”	TMF518_RPM	TR-252
xTU Line Performance	xTU-C Forward Error Correction Seconds (FECS-L)	“PMP_FEC_SCS”	SD1-44	G.997.1
xTU Line Performance	xTU-R Forward Error Correction Seconds (FECS-LFE)	“PMP_FEC_SCS”	SD1-44	G.997.1
xTU Line Performance	xTU-C Errored Seconds – Line (ES-L)	“PMP_ES”	SD1-44	G.997.1
xTU Line Performance	xTU-R Errored Seconds – Line (ES-LFE)	“PMP_ES”	SD1-44	G.997.1
xTU Line Performance	xTU-C Severely Errored Seconds – Line (SES-L)	“PMP_SES”	SD1-44	G.997.1
xTU Line Performance	xTU-R Severely Errored Seconds – Line (SES-LFE)	“PMP_SES”	SD1-44	G.997.1
xTU Line Performance	xTU-C Loss of Signal Seconds – Line (LOSS-L)	“PMP_LOSS”	SD1-44	G.997.1
xTU Line Performance	xTU-R Loss of Signal Seconds – Line (LOSS-LFE)	“PMP_LOSS”	SD1-44	G.997.1
xTU Line Performance	xTU-C Unavailable Seconds – Line	“PMP_UAS”	SD1-44	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	(UAS-L)			
xTU Line Performance	xTU-R Unavailable Seconds – Line (UAS-LFE)	“PMP_UAS”	SD1-44	G.997.1
xTU Line Performance	xTU-C Full Initializations	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997
xTU Line Performance	xTU-C Failed Full Initializations	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Performance	xTU-C Short Initializations	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Performance	xTU-C Failed Short Initializations	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Performance	xTU-C Loss-of-Power Interruption Count (LPR_INTRPT)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
xTU Line Performance	xTU-C Host-Reinit Interruption Count (HRI_INTRPT)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
xTU Line Performance	Spontaneous Interruption Count (SPONT_INTRPT)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
xTU Line Performance	Near-end (xTU-C) Impulse Noise: INM INPEQ histogram 1..17	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	(INMINPEQ1..17-L)			
xTU Line Performance	Near-end (xTU-C) Impulse Noise: INM IAT histogram 0..7 (INMIAT0-7-L)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Near-end (xTU-C) Impulse Noise: INM Total Measurement (INMME-L)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Far-end (xTU-R) Impulse Noise: INM INPEQ histogram 1..17 (INMINPEQ1..17-LFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Far-end (xTU-R) Impulse Noise: INM IAT histogram 0..7 (INM IAT0..7-LFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Far-end (xTU-R) Impulse Noise: INM Total Measurement (INMME-LFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Near-end Successful SOS Count (SOS SUCCESS NE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
xTU Line Performance	Far-end Successful SOS Count (SOS SUCCESS FE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 3
xTU Line Performance	Near-End "Leftr" Defect Seconds	NO MAPPING TO TM FORUM SPECIFICATIONS -	None	G.997.1 Amendment 1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
		GAP		
xTU Line Performance	Far-End “Leftr” Defect Seconds	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Near-End Error Free Bits	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Far-End Error Free Bits	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Near-End Minimum Error Free Throughput (MINEFTR_NE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Performance	Far-End Minimum Error Free Throughput (MINEFTR_FE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Channel Performance	Interval Number	R_TMF518_RPM_II_0005	TMF518_RPM	TR-252
xTU Channel Performance	Interval Status	“Interval Status”	TMF518_RPM	TR-252
xTU Channel Performance	xTU-C Code Violations Channel (CV-C)	“PMP_CV”	SD1-44	G.997.1
xTU Channel Performance	xTU-R Code Violations Channel (CV-CFE)	“PMP_CV”	SD1-44	G.997.1
xTU Channel Performance	xTU-C Forward Error Corrections – Channel (FEC-C)	“PMP_FEC_SCS”	SD1-44	G.997.1
xTU	xTU-R Forward	“PMP_FEC_SCS”	SD1-44	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
Channel Performance	Error Corrections – Channel (FEC-CFE)			

4.4 xDSL Performance Threshold Management Mapping

For xDSL Performance Management, Table 4 provides a mapping between TR-252 requirements/parameter names and MTNM 3.5 parameter names. The specific document where the MTNM 3.5 parameter can be found along with the source standards document for the TR-252 requirement are also cited in Table 4.

Table 4 identifies several gaps between TR-252 and TMF MTNM 3.5. When a gap exists, the following note appears in the MTNM 3.5 Parameter Name cell “NO MAPPING TO TM FORUM SPECIFICATIONS – GAP.” Gaps exist between the Broadband Forum and MTNM 3.5 requirements as summarized below.

xDSL performance threshold management gaps exist between the Broadband Forum and MTNM 3.5 requirements in the following areas.

- Performance Threshold Management
 - xTU Line Threshold
 - xTU Channel Threshold

Table 4 – xDSL Performance Threshold Management Mapping between TR-252 and TMF MTNM

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xDSL Line Threshold Template	Template Name	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252
xDSL Line	Pointer to the	SD1-16/SD1-44 does not	None	TR-252

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
Threshold Template	xTU-C 15-min Line Threshold Profile	model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS - GAP		
xDSL Line Threshold Template	Pointer to the xTU-C 1-day Line Threshold Profile	SD1-16/SD1-44 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252
xDSL Line Threshold Template	Pointer to the xTU-R 15-min Line Threshold Profile	SD1-16/SD1-44 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252
xDSL Line Threshold Template	Pointer to the xTU-R 1-day Line Threshold Profile	SD1-16/SD1-44 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252
xDSL Line Threshold Template	Pointer to the xTU-C 15-min Channel Threshold Profile	SD1-16/SD1-44 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252
xDSL Line Threshold Template	Pointer to the xTU-C 1-day Channel Threshold Profile	SD1-16/SD1-44 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252
xDSL Line Threshold Template	Pointer to the xTU-R 15-min Channel Threshold Profile	SD1-16/SD1-44 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xDSL Line Threshold Template	Pointer to the xTU-R 1-day Channel Threshold Profile	SD1-16/SD1-44 does not model pointers; NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252
xTU Line Threshold	Profile Name	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	
xTU Line Threshold	xTU-C Forward Error Correction Seconds – Line Threshold (FECS-L)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-R Forward Error Correction Seconds – Line Threshold (FECS-LFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-C Errored Seconds – Line Threshold (ES-L)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-R Errored Seconds – Line Threshold (ES-LFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-C Severely Errored Seconds – Line Threshold (SES-L)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Threshold	xTU-R Severely Errored Seconds – Line Threshold (SES-LFE)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Line Threshold	xTU-C Loss of Signal Seconds – Line Threshold (LOSS-L)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xTU Line Threshold	xTU-R Loss of Signal Seconds – Line Threshold (LOSS-LFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-C Unavailable Seconds – Line Threshold (UAS-L)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-R Unavailable Seconds – Line Threshold (UAS-LFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-C Full Initializations Threshold	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Theshold	xTU-C Failed Full Initializations Threshold	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-C Short Initializations Threshold	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-C Failed Short Initializations Threshold	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Line Threshold	xTU-C Spontaneous Interruption Count (SPONT_INTRP T) Thresholds (24-hour interval)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 1
xTU Line Threshold	“Left” Defect Threshold (LEFTR	NO MAPPING TO TM FORUM SPECIFICATIONS -	None	G.997.1 Amendment 1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	THRESH)	GAP		
xTU Channel Threshold Profile	Profile Name	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	TR-252
xTU Channel Thresholds Object	Channel Number	“<channel<n>”	SD1-16	G.997.1
xTU Channel Thresholds Object	xTU-C Code Violations – Channel Threshold (CV-C)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Channel Thresholds Object	xTU-R Code Violations – Channel Threshold (CV-CFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Channel Thresholds Object	xTU-C Forward Error Corrections – Channel Threshold (FEC-C)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Channel Thresholds Object	xTU-R Forward Error Corrections – Channel Threshold (FEC-CFE)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1

4.5 xDSL Performance Management Mapping

For xDSL Performance Management, Table 5 provides a mapping between TR-252 requirements/parameter names and MTNM 3.5 parameter names. The specific document where the MTNM 3.5 parameter can be found along with the source standards document for the TR-252 requirement are also cited in Table 5.

Table 5 identifies several gaps between TR-252 and TMF MTNM 3.5. When a gap exists, the following note appears in the MTNM 3.5 Parameter Name cell “NO MAPPING TO TM FORUM SPECIFICATIONS – GAP.” Gaps exist between the Broadband Forum and MTNM 3.5 requirements in the following areas.

- xTU Sub-Carrier Status
- xTU Annex C G.992.3/5 Sub-Carrier Status

Table 5 – xDSL Performance Management Mapping between TR-252 and TMF MTNM

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
xTU Sub-Carrier Status	Sub-Carrier Number	subcarrier index	SD1-16	TR-252
xTU Sub-Carrier Status	xTU-C Channel Characteristics Function Linear Representation Scale (HLINSCds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Sub-Carrier Status	xTU-R Channel Characteristics Function Linear Representation Scale (HLINSCus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C H(f) Linear Subcarrier Group Size (HLINGds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R H(f) Linear Subcarrier	NO MAPPING TO TM FORUM SPECIFICATIONS –	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	Group Size (HLINGus)	GAP		
xTU Subcarrier Status	xTU-C Channel Characteristics Function Linear Representation (HLINpsds/HLI Npsus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R Channel Characteristics Function Linear Representation (HLINpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C Channel Characteristics Function Logarithmic Measurement Time (HLOGMTds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Subcarrier Status	xTU-R Channel Characteristics Function Logarithmic Measurement Time (HLOGMTus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C H(f) Logarithmic Subcarrier Group Size (HLOGGds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R H(f) Logarithmic Subcarrier Group Size (HLOGGus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C Channel Characteristics Function Logarithmic	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	Representation (HLOGpsus)			
xTU Subcarrier Status	xTU-R Channel Characteristics Function Logarithmic Representation (HLOGpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C Quiet Line Noise PSD Measurement Time (QLNMTds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R Quiet Line Noise PSD Measurement Time (QLNMTus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C QLN(f) Subcarrier Group Size (QLNGds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R QLN(f) Subcarrier Group Size (QLNGus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C Quiet Line Noise PSD (QLNpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R Quiet Line Noise PSD (QLNpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C Signal-toNoise Ratio Measurement Time (SNRMTds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier	xTU-R Signal-toNoise Ratio	NO MAPPING TO TM FORUM	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
Status	Measurement Time (SNRMTus)	SPECIFICATIONS – GAP		
xTU Subcarrier Status	xTU-C SNR(f) Subcarrier Group Size (SNRGds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R SNR(f) Subcarrier Group Size (SNRGus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C Signal-to-Noise Ratio (SNRpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Subcarrier Status	xTU-R Signal-to-Noise Ratio (SNRpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS	None	G.997.1
xTU Subcarrier Status	xTU-C Bits Allocation (BITSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R Bits Allocation (BITSpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C Gains Allocation (GAINSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R Gains Allocation (GAINSpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-C Transmit Spectrum Shaping (TSSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R Transmit Spectrum Shaping	NO MAPPING TO TM FORUM SPECIFICATIONS -	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	(TSSpsus)	GAP		
xTU Subcarrier Status	xTU-C MEDLEY Reference PSD (MREFPSDs)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Subcarrier Status	xTU-R MEDLEY Reference PSD (MREFPSDs)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	Sub-Carrier Number (1..J)	subcarrier index	SD1-16	TR-252
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Downstream QLN(f) (FEXT QLNpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Downstream QLN(f) (NEXT QLNpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Upstream Quiet Line Noise PSD Measurement Time (FEXT QLNMTus)	NO MAPPING TO TM FORUM SPECIFICATIONS – GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Upstream Quiet Line Noise PSD Measurement Time (NEXT QLNMTus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Upstream QLN(f) (FEXT QLNpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier	NEXT Upstream QLN(f) (NEXT QLNpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS -	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
Status		GAP		
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Downstream Quiet Line Noise PSD Measurement Time (FEXT SNRMTds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Downstream Quiet Line Noise PSD Measurement Time (NEXT SNRMTds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Downstream SNR Measurement Time (FEXT SNRMTds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Downstream SNR Measurement Time (NEXT SNRMTds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Downstream SNR(f) (FEXT SNRpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Downstream SNR(f) (NEXT SNRpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Upstream SNR Measurement Time (FEXT SNRMTus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex	NEXT Upstream	NO MAPPING TO TM	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
C G.992.3/5 Sub-Carrier Status	SNR Measurement Time (NEXT SNRMTus)	FORUM SPECIFICATIONS - GAP		
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Upstream SNR(f) (FEXT SNRpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Upstream SNF(f) (NEXT SNRpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Downstream Bits Allocation (FEXT BITSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Downstream Bits Allocation (NEXT BITSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Upstream Bits Allocation (FEXT BITSpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Upstream Bits Allocation (NEXT BITSpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Downstream Gains Allocation (FEXT GAINSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Downstream Gains Allocation (NEXT GAINSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex	FEXT Upstream	NO MAPPING TO TM	None	G.997.1

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
C G.992.3/5 Sub-Carrier Status	Gains Allocation (FEXT GAINSpsus)	FORUM SPECIFICATIONS - GAP		
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Upstream Gains Allocation (NEXT GAINSpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Downstream Transmit Spectrum Shaping (FEXT TSSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Downstream Transmit Spectrum Shaping (NEXT TSSpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	FEXT Upstream Transmit Spectrum Shaping (FEXT TSSpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	NEXT Upstream Transmit Spectrum Shaping (NEXT TSSpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1
xTU Annex C G.992.3/5 Sub-Carrier Status	Downstream XLIN Scale (XLINSCds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 4
xTU Annex C G.992.3/5 Sub-Carrier Status	Downstream XLIN Subcarrier Group Size (XLINGds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 4
xTU Annex C G.992.3/5 Sub-Carrier Status	Downstream XLIN Bandedges (XLINBANDSd)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 4

TR-252 Object	TR-252 Attribute/Parameter Name (B)	MTNM Parameter Name (C)	MTNM Document (D)	Source Standard (E)
	s)			
xTU Annex C G.992.3/5 Sub-Carrier Status	Downstream FEXT Coupling (XLINpsds)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 4
xTU Annex C G.992.3/5 Sub-Carrier Status	Upstream XLIN Scale (XLINSCus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 4
xTU Annex C G.992.3/5 Sub-Carrier Status	Upstream XLIN Subcarrier Group Size (XLINGus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 4
xTU Annex C G.992.3/5 Sub-Carrier Status	Upstream XLIN bandedges (XLINBANDSus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 4
xTU Annex C G.992.3/5 Sub-Carrier Status	Upstream FEXT Coupling (XLINpsus)	NO MAPPING TO TM FORUM SPECIFICATIONS - GAP	None	G.997.1 Amendment 4

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