International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.984.4

Amendment 2

(03/2006)

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

Digital sections and digital line system – Optical line systems for local and access networks

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Gigabit-capable Passive Optical Networks (G-PON): ONT management and control interface specification

Amendment 2

ITU-T Recommendation G.984.4 (2004) – Amendment 2

ITU-T

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ITU-T Recommendation G.984.4

Gigabit-capable Passive Optical Networks (G-PON): ONT management and control interface specification

Amendment 2

Summary

Amendment 1 to ITU-T Rec. G.983.2 (2005) is reflected in this amendment. Managed entities that are supported in ITU-T Rec. G.984.4 are updated and generalized cardholder and circuit pack are introduced.

In addition, several editorial errors in the Recommendation have been corrected.

Source

Amendment 2 to ITU-T Recommendation G.984.4 (2004) was approved on 29 March 2006 by ITU-T Study Group 15 (2005-2008) under the ITU-T Recommendation A.8 procedure.

Keywords

G-PON, management, optical.

FOREWORD

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ITU-T Recommendation G.984.4

Gigabit-capable Passive Optical Networks (G-PON): ONT management and control interface specification

Amendment 2

1) Scope

ITU-T Rec. G.984.4, including its Amendment 1 describes the G-PON OMCI specification. Since the G-PON OMCI has developed based on B-PON OMCI (ITU-T Rec. G.983.2 and its amendments), ITU-T Rec. G.984.4 should be aligned with ITU-T Rec. G.983.2 so as to implement a consistent and advanced system.

This amendment is intended to update the G-PON OMCI specification in order to be aligned with ITU-T Rec. G.983.2 (2005) and its Amendment 1.

2) References

Delete references [4], [5], [7]-[9] and [11]-[13] and add the following references:

[14] ITU-T Recommendation G.984.3 (2004), *Gigabit-capable Passive Optical Networks (G-PON): Transmission convergence layer specification,* plus Amendment 1 (2005).

[15] ITU-T Recommendation G.983.2 (2005), *ONT management and control interface specification for B-PON,* plus Amendment 1 (2006).

3) Abbreviations

Add the following new abbreviation to clause 4.

ASCII American Standard Code for Information Interchange

4) Conventions

Add the following new text to the end of clause 5.

"ASCII string" is a sequence of ASCII encoded characters, terminated by the NULL character (0x00).

5) Modification to ITU-T Rec. G.984.4 existing features

5.1) General changes

Change the range of 208-223 as vendor-specific alarms, not to be standardized, to every alarm list table in the Recommendation as the maximum number of alarms is restricted to 224 because of the available field of the Get All Alarm Next message.

5.2) Fault management

In clause 7.2, there are three modifications to be made as follows:

1) *Replace the paragraph:*

The ONT supports *limited* fault management only. Most of the operations are limited to failure indication. The OMCI supports failure reporting on the following managed entities that are described throughout clause 9, ITU-T Recs G.983.2 and G.983.8:

with:

The ONT supports *limited* fault management only. Most of the operations are limited to failure indication. The OMCI supports failure reporting on the following managed entities that are described throughout clause 9 and ITU-T Rec. G.983.2 (2005):

2) *Replace items b) and c):*

b) Subscriber Line Cardholder;

c) Subscriber Line Card;

with:

b) Cardholder (formerly Subscriber Line Cardholder);

c) Circuit pack (formerly Subscriber Line Card);

3) *Add the following new item to the list:*

u) Equipment extension package.

5.3) Performance management

a) *In clause 7.3, add the following new items to the list:*

gg) IP Host Monitoring Data;

hh) Call Control PM History Data;

ii) RTP Monitoring Data;

jj) SIP Agent Monitoring Data;

kk) SIP Call Initiation Performance Monitoring History Data;

ll) MGC Monitoring Data.

b) *In clause 7.3, also replace the following sentence:*

Note that it is not required to upload all the performance monitoring related managed entities during the MIB upload (see 7.1.2/G.983.2).

with:

Note that it is not required to upload all the performance monitoring related managed entities during the MIB upload (see 7.1.2/G.983.2). Furthermore, all performance monitoring related managed entities are created at the request of the OLT.

5.4) Managed entity list

a) *In clause 8.1, replace the following sentence:*

In this table, G.983.2amd1 means ITU-T Rec. G.983.2 Amendment 1 and IGtoG.983.2 means Implementors' guide to G.983.2.

with:

In this table, G.983.2 Amd1 means ITU-T Rec. G.983.2 (2005) Amendment 1.

b) *Also, replace Table 1, that was modified in Amendment 1, with the following:*

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
AAL 1 Profile$_{B\text{-}PON}$	CR	Used when the ONT supports CES UNIs	7.3.8/G.983.2 (2005)
AAL 1 Protocol Monitoring History Data$_{B\text{-}PON}$	O	Used when AAL 1 layer performance monitoring is supported	7.3.9/G.983.2 (2005)
AAL 2 CPS Protocol Monitoring History Data$_{B\text{-}PON}$	O	Used when AAL 2 layer performance monitoring is supported	7.3.20/G.983.2 (2005)
AAL 2 Profile$_{B\text{-}PON}$	CR	Used when the ONT supports AAL 2	7.3.18/G.983.2 (2005)
AAL 2 PVC Profile$_{B\text{-}PON}$	CR	Used when the ONT supports AAL 2 PVC	7.3.19/G.983.2 (2005)
AAL 2 SSCS Parameter Profile 1	CR	Used when the ONT supports AAL 2 SSCS	7.3.22/G.983.2 (2005)
AAL 2 SSCS Parameter Profile 2	CR	Used when the ONT supports AAL 2 SSCS	7.3.23/G.983.2 (2005)
AAL 2 SSCS Protocol Monitoring History Data$_{B\text{-}PON}$	CR	Used when AAL 2 layer performance monitoring is supported	7.3.21/G.983.2 (2005)
AAL 5 Profile$_{B\text{-}PON}$	CR	Used when the ONT supports LAN UNIs	7.3.10/G.983.2 (2005)
AAL 5 Protocol Monitoring History Data$_{B\text{-}PON}$	O	Used when AAL 5 layer performance monitoring is supported	7.3.11/G.983.2 (2005)
ADSL ATU-C Channel Performance Monitoring History Data	O	Performance monitoring data for an ADSL ATU-C channel	7.3.79/G.983.2 (2005)
ADSL ATU-C Performance Monitoring History Data	O	Performance monitoring data for an ADSL ATU-C modem path	7.3.77/G.983.2 (2005)
ADSL ATU-R Channel Performance Monitoring History Data	O	Performance monitoring data for an ADSL ATU-R channel	7.3.80/G.983.2 (2005)
ADSL ATU-R Performance Monitoring History Data	O	Performance monitoring data for an ADSL ATU-R modem path	7.3.78/G.983.2 (2005)
ADSL Channel Configuration Profile	CR	Contains configuration for a channel	7.3.72/G.983.2 (2005)
ADSL Channel Downstream Status Data	CR	Contains status on the downstream channel	7.3.67/G.983.2 (2005)
ADSL Channel Upstream Status Data	CR	Contains status on the upstream channel	7.3.68/G.983.2 (2005)
ADSL Downstream PSD Mask Profile	CR	Contains masking information for the downstream PSD	7.3.75/G.983.2 (2005)
ADSL Downstream RFI Bands Profile	CR	Contains information on the downstream RFI Bands	7.3.76/G.983.2 (2005)
ADSL Line Configuration Profile Part 1	CR	Contains the line parameters for an ADSL line	7.3.69/G.983.2 (2005)

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
ADSL Line Configuration Profile Part 2	CR	Contains the line parameters for an ADSL line	7.3.70/G.983.2 (2005)
ADSL Line Configuration Profile Part 3	CR	Contains the line parameters for an ADSL line	7.3.71/G.983.2 (2005)
ADSL Line Inventory and Status Data Part 1	CR	Contains the inventory and status information on the ADSL Line	7.3.65/G.983.2 (2005)
ADSL Line Inventory and Status Data Part 2	CR	Contains the inventory and status information on the ADSL Line	7.3.66/G.983.2 (2005)
ADSL Subcarrier Masking Downstream Profile	CR	Contains masking information for the downstream subcarriers	7.3.73/G.983.2 (2005)
ADSL Subcarrier Masking Upstream Profile	CR	Contains masking information for the upstream subcarriers	7.3.74/G.983.2 (2005)
ANI-G	R	Used for ANI management	9.2.1/G.984.4
ARP Configuration Data	CR	Used for IP port supported by the ONT	7.3.47/G.983.2 (2005)
ARP Service Profile	CR	Used for IP port supported by the ONT	7.3.46/G.983.2 (2005)
ATM Interworking VCC Termination Point	CR	Used for non-ATM UNIs and for ATM-based connections	9.3.2/G.984.4
ATM VC Cross-Connection	O	Used for VC multiplexing with VCI translation in the ONU	7.4.5/G.983.2 (2005)
ATM VP Cross-Connection	CR	Used for VP multiplexing in the ONT	7.4.2/G.983.2 (2005)
Authentication Security Method	O	Used for the user id/password configuration to associate a session between the client and destination server.	7.3.117/G.983.2 Amd1
Call Control PM History Data	O	Used for call control performance monitoring history. Member of VoIPData group.	7.3.111/G.983.2 Amd1
Cardholder (Formerly "Subscriber Line Cardholder")	CR	Used for a circuit pack plug-in slot. Can also represent a virtual cardholder to distinguish types of ports in an integrated ONT.	7.1.3/G.983.2 Amd1, 9.1.5/G.984.4
CES Physical Interface Monitoring History Data	O	Used for the CES interface performance monitoring	7.3.15/G.983.2 (2005)
CES Service Profile$_{B\text{-}PON}$	CR	Used for CES services supported by the ONT	7.3.12/G.983.2 (2005)
Circuit pack (Formerly "Subscriber Line card")	CR	Used for a plug-in circuit pack module. Can also represent a virtual circuit pack to distinguish types of ports in an integrated ONT.	7.1.4/G.983.2 Amd1

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
Equipment extension package	O	Used for additional attributes that may be associated with an ONT, ONU or cardholder.	7.1.10/G.983.2 Amd1
Equipment protection profile	CR	Defines equipment protection groups	7.1.9/G.983.2 Amd1
Ethernet Performance Monitoring History Data	O	Used for Ethernet interface performance monitoring	7.3.14/G.983.2 (2005)
Ethernet Performance Monitoring History Data 2	O	Used for Ethernet performance monitoring	7.3.55/G.983.2 (2005)
GAL Ethernet Profile	O	Used when the ONT supports GAL Ethernet	9.3.5/G.984.4
GAL Ethernet Protocol Monitoring History Data	O	Used when GAL Ethernet layer performance monitoring is supported	9.3.7/G.984.4
GAL TDM Profile	O	Used when the ONT supports GAL TDM	9.3.4/G.984.4
GAL TDM Protocol Monitoring History Data	O	Used when GAL TDM layer performance monitoring is supported	9.3.6/G.984.4
GEM Interworking Termination Point	CR	Used for non-ATM UNIs and GEM-based connections	9.3.3/G.984.4
GEM Port Network CTP	CR	Used for GEM port termination	9.4.1/G.984.4
GEM port Protocol Monitoring History Data	O	Used for GEM port performance monitoring	9.4.2/G.984.4
GEM Traffic Descriptor	CR	Used for GEM-based connections	9.5.3/G.984.4 Amd1
ICMP PM History Data1	O	Used for ICMP performance monitoring	7.3.42/G.983.2 (2005)
ICMP PM History Data2	O	Used for ICMP performance monitoring	7.3.43/G.983.2 (2005)
IP Host Config Data	CR	Used to define the Internet protocol service that may be used with a MAC bridge port. Member of IPHostData group.	7.3.98/G.983.2 Amd1
IP Host Performance Monitoring History Data	O	Used to hold PM counters and alarms for the IP host. Member of IPHostData group.	7.3.99/G.983.2 Amd1
IP Port Configuration Data	CR	Used for IP port supported by the ONT	7.3.37/G.983.2 (2005)
IP Router Configuration Data	CR	Used for IP router supported by the ONT	7.3.39/G.983.2 (2005)
IP Router PM History Data1	O	Used for IP router performance monitoring	7.3.40/G.983.2 (2005)
IP Router PM History Data2	O	Used for IP router performance monitoring	7.3.41/G.983.2 (2005)

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
IP Router Service Profile	CR	Used for IP router supported by the ONT	7.3.38/G.983.2 (2005)
IP Route Table	CR	Used for IP router supported by the ONT	7.3.44/G.983.2 (2005)
IP Static Routes	CR	Used for IP router supported by the ONT	7.3.45/G.983.2 (2005)
LargeString	CR	Used to hold a character string larger than 25 bytes and up to 375 bytes. Member of H248relatedData group.	7.3.118/G.983.2 Amd1
LES Service Profile	CR	Used for LES services supported by the ONT	7.3.25/G.983.2 (2005)
Logical N × 64 kbit/s Sub-port Connection Termination Point	CR	Used as logical interface for structured CES	7.3.4/G.983.2 (2005)
MAC Bridge Configuration Data	CR	Used for MAC bridge supported by the ONT	7.3.30/G.983.2 (2005)
MAC Bridge PM History Data	O	Used for MAC bridge performance monitoring	7.3.35/G.983.2 (2005)
MAC Bridge Port Bridge Table Data	CR	Used for MAC bridge supported by the ONT	7.3.34/G.983.2 (2005)
MAC Bridge Port Configuration Data	CR	Used to organize and record data associated with a bridge port.	7.3.31/G.983.2 Amd1 9.3.9/G.984.4 Amd2
MAC Bridge Port Designation Data	CR	Used for MAC bridge supported by the ONT	7.3.32/G.983.2 (2005)
MAC Bridge Port Filter Preassign Table	O	Used for Ethernet type filtering	7.3.51/G.983.2 (2005)
MAC Bridge Port Filter Table Data	CR	Used for MAC bridge supported by the ONT	7.3.33/G.983.2 (2005)
MAC Bridge Port PM History Data	O	Used for MAC bridge port performance monitoring	7.3.36/G.983.2 (2005)
MAC Bridge Service Profile	CR	Used for MAC bridge supported by the ONT	7.3.29/G.983.2 (2005)
MGC Config Data	CR	Used for the configuration data associated with a MGC client. Member of H248relatedData group.	7.3.120/G.983.2 Amd1
MGC Config Portal	CR	Used to view H.248 configuration when the IP path is being used to manage H.248. Member of H248relatedData group.	7.3.119/G.983.2 Amd1

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
MGC Monitoring Data	O	Used for the runtime attributes and statistics associated with the active MGC client. Member of H248relatedData group.	7.3.121/G.983.2 Amd1
Multicast GEM Interworking Termination Point	CR	Used to manage multicasting support for GEM connection	9.3.8/G.984.4 Amd1
Multicast Interworking VCC Termination Point	CR	Used to manage multicasting support for ATM connection	7.3.97/G.983.2 (2005)
Network Address	CR	Used to bind a network address (URL, IP address) to its associated security method. Member of IPHostData group.	7.3.116/G.983.2 Amd1
Network Dial Plan Table	O	Used to support network defined dial plans. Member of VoIPData group.	7.3.112/G.983.2 Amd1
$OLT_{B\text{-}PON}$	O	Used for OLT identification for interoperability facilitation	7.3.96/G.983.2 (2005)
ONT Data	R	Used for OMCI MIB management	7.1.2/G.983.2 (2005)
ONT-G	R	Used for ONT equipment management	9.1.1/G.984.4
ONT2-G	R	Used for ONT equipment management	9.1.2/G.984.4
ONT Power Shedding	CR	Used to control the power shedding service.	7.1.12/G.983.2 Amd1
ONT Remote Debug	CR	Used to allow remote debugging of an ONT.	7.1.13/G.983.2 Amd1
ONU-G	R	Used for ONU equipment management	9.1.3/G.984.4
ONU2-G	R	Used for ONU equipment management	9.1.4/G.984.4
Physical Path Termination Point ADSL UNI Part 1	CR	Used for the physical path termination point at an ADSL CO modem	7.3.63/G.983.2 (2005)
Physical Path Termination Point ADSL UNI Part 2	CR	Used for the physical path termination point at an ADSL CO modem	7.3.64/G.983.2 (2005)
Physical Path Termination Point ATM UNI	CR	Used for physical path termination point at the ATM UNI	7.3.1/G.983.2 (2005)
Physical Path Termination Point CES UNI	CR	Used for physical path termination point at the CES UNI	7.3.3/G.983.2 (2005)
Physical Path Termination Point Ethernet UNI	CR	Used for physical path termination point at the Ethernet UNI	7.3.2/G.983.2 (2005)
Physical Path Termination Point ISDN UNI	O	Used for ISDN port supported by the ONT	7.3.48/G.983.2 (2005)
Physical Path Termination Point LCT UNI	O	Used for local craft terminal port	7.3.54/G.983.2 (2005)
Physical Path Termination Point POTS UNI	CR	Used for physical path trail termination point at the POTS UNI	7.3.26/G.983.2 (2005)
Physical Path Termination Point VDSL UNI	CR	Used for the physical path termination point at a VDSL connection	7.3.82/G.983.2 (2005)

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
Physical Path Termination Point Video ANI	O	Used for video input port	7.3.53/G.983.2 (2005)
Physical Path Termination Point Video UNI	O	Used for video port	7.3.52/G.983.2 (2005)
Physical Path Termination Point 802.11 UNI	CR	Used for 802.11 interface supported by the ONT	7.3.56/G.983.2 (2005)
PON IF Line Card-G	Deprecated	Used for the PON line card This managed entity is deprecated in favour of the generalized circuit pack ME.	9.1.7/G.984.4
PON IF Line Cardholder	Deprecated	Used for the PON line cardholder This managed entity is deprecated in favour of the generalized Cardholder ME.	9.1.6/G.984.4
PON Physical Path Termination Point	R	Used for physical path at the ANI, descriptive purpose only, see 7.2/G.983.2 (ANI Management)	7.2.1/G.983.2 (2005)
PON TC Adapter-G	R	Used for TC layer at PON interface	9.2.2/G.984.4
Port mapping package	O	Used to map heterogeneous ports to an equipment entity.	7.1.11/G.983.2 Amd1
Priority Queue-G	CR	Used for ONTs that support priority queues to multiplex ATM or GEM traffic flows	9.5.1/G.984.4
Protection Data	CR	Used for PON protection	9.1.10/G.984.4
RTP Monitoring Data	O	Used to hold the last completed 15 minutes interval PM data for RTP. Member of VoIPData group.	7.3.109/G.983.2 Amd1
RTP Profile Data	CR	Used for RTP configuration for VoIP service.	7.3.108/G.983.2 Amd1
SIP Agent Config Data	CR	Used to define a VoIP SIP agent configuration. Member of SIPrelatedData group.	7.3.103/G.983.2 Amd1
SIP Agent Monitoring Data	O	Used for statistics for the VoIP SIP agent. Member of SIPrelatedData group.	7.3.104/G.983.2 Amd1
SIP Call Initiation Performance Monitoring History Data	O	Used for statistics for the VoIP SIP agent. Member of SIPrelatedData group.	7.3.105/G.983.2 Amd1
SIP Config Portal	CR	Used to view SIP configuration when the IP path is being used to manage SIP. Member of SIPrelatedData group.	7.3.102/G.983.2 Amd1
SIP User Data	CR	Used for user (subscriber) specific SIP data. Member of SIPrelatedData group.	7.3.106/G.983.2 Amd1

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
Software Image	R	Used for the software image of the ONT or its components that contain independently manageable software.	7.1.7/G.983.2 Amd1
TC Adapter$_{B\text{-}PON}$	CR	Used for TC layer at the UNI side for the ATM UNI	7.3.6/G.983.2 (2005)
TC Adaptor Performance Monitoring History Data ADSL	O	Performance monitoring data for the ADSL ATM data path	7.3.81/G.983.2 (2005)
TC Adapter Protocol Monitoring History Data	O	Used when TC layer performance monitoring is supported	7.3.16/G.983.2 (2005)
T-CONT	R	Used for DBA	9.2.3/G.984.4
TCP/UDP Config Data	CR	Used for the TCP or UDP configuration for a TCP/UDP service. Member of IPHostData group.	7.3.100/G.983.2 Amd1
Threshold Data1	CR	Used for the set-up of threshold values	9.1.8/G.984.4
Threshold Data2	CR	Used for the set-up of threshold values	9.1.9/G.984.4
Traffic Descriptors	CR	Used for the ONT that supports traffic shaper to specify ATM layer traffic characteristics in the case of accommodation of non-ATM UNI. Moreover, in the case of accommodation of ATM UNI, Traffic Descriptors may be used for the UPC function in the ONT, if it is required.	7.5.2/G.983.2 (2005)
Traffic Scheduler-G	CR	Used for DBA	9.5.2/G.984.4
UNI$_{B\text{-}PON}$	CR	Used for user network interface for ATM service	7.3.5/G.983.2 (2005)
UNI-G	CR	Used for user network interface for GEM service	9.3.1/G.984.4
UPC Disagreement Monitoring History Data$_{B\text{-}PON}$	CR	Used for the ONT that supports UPC	7.5.4/G.983.2 (2005)
VC Network CTP-G	CR	Used for VC link termination in the VC MUX	9.4.4/G.984.4
VC PM History Data	O	Used for VC performance monitoring	7.4.6/G.983.2 (2005)
VDSL Band Plan Configuration Profile	CR	Parameters used to configure a VDSL band plan configuration profile.	7.3.88/G.983.2 (2005)
VDSL Channel Configuration Profile	CR	Parameters used to configure a VDSL channel configuration profile	7.3.87/G.983.2 (2005)
VDSL Channel Data	CR	Contains the channel parameters for VDSL fast and slow channels	7.3.85/G.983.2 (2005)
VDSL Line Configuration Profile	CR	Parameters used to configure a VDSL line configuration profile	7.3.86/G.983.2 (2005)

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
VDSL VTU-O Channel Performance Monitoring History Data	O	Performance monitoring data for a VDSL VTU-O channel	7.3.91/G.983.2 (2005)
VDSL VTU-O Physical Data	CR	Contains the physical layer parameters for a VTU-O	7.3.83/G.983.2 (2005)
VDSL VTU-O Physical Interface Monitoring History Data	O	Monitoring data for a VDSL VTU-O physical interface	7.3.89/G.983.2 (2005)
VDSL VTU-R Channel Performance Monitoring History Data	O	Performance monitoring data for a VDSL VTU-R channel	7.3.92/G.983.2 (2005)
VDSL VTU-R Physical Data	CR	Contains the physical layer parameters for a VTU-R	7.3.84/G.983.2 (2005)
VDSL VTU-R Physical Interface Monitoring History Data	O	Monitoring Data for a VDSL VTU-R physical interface	7.3.90/G.983.2 (2005)
Video Return Path Service Profile	CR	Used for video return path service supported by the ONT	7.3.93/G.983.2 (2005)
Video Return Path Statistics	O	Used for video return path service supported by the ONT	7.3.94/G.983.2 (2005)
VLAN Tagging Filter Data	O	Used for VLAN tagging	7.3.50/G.983.2 (2005)
VLAN Tagging Operation Configuration Data	O	Used for VLAN tagging	7.3.49/G.983.2 (2005)
Voice CTP	CR	Used for voice termination point supported by the ONT	7.3.27/G.983.2 (2005)
Voice PM History Data	O	Used for voice performance monitoring	7.3.28/G.983.2 (2005)
Voice Service Profile AAL	CR	Used for voice over AAL 1/2 supported by the ONT	7.3.24/G.983.2 (2005)
VoIP Application Service Profile	O	Used for VoIP calling feature services. Member of VoIPData group.	7.3.113/G.983.2 Amd1
VoIP Config Data	CR	Used to discover VoIP signalling protocols supported and select a VoIP signalling to use. Also used to select a VoIP configuration method. Member of VoIPData group.	7.3.101/G.983.2 Amd1
VoIP Feature Access Codes	O	Used to define feature access codes for a POTS port. Member of VoIPData group.	7.3.115/G.983.2 Amd1
VoIP Line Status	O	Used for VoIP line status that relates to a POTS port. Member of VoIPData group.	7.3.114/G.983.2 Amd1

Table 1/G.984.4 – Managed entities in the OMCI

Managed entity	Required/ Optional	Description	Recommen-dation
VoIP Media Profile	CR	Used to define codec and other media selection criteria. Member of VoIPData group.	7.3.107/G.983.2 Amd1
VoIP Voice CTP	CR	Used for VoIP voice channel termination point. Member of VoIPData group.	7.3.110/G.983.2 Amd1
VP Network CTP-G	CR	Used for VP link termination in the VP mux	9.4.3/G.984.4
VP PM History Data	O	Used for VP performance monitoring	7.4.3/G.983.2 (2005)
802.1p Mapper Service Profile	CR	Used for 802.1p priority Ethernet UNI	7.3.95/G.983.2 (2005)
802.11 Counters	O	Used for 802.11 interface supported by the ONT	7.3.61/G.983.2 (2005)
802.11 General Purpose Object	CR	Used for 802.11 interface supported by the ONT	7.3.59/G.983.2 (2005)
802.11 MAC&PHY Operation and Antenna Data	CR	Used for 802.11 interface supported by the ONT	7.3.60/G.983.2 (2005)
802.11 PHY FHSS DSSS IR Tables	CR	Used for 802.11 interface supported by the ONT	7.3.62/G.983.2 (2005)
802.11 Station Management Data 1	CR	Used for 802.11 interface supported by the ONT	7.3.57/G.983.2 (2005)
802.11 Station Management Data 2	CR	Used for 802.11 interface supported by the ONT	7.3.58/G.983.2 (2005)

5.5) Managed Entity relation diagrams

In clause 8.2, modify Figure 5 to change subscriber line card, PON IF line card and cardholders to the new preferred terminology.

5.6) ONT-G

In clause 9.1.1, modify the following three attributes:

1) *Vendor id*

Replace the description of the **Vendor id** *attribute:*

This attribute identifies the vendor of the ONT. Upon autonomous instantiation, this attribute consists of all spaces. (R) (mandatory) (4 bytes)

with:

This attribute identifies the vendor of the ONT, and is the same as the 4 most significant bytes of the ONT serial number as specified in ITU-T Rec. G.983.1. Upon autonomous instantiation, this attribute consists of all spaces. (R) (mandatory) (4 bytes)

2) *Serial Number*

Replace the description of the ***Serial Number*** *attribute*:

The serial number is unique for each ONT. Note that the serial number of the ONT is already defined in ITU-T Rec. G.983.1 and contains the vendor id and/or the version number. Upon autonomous instantiation, this attribute consists of all spaces.
(R) (mandatory) (8 bytes)

with:

The serial number is unique for each ONT. Note that the serial number of the ONT is already defined in ITU-T G.983.1 and contains the vendor id and version number. The first four bytes are the ASCII encoded vendor ID four letter mnemonic. The second four bytes are a binary encoded 'serial number', under the complete control of the vendor in question. Upon autonomous instantiation, this attribute consists of four spaces and four null characters. (R) (mandatory) (8 bytes)

3) *Traffic Management Option*

Replace the description of the **Traffic Management Option** *attribute:*

This attribute identifies the upstream traffic management function implemented in the ONT. There are two options:

1) "Priority controlled and flexibly scheduled upstream traffic" (0x00): The traffic scheduler and priority queue mechanism are used for the upstream traffic.
2) "Cell rate controlled upstream traffic" (0x01): The maximum upstream traffic of each individual connection is guaranteed. For more clarification, see Appendix IV/G.983.2.

Note that the Traffic management option will not apply to downstream traffic. In other words, there is no need for a traffic descriptor for the downstream direction and downstream priority queues can be used. Upon autonomous instantiation, this attribute is set to 0x00. (R) (mandatory) (1 byte)

with:

This attribute identifies the upstream traffic management function implemented in the ONT. There are two options:

1) "Priority controlled and flexibly scheduled upstream traffic" (0x00): The traffic scheduler and priority queue mechanism are used for the upstream traffic.
2) "Cell rate controlled upstream traffic" (0x01): The maximum upstream traffic of each individual connection is guaranteed. For more clarification, see Appendix IV/G.983.2.

Note that the Traffic management option will not apply to downstream traffic. In other words, there is no need for a traffic descriptor for the downstream direction and downstream priority queues can be used. Upon autonomous instantiation, this attribute is set to the value that describes the ONT's implementation. The OLT must adapt its model to conform to the ONT's selection. (R) (mandatory) (1 byte)

5.7) ONT2-G

In clause 9.1.2, modify the following two attributes:

1) *Total Priority Queue Number*

Replace the description of the **Total Priority Queue Number** *attribute:*

This attribute provides a total number of priority queues which are not associated with the PON IF line card. Maximum value is 0x0FFF. (R) (mandatory) (2 bytes)

with:

This attribute provides a total number of priority queues which are not associated with the PON IF circuit pack. Maximum value is 0x0FFF. Upon autonomous instantiation, this attribute is set to zero. (R) (mandatory) (2 bytes)

2) *Total Traffic Scheduler Number*

Replace the description of the **Total Traffic Scheduler Number** *attribute:*

This attribute provides a total number of Traffic Schedulers which are not associated with the PON IF line card. The ONT supports NULL function, HOL scheduling and WRR from the priority control and guarantee of minimum rate control points of view, respectively. If the ONT does not have any Traffic Scheduler, this attribute should be 0x00. (R) (mandatory) (1 byte)

with:

This attribute provides a total number of Traffic Schedulers which are not associated with the PON IF circuit pack. The ONT supports NULL function, HOL scheduling and WRR from the priority control and guarantee of minimum rate control points of view, respectively. If the ONT does not have any Traffic Scheduler, this attribute should be 0x00. Upon autonomous instantiation, this attribute is set to zero. (R) (mandatory) (1 byte)

5.8) Subscriber Line Cardholder

In clause 9.1.5, there are two modifications.

1) *Change the title of this clause from* "Subscriber Line Cardholder" *to* "Cardholder".

2) *Add the following new note and Table 3-1 to the end of this clause:*

NOTE – This managed entity was previously known as a Subscriber Line Cardholder. It has been generalized in a backward-compatible way to model any plug-in equipment module. The card type that is defined in Table 3/G.983.2 is extended in order to identify the G-PON interface card. Table 3-1 is specified in addition to Table 3/G.983.2.

Table 3-1/G.984.4 – Card types

Coding	Contents	Description
243	GPON12440155	G-PON interface card with asymmetric transmit rate of 1244 Mbit/s downstream and 155 Mbit/s upstream
244	GPON12440622	G-PON interface card with asymmetric transmit rate of 1244 Mbit/s downstream and 622 Mbit/s upstream
245	GPON1244symm	G-PON interface card with symmetric transmit rate of 1244 Mbit/s downstream and upstream
246	GPON24880155	G-PON interface card with asymmetric transmit rate of 2488 Mbit/s downstream and 155 Mbit/s upstream
247	GPON24880622	G-PON interface card with asymmetric transmit rate of 2488 Mbit/s downstream and 622 Mbit/s upstream
248	GPON24881244	G-PON interface card with asymmetric transmit rate of 2488 Mbit/s downstream and 1244 Mbit/s upstream
249	GPON2488symm	G-PON interface card with symmetric transmit rate of 2488 Mbit/s downstream and upstream

5.9) PON IF Line Cardholder

In clause 9.1.6, add the following new text to the end of the clause:

This managed entity is deprecated in favour of the cardholder managed entity, which better models cardholders that provide both ANI and UNI card slots.

5.10) PON IF Line Card-G

In clause 9.1.7, add the following new text to the end of the clause:

This managed entity is deprecated in favour of the circuit pack managed entity, which better models circuit packs that provide no ANI and UNI functions, or several such functions of different types.

5.11) ANI-G

In clause 9.2.1, there are four modifications.

1) *Description in Relationships*

Replace the text:

One or more instances of this managed entity are contained in an instance of the PON IF Line Card-G managed entity.

with:

One or more instances of this managed entity are contained in an instance of a circuit pack that supports a PON IF function.

2) *SR Indication*

Replace the description of **SR Indication** *attribute:*

This Boolean attribute indicates the capability of status reporting. The value TRUE means that the status reporting is available for all T-CONTs which are associated with the ANI. (R) (mandatory) (1 byte)

with:

This Boolean attribute indicates the capability of status reporting. The value TRUE means that the status reporting is available for all T-CONTs which are associated with the ANI. The default value is false. (R) (mandatory) (1 byte)

3) *SF threshold*

Replace the description of the **SF threshold** *attribute:*

This attribute represents the upstream/downstream BER threshold to detect SFi/SF alarm. When this value is y in decimal, the BER threshold for SFi/SF is 10^(–y). The valid values are from 0x3 to 0x8 inclusive. Upon autonomous instantiation, this attribute consists of 0x5. (R, W) (mandatory) (1 byte).

with:

This attribute represents the upstream/downstream BER threshold to detect SFi/SF alarm. When this value is y in decimal, the BER threshold for SFi/SF is 10^(–y). The valid values are from 3 to 8 inclusive. Upon autonomous instantiation, this attribute consists of 5. (R, W) (mandatory) (1 byte)

4) *SD threshold*

Replace the description of the **SD threshold** *attribute:*

This attribute represents the upstream/downstream BER threshold to detect SDi/SD alarm. When this value is x in decimal, the BER threshold for SDi/SD is 10^(–x). The valid values are from 0x4 to 0x10 inclusive. Please note that the SD threshold shall be smaller than the SF threshold. This

means that the value of x shall be larger than the value of y. Upon autonomous instantiation, this attribute consists of 0x9. (R, W) (mandatory) (1 byte).

with:

This attribute represents the upstream/downstream BER threshold to detect SDi/SD alarm. When this value is x in decimal, the BER threshold for SDi/SD is 10^(–x). The valid values are from 4 to 10 inclusive. Please note that the SD threshold shall be smaller than the SF threshold. This means that the value of x shall be larger than the value of y. Upon autonomous instantiation, this attribute consists of 9. (R, W) (mandatory) (1 byte).

5.12) T-CONT

In clause 9.2.3, there are two modifications.

1) *Description in Relationships*

Replace the text:

One or more instances of this managed entity are contained in an instance of the PON IF Line Card-G managed entity.

with:

One or more instances of this managed entity are contained in an instance of a circuit pack that supports a PON IF function.

2) *Managed Entity id*

Replace the description of the **Managed Entity id** *attribute:*

This attribute provides a unique number for each instance of this managed entity. This 2-byte number is associated with the physical capability that realizes the T-CONT. It is represented as 0xSSBB, where SS indicates the slot id that contains this T-CONT and BB is the T-CONT id that is numbered by the ONT itself. The range of SS is 0x80-0xFF (T-CONT is ANI side only). The T-CONT id is numbered in ascending order with the range of 0x00 to 0xFF in each slot. (R) (mandatory) (2 bytes)

with:

This attribute provides a unique number for each instance of this managed entity. This 2-byte number is associated with the physical capability that realizes the T-CONT. It is represented as 0xSSBB, where SS indicates the slot id that contains this T-CONT and BB is the T-CONT id that is numbered by the ONT itself. The T-CONT id is numbered in ascending order with the range of 0x00 to 0xFF in each slot. (R) (mandatory) (2 bytes)

5.13) UNI management

In clause 9.3, change all instances of subscriber line card/cardholder and PON IF line card/cardholder to the new preferred terminology.

5.14) GAL Profile Pointer attribute in GEM Interworking Termination Point ME

In clause 9.3.3, modify the description of the **GAL Profile Pointer***:*

This attribute provides a pointer to the instance of the GAL Profile used for this service. The following pointer values are supported:

– 0x00 GAL TDM Profile;

– 0x01 GAL Ethernet Profile;

– 0x02 Reserved for future use;

– 0x03 GAL Ethernet Profile for Data Service;

– 0x04 GAL Ethernet Profile for Video Return Path;
– 0x05 GAL Ethernet Profile for 802.1p Mapper.

(R, Set-by-create) (mandatory) (2 bytes).

with:

This attribute provides a pointer to an instance of the GAL Profile in response to the Interworking Option attribute. The relationship between the Interworking Option and the related GAL profile is listed:

– 0x00 GAL TDM Profile;
– 0x01 GAL Ethernet Profile;
– 0x02 Reserved for future use;
– 0x03 GAL Ethernet Profile for Data Service;
– 0x04 GAL Ethernet Profile for Video Return Path;
– 0x05 GAL Ethernet Profile for 802.1p Mapper.

(R, Set-by-create) (mandatory) (2 bytes).

5.15) Priority Queue-G

In clause 9.5.1, there are three modifications:

1) *First modification to explanation, modify the second paragraph:*

If *N* priority queues reside in the ONT, the Subscriber Line Card, ONT core or PON IF Line Card, *N* instances of Priority Queue-G management entity will be automatically created by the ONT following the creation of the Subscriber Line Card or T-CONT ME. In ANI side, the Priority Queue-G ME is related to T-CONT ME. After instances of T-CONT ME are created, instances of Priority Queue-G ME should be created autonomously.

with:

If *N* priority queues reside in the ONT and its circuit packs, *N* instances of Priority Queue-G management entity will be automatically created by the ONT following the creation of the circuit pack or T-CONT ME. In ANI side, the Priority Queue-G ME is related to T-CONT ME. After instances of T-CONT ME are created, instances of Priority Queue-G ME should be created autonomously.

2) *Second modification to explanation, modify the fifth paragraph:*

Upstream priority queues can be added to the ONT. Moreover, priority queues can exist in the ONT core and subscriber line cards as well as PON IF Line Cards.

with:

Upstream priority queues can be added to the ONT. Moreover, priority queues can exist in the ONT core and circuit packs serving both UNI and ANI functions.

3) *Description in Relationships*

Replace the text:

One or more instances of this managed entity are contained in the ONT-G managed entity to model the upstream priority queues if the Traffic Management Option attribute in ONT-G ME is 0x00. One or more instances of this managed entity are associated with the Subscriber Line Card managed entity as downstream priority queues. For the ONT that has one or more fixed user interfaces, one or more instances are contained in the ONT-G managed entity for the downstream priority queues.

with:

One or more instances of this managed entity are contained in the ONT-G managed entity to model the upstream priority queues if the Traffic Management Option attribute in ONT-G ME is 0x00. One or more instances of this managed entity are associated with the circuit pack managed entity serving UNI functions as downstream priority queues. For the ONT that has one or more fixed user interfaces, one or more instances are contained in the ONT-G managed entity for the downstream priority queues.

5.16) Traffic Scheduler-G

In clause 9.5.2, replace the description of the **Managed Entity id***:*

This attribute provides a unique number for each instance of this managed entity. This 2-byte number is associated with the physical capability that realizes the Traffic Scheduler. The first byte is the slot id of the PON IF card with which this Traffic Scheduler is associated. For integrated PON IF interfaces, this byte can be associated with "pseudo" slot id 0x80 (128). If the ONT has Traffic Schedulers that are not associated with the PON IF card at the creation of this instance, the first byte of this Traffic Scheduler is 0xFF. The second byte is the Traffic Scheduler id that is numbered by the ONT itself. The Traffic Scheduler id is numbered in ascending order with the range of 0x00 to 0xFF. (R) (mandatory) (2 bytes)

with:

This attribute provides a unique number for each instance of this managed entity. This 2-byte number is associated with the physical capability that realizes the Traffic Scheduler. The first byte is the slot id of the circuit pack with which this Traffic Scheduler is associated. For a traffic scheduler that is not associated with a circuit pack at the creation of this instance, the first byte of this attribute is 0xFF. The second byte is the Traffic Scheduler id that is numbered by the ONT itself. The Traffic Scheduler id is numbered in ascending order with the range of 0x00 to 0xFF in each circuit pack or ONT core. (R) (mandatory) (2 bytes)

6) New ITU-T Rec. G.984.4 features

Add the following new clause 9.3.9:

9.3.9 MAC Bridge Port Configuration Data

This managed entity is used to organize and record data that is associated with a bridge port. ITU-T Rec. G.984.4 can reuse the managed entity that is specified in ITU-T Rec. G.983.2. However, some code points are added for GEM port in this clause. The modified attributes are TPType and TPPointer.

i) *Modification of TPType*

Append the following text to the attribute descriptions:

The value is set to 0x05 if this bridge port is associated with a GEM Interworking Termination Point ME.

ii) *Modification of TPPointer*

Append the following text to the attribute descriptions:

If TPType = 0x05, the value of this attribute is the same as the id of the GEM Interworking Termination Point ME associated with this MAC bridge port.

7) Class values for new and renamed managed entities

7.1) Renamed managed entities

In Tables 17 and 18, replace "Subscriber line cardholder" *with* "Cardholder", *and replace* "Subscriber line card" *with* "Circuit Pack".

7.2) New managed entities

In Table 18 add the following new items:

Managed entity class value	Managed Entity
133	ONT Power Shedding
134	IP Host Config Data
135	IP Host Performance Monitoring History Data
136	TCP/UDP Config Data
137	Network Address
138	VoIP Config Data
139	VoIP Voice CTP
140	Call Control PM History Data
141	VoIP Line Status
142	VoIP Media Profile
143	RTP Profile Data
144	RTP Monitoring Data
145	Network Dial Plan Table
146	VoIP Application Service Profile
147	VoIP Feature Access Codes
148	Authentication Security Method
149	SIP Config Portal
150	SIP Agent Config Data
151	SIP Agent Monitoring Data
152	SIP Call Initiation Performance Monitoring History Data
153	SIP User Data
154	MGC Config Portal
155	MGC Config Data
156	MGC Monitoring Data
157	LargeString
158	ONT Remote Debug
159	Equipment protection profile
160	Equipment extension package
161	Port mapping package
162..239	Reserved for future B-PON managed entities
240-255	Reserved for vendor-specific managed entities

8) Modify Appendix II – OMCI message set

8.1) General changes

Replace all instances of "Subscriber line card" *with* "Circuit Pack".

Replace all instances of "1, 2, ..., 127 = UNI card 129, 130, ..., 255 = ANI card" *with* "1, 2, ..., 254 = slot number".

8.2) Create

In II.2.1, modify the description:

It should be noted that the message contents for the "Create" message apply only to attributes that are "Set-by-create". Thus, the first byte of Message Contents field begins with the attribute value for the first Set-by-create attribute and so forth.

with:

It should be noted that the message contents for the "Create" message apply only to attributes that are "Set-by-create". Writeable attributes that are not set-by-create are not permitted in a create message. Thus, the first byte of Message Contents field begins with the attribute value for the first Set-by-create attribute and so forth.

Space for each set-by-create attribute must be allocated in the create message, even if the attribute is optional. When an optional attribute is not to be instantiated, the placeholder value to be entered into this space is specific to the definition of each attribute.

8.3) Test

In II.2.27, replace the following description and format:

The format of the test message is specific to the target entity class. At present, two formats are defined. Future test extensions for a given entity class can be supported by adding additional encodings to presently unused bits or bytes. Future specification of tests for other entity classes may use an existing format or may define new formats for the test message. These extension mechanisms allow future tests to be supported without changing the principle of operation.

Format for ONT-G, ONU-G, Subscriber Line Card, PON IF Line Card-G entity classes

Field	Byte	8	7	6	5	4	3	2	1	Comments
Transaction identifier	6-7									
Message type	8	0	1	0						DB = 0, AR = 1, AK = 0 bits 5-1: action = test
Device identifier type	9	0	0	0	0	1	0	1	0	OMCI = 0x0A
Message identifier	10-11									Entity class. NOTE – This format applies to entity classes ONT-G, ONU-G, Subscriber Line Card, PON IF Line Card-G.
	12									MSB entity instance
	13									LSB entity instance
Message contents	14	0	0	0	0	x	x	x	x	xxxx = select test 0111 = self test
	15-45	0	0	0	0	0	0	0	0	Padding

with:

The format of the test message is specific to the target entity class. At present, two formats are defined. Future test extensions for a given entity class can be supported by adding additional encodings to presently unused bits or bytes. Future specification of tests for other entity classes may use an existing format or may define new formats for the test message. These extension mechanisms allow future tests to be supported without changing the principle of operation.

Format for ONT-G, ONU-G and Circuit pack entity classes

Field	Byte	8	7	6	5	4	3	2	1	Comments
Transaction identifier	6-7									
Message type	8	0	1	0						DB = 0, AR = 1, AK = 0 bits 5-1: action = test
Device identifier type	9	0	0	0	0	1	0	1	0	OMCI = 0x0A
Message identifier	10-11									Entity class. NOTE – This format applies to entity classes ONT-G, ONU-G, and Circuit pack.
	12									MSB entity instance
	13									LSB entity instance
Message contents	14	0	0	0	0	x	x	x	x	xxxx=select test 0000 ~ 0110 Reserved for future use 0111=self test 1000 ~ 1111 Vendor specific use. See description related to the test result message.
	15-45	0	0	0	0	0	0	0	0	Padding

8.4) Test result

In II.2.45, replace the following description and format:

The test result message is used to report the result of a test. The transaction identifier of the test result message is identical to the transaction identifier of the test message that initiated the corresponding test.

Two formats are currently defined, one of which reports the result of a self test (any ME that supports self test), the other of which reports the results of a dial tone draw-break test (PPTP POTS UNI) or an MLT test (PPTP POTS UNI or PPTP ISDN UNI). If a new test for the presently-supported entities is defined in the future, the corresponding test results can be reported by extending the test result message layout. If a new test for other managed entity classes is defined in the future, a new test result message layout may be defined.

Format for ONT-G, ONU-G, subscriber line card, PON line card entity classes

Field	Byte	8	7	6	5	4	3	2	1	Comments
Transaction identifier	6-7									
Message type	8	0	0	0						DB = 0, AR = 0, AK =0 bits 5-1: action = test result
Device identifier type	9	0	0	0	0	1	0	1	0	OMCI = 0x0A
Message identifier	10-11									Entity class. NOTE – This format applies to entity classes ONT-G, ONU-G, Subscriber Line Card, PON IF Line Card-G.
	12									MSB entity instance
	13									LSB entity instance
Message contents	14	0	0	0	0	0	0	0	0	Unused.
	15	0	0	0	0	0	0	x	x	Self test result: xx = 00: failed xx = 01: passed xx = 10: not completed
	16-45	0	0	0	0	0	0	0	0	Padding

with:

The test result message is used to report the result of a test. The transaction identifier of the test result message is identical to the transaction identifier of the test message that initiated the corresponding test.

Three formats are currently defined. The first reports the result of a self test (any ME that supports self test). The second reports the results of vendor-specific tests using a generic structure. The third reports the results of a dial tone draw-break test (PPTP POTS UNI) or an MLT test (PPTP POTS UNI or PPTP ISDN UNI). If a new test for the presently-supported entities is defined in the future, the corresponding test results can be reported by extending the test result message layout. If a new test for other managed entity classes is defined in the future, a new test result message layout may be defined.

Format for self-test action invoked against ONT-G, ONU-G, and Circuit pack entity classes

Field	Byte	8	7	6	5	4	3	2	1	Comments
Transaction identifier	6-7									
Message type	8	0	0	0						DB = 0, AR = 0, AK =0 bits 5-1: action = test result
Device identifier type	9	0	0	0	0	1	0	1	0	OMCI = 0x0A
Message identifier	10-11									Entity class. NOTE – This format applies to entity classes ONT-G, ONU-G, and Circuit Pack.
	12									MSB entity instance
	13									LSB entity instance
Message contents	14	0	0	0	0	0	0	0	0	Unused.
	15	0	0	0	0	0	0	x	x	Self test result: xx = 00: failed xx = 01: passed xx = 10: not completed
	16-45	0	0	0	0	0	0	0	0	Padding

Format for vendor-specific test actions invoked against ONT-G, ONU-G, and Circuit Pack entity classes

Field	Byte	8	7	6	5	4	3	2	1	Comments
Transaction identifier	6-7									
Message type	8	0	0	0						DB = 0, AR = 0, AK =0 bits 5-1: action = test result
Device identifier type	9	0	0	0	0	1	0	1	0	OMCI = 0x0A
Message identifier	10-11									Entity class. NOTE – This message format pertains to ONT-G, ONU-G, and Circuit pack entity classes.
	12									MSB entity instance
	13									LSB entity instance
Message contents	14									Type 1 (Note)
	15-16									Value 1
	17									Type 2
	18-19									Value 2
	20									Type 3
	21-22									Value 3
	23									Type 4
	24-25									Value 4
	26									Type 5
	27-28									Value 5
	29									Type 6
	30-31									Value 6
	32									Type 7
	33-34									Value 7
	35									Type 8
	36-37									Value 8
	38									Type 9
	39-40									Value 9
	41									Type 10
	42-43									Value 10
	44-45									Padding

NOTE – Test result types are specified in 9.1.10/G.983.2. Type-value fields are packed in the lowest byte positions. Unused trailing byte positions are filled with 0 values. If more than 10 type-value pairs are to be returned, an additional test type should be defined in the test message. At the vendor's discretion, a test result may include an ordered sequence of repeated type-value pairs to represent, for example, port ordering, or first/second power input. In this case, missing values can be flagged with type = 255.

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Printed in Switzerland
Geneva, 2006