

# ITU-T

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

# G.709/Y.1331

**Corrigendum 2**  
(01/2015)

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

Digital terminal equipments – General

SERIES Y: GLOBAL INFORMATION  
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS  
AND NEXT-GENERATION NETWORKS

Internet protocol aspects – Transport

---

Interfaces for the optical transport network

**Corrigendum 2**

Recommendation ITU-T G.709/Y.1331 (2012) –  
Corrigendum 2

ITU-T G-SERIES RECOMMENDATIONS

**TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS**

INTERNATIONAL TELEPHONE CONNECTIONS AND CIRCUITS	G.100–G.199
GENERAL CHARACTERISTICS COMMON TO ALL ANALOGUE CARRIER-TRANSMISSION SYSTEMS	G.200–G.299
INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES	G.300–G.399
GENERAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON RADIO-RELAY OR SATELLITE LINKS AND INTERCONNECTION WITH METALLIC LINES	G.400–G.449
COORDINATION OF RADIOTELEPHONY AND LINE TELEPHONY	G.450–G.499
TRANSMISSION MEDIA AND OPTICAL SYSTEMS CHARACTERISTICS	G.600–G.699
DIGITAL TERMINAL EQUIPMENTS	G.700–G.799
<b>General</b>	<b>G.700–G.709</b>
Coding of voice and audio signals	G.710–G.729
Principal characteristics of primary multiplex equipment	G.730–G.739
Principal characteristics of second order multiplex equipment	G.740–G.749
Principal characteristics of higher order multiplex equipment	G.750–G.759
Principal characteristics of transcoder and digital multiplication equipment	G.760–G.769
Operations, administration and maintenance features of transmission equipment	G.770–G.779
Principal characteristics of multiplexing equipment for the synchronous digital hierarchy	G.780–G.789
Other terminal equipment	G.790–G.799
DIGITAL NETWORKS	G.800–G.899
DIGITAL SECTIONS AND DIGITAL LINE SYSTEM	G.900–G.999
MULTIMEDIA QUALITY OF SERVICE AND PERFORMANCE – GENERIC AND USER-RELATED ASPECTS	G.1000–G.1999
TRANSMISSION MEDIA CHARACTERISTICS	G.6000–G.6999
DATA OVER TRANSPORT – GENERIC ASPECTS	G.7000–G.7999
PACKET OVER TRANSPORT ASPECTS	G.8000–G.8999
ACCESS NETWORKS	G.9000–G.9999

*For further details, please refer to the list of ITU-T Recommendations.*

# Recommendation ITU-T G.709/Y.1331

## Interfaces for the optical transport network

### Corrigendum 2

#### Summary

Corrigendum 2 to Recommendation ITU-T G.709/Y.1331 (2012) removes the 'T factor' from Table 7-9.

#### History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T G.709/Y.1331	2001-02-09	15	<a href="http://handle.itu.int/11.1002/1000/5350">11.1002/1000/5350</a>
1.1	ITU-T G.709/Y.1331 (2001) Amd. 1	2001-11-29	15	<a href="http://handle.itu.int/11.1002/1000/5629">11.1002/1000/5629</a>
2.0	ITU-T G.709/Y.1331	2003-03-16	15	<a href="http://handle.itu.int/11.1002/1000/6265">11.1002/1000/6265</a>
2.1	ITU-T G.709/Y.1331 (2003) Amd. 1	2003-12-14	15	<a href="http://handle.itu.int/11.1002/1000/7060">11.1002/1000/7060</a>
2.2	ITU-T G.709/Y.1331 (2003) Cor. 1	2006-12-14	15	<a href="http://handle.itu.int/11.1002/1000/8982">11.1002/1000/8982</a>
2.3	ITU-T G.709/Y.1331 (2003) Amd. 2	2007-11-22	15	<a href="http://handle.itu.int/11.1002/1000/9155">11.1002/1000/9155</a>
2.4	ITU-T G.709/Y.1331 (2003) Cor.2	2009-01-13	15	<a href="http://handle.itu.int/11.1002/1000/9646">11.1002/1000/9646</a>
2.5	ITU-T G.709/Y.1331 (2003) Amd. 3	2009-04-22	15	<a href="http://handle.itu.int/11.1002/1000/9671">11.1002/1000/9671</a>
3.0	ITU-T G.709/Y.1331	2009-12-22	15	<a href="http://handle.itu.int/11.1002/1000/10398">11.1002/1000/10398</a>
3.1	ITU-T G.709/Y.1331 (2009) Cor. 1	2010-07-29	15	<a href="http://handle.itu.int/11.1002/1000/10875">11.1002/1000/10875</a>
3.2	ITU-T G.709/Y.1331 (2009) Amd. 1	2010-07-29	15	<a href="http://handle.itu.int/11.1002/1000/10874">11.1002/1000/10874</a>
3.3	ITU-T G.709/Y.1331 (2009) Amd. 2	2011-04-13	15	<a href="http://handle.itu.int/11.1002/1000/11115">11.1002/1000/11115</a>
4.0	ITU-T G.709/Y.1331	2012-02-13	15	<a href="http://handle.itu.int/11.1002/1000/11485">11.1002/1000/11485</a>
4.1	ITU-T G.709/Y.1331 (2012) Cor. 1	2012-10-29	15	<a href="http://handle.itu.int/11.1002/1000/11776">11.1002/1000/11776</a>
4.2	ITU-T G.709/Y.1331 (2012) Amd. 1	2012-10-29	15	<a href="http://handle.itu.int/11.1002/1000/11774">11.1002/1000/11774</a>
4.3	ITU-T G.709/Y.1331 (2012) Amd. 2	2013-10-22	15	<a href="http://handle.itu.int/11.1002/1000/11982">11.1002/1000/11982</a>
4.4	ITU-T G.709/Y.1331 (2012) Amd. 3	2014-12-05	15	<a href="http://handle.itu.int/11.1002/1000/12363">11.1002/1000/12363</a>
4.5	ITU-T G.709/Y.1331 (2012) Cor. 2	2015-01-13	15	<a href="http://handle.itu.int/11.1002/1000/12365">11.1002/1000/12365</a>
4.6	ITU-T G.709/Y.1331 (2012) Amd. 4	2015-01-13	15	<a href="http://handle.itu.int/11.1002/1000/12364">11.1002/1000/12364</a>

\* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

## FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

## NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

## INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2015

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

# Recommendation ITU-T G.709/Y.1331

## Interfaces for the optical transport network

### 1) Clause 7.3: Bit rates and capacity

Modify the notes in Table 7-9 as follows:

**Table 7-9 – Number of tributary slots required for ODU<sub>j</sub> into HO OPU<sub>k</sub>**

LO ODU	# 2.5G tributary slots		# 1.25G tributary slots			
	OPU2	OPU3	OPU1	OPU2	OPU3	OPU4
ODU0	–	–	1	1	1	1
ODU1	1	1	–	2	2	2
ODU2	–	4	–	–	8	8
ODU2e	–	–	–	–	9	8
ODU3	–	–	–	–	–	31
ODUflex(CBR)	–	–	–	Note 1	Note 2	Note 3
– ODUflex(IB SDR)	–	–	–	3	3	2
– ODUflex(IB DDR)	–	–	–	5	5	4
– ODUflex(IB QDR)	–	–	–	–	9	8
– ODUflex(FC-400)	–	–	–	4	4	4
– ODUflex(FC-800)	–	–	–	7	7	7
– ODUflex(FC-1600)	–	–	–	–	12	11
– ODUflex(3G SDI) (2 970 000)	–	–	–	3	3	3
– ODUflex(3G SDI) (2 970 000/1.001)	–	–	–	3	3	3
ODUflex(GFP)	–	–	–	n	n	n
<p>NOTE 1 – Number of tributary slots = Ceiling(ODUflex(CBR) nominal bit rate/(<del>T</del>×ODTU2.ts nominal bit rate) × (1+ODUflex(CBR) bit-rate tolerance)/(1–HO OPU2 bit-rate tolerance)).</p> <p>NOTE 2 – Number of tributary slots = Ceiling(ODUflex(CBR) nominal bit rate/(<del>T</del>×ODTU3.ts nominal bit rate) × (1+ODUflex(CBR) bit-rate tolerance)/(1–HO OPU3 bit-rate tolerance)).</p> <p>NOTE 3 – Number of tributary slots = Ceiling(ODUflex(CBR) nominal bit rate/(<del>T</del>×ODTU4.ts nominal bit rate) × (1+ODUflex(CBR) bit-rate tolerance)/(1–HO OPU4 bit-rate tolerance)).</p> <p><del>NOTE 4 – T represents the transcoding factor. Refer to clauses 17.7.3, 17.7.4 and 17.7.5.</del></p>						



## ITU-T Y-SERIES RECOMMENDATIONS

### GLOBAL INFORMATION INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS AND NEXT-GENERATION NETWORKS

<b>GLOBAL INFORMATION INFRASTRUCTURE</b>	
General	Y.100–Y.199
Services, applications and middleware	Y.200–Y.299
Network aspects	Y.300–Y.399
Interfaces and protocols	Y.400–Y.499
Numbering, addressing and naming	Y.500–Y.599
Operation, administration and maintenance	Y.600–Y.699
Security	Y.700–Y.799
Performances	Y.800–Y.899
<b>INTERNET PROTOCOL ASPECTS</b>	
General	Y.1000–Y.1099
Services and applications	Y.1100–Y.1199
Architecture, access, network capabilities and resource management	Y.1200–Y.1299
<b>Transport</b>	<b>Y.1300–Y.1399</b>
Interworking	Y.1400–Y.1499
Quality of service and network performance	Y.1500–Y.1599
Signalling	Y.1600–Y.1699
Operation, administration and maintenance	Y.1700–Y.1799
Charging	Y.1800–Y.1899
IPTV over NGN	Y.1900–Y.1999
<b>NEXT GENERATION NETWORKS</b>	
Frameworks and functional architecture models	Y.2000–Y.2099
Quality of Service and performance	Y.2100–Y.2199
Service aspects: Service capabilities and service architecture	Y.2200–Y.2249
Service aspects: Interoperability of services and networks in NGN	Y.2250–Y.2299
Enhancements to NGN	Y.2300–Y.2399
Network management	Y.2400–Y.2499
Network control architectures and protocols	Y.2500–Y.2599
Packet-based Networks	Y.2600–Y.2699
Security	Y.2700–Y.2799
Generalized mobility	Y.2800–Y.2899
Carrier grade open environment	Y.2900–Y.2999
<b>FUTURE NETWORKS</b>	<b>Y.3000–Y.3499</b>
<b>CLOUD COMPUTING</b>	<b>Y.3500–Y.3999</b>

*For further details, please refer to the list of ITU-T Recommendations.*

## SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
<b>Series G</b>	<b>Transmission systems and media, digital systems and networks</b>
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	Telecommunication management, including TMN and network maintenance
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Terminals and subjective and objective assessment methods
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks, open system communications and security
Series Y	Global information infrastructure, Internet protocol aspects and next-generation networks
Series Z	Languages and general software aspects for telecommunication systems