

# ITU-T

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

## G.8251

**Corrigendum 2**  
(05/2008)

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

Packet over Transport aspects – Quality and availability  
targets

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The control of jitter and wander within the optical  
transport network (OTN)

**Corrigendum 2**

Recommendation ITU-T G.8251 (2001) – Corrigendum 2

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# **Recommendation ITU-T G.8251**

## **The control of jitter and wander within the optical transport network (OTN)**

### **Corrigendum 2**

#### **Summary**

Corrigendum 2 to Recommendation ITU-T G.8251 contains material to correct Recommendation ITU-T G.8251 in terms of 40 Gbit/s rate signals.

#### **Source**

Corrigendum 2 to Recommendation ITU-T G.8251 (2001) was approved on 22 May 2008 by ITU-T Study Group 15 (2005-2008) under Recommendation ITU-T A.8 procedure.

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# Recommendation ITU-T G.8251

## The control of jitter and wander within the optical transport network (OTN)

### Corrigendum 2

#### 1 Scope

This corrigendum contains material to correct Recommendation ITU-T G.8251 in terms of 40 Gbit/s rate signals.

#### 2 Changes to Recommendation ITU-T G.8251

*The following clauses contain changes to be made to Recommendation ITU-T G.8251.*

##### 2.1 Modifications to clause 2

*Add the following reference to clause 2:*

[15] Recommendation ITU-T G.693 (2006), *Optical interfaces for intra-office systems*.

##### 2.2 Modifications to clause 5, network limits for the maximum output jitter and wander at an OTUk interface

*Table 1, change the OTU3 high band jitter tolerance value of 0.15 UI to 0.18 UIpp in line with technology capabilities:*

**Table 1/G.8251 – Maximum permissible jitter at OTUk interfaces**

Interface	Measurement bandwidth, –3 dB frequencies (Hz)	Peak-to-peak amplitude (UIpp)
OTU1	5 k to 20 M	1.5
	1 M to 20 M	0.15
OTU2	20 k to 80 M	1.5
	4 M to 80 M	0.15
OTU3	20 k to 320 M	6.0
	16 M to 320 M	<del>0.15</del> <u>18</u>
NOTE – OTU1 $1 \text{ UI} = \frac{238}{(255)(2.48832)} \text{ ns} = 375.1 \text{ ps}$		
OTU2 $1 \text{ UI} = \frac{237}{(255)(9.95328)} \text{ ns} = 93.38 \text{ ps}$		
OTU3 $1 \text{ UI} = \frac{236}{(255)(39.81312)} \text{ ns} = 23.25 \text{ ps}$		

## 2.3 Modifications to clause 6.1, jitter and wander tolerance of OTN interfaces

Modify the first bullet item in the list below Note 2 as follows:

NOTE 2 – This definition is subject to further study, taking into account the effects of, e.g., Optical Amplifiers (OA), Polarisation Mode Dispersion (PMD), and Forward Error Correction (FEC).

All OTUk input ports of equipment shall be able to tolerate an OCh\_AI\_D signal that has:

- optical characteristics of ITU-T Rec-s G.959.1; and G.693;
- a frequency offset (relative to the nominal value) within the range defined in A.3;
- a sinusoidal phase deviation having an amplitude-frequency relationship, defined in the following clauses, which indicates the appropriate limits for the different interfaces.

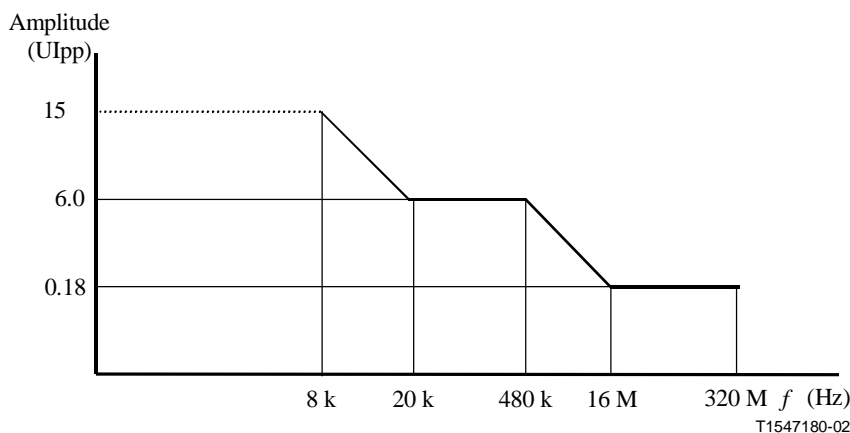
## 2.4 Modifications to clause 6.1.3, OTU3 jitter and wander tolerance

Modify Table 4 as follows:

**Table 4/G.8251 – OTU3 input sinusoidal jitter tolerance limit**

Frequency $f$ (Hz)	Peak-to-peak amplitude (UI <sub>pp</sub> )
$8\text{ k} < f \leq 20\text{ k}$	$1.2 \times 10^5 f^{-1}$
$20\text{ k} < f \leq 400\text{--}480\text{ k}$	6.0
$400\text{--}480\text{ k} < f \leq 16\text{ M}$	$2.88 \times 10^6 f^{-1}$ UI $2.4 \times 10^6 f^{-1}$
$16\text{ M} < f \leq 320\text{ M}$	0.4518

Replace Figure 3 with the following:



**Figure 3/G.8251 – OTU3 input sinusoidal jitter tolerance limit**

## 2.5 Modifications to clause 6.2, jitter and wander tolerance of CBR2G5, CBR10G, and CBR40G client interfaces

Modify clause 6.2 as follows:



## 6.2 Jitter and wander tolerance of CBR2G5, CBR10G, and CBR40G client interfaces

Jitter and wander tolerance requirements and network limits for CBR2G5, CBR10G, and CBR40G are derived from the corresponding requirements for STM-16, ~~and STM-64~~ and STM-256 signals, respectively, given in ITU-T Rec. G.825.

~~NOTE – Jitter and wander tolerance requirements and network limits for STM-256 signals are not currently given in ITU-T Rec. G.825; however, it is expected they will be in future editions of ITU-T Rec. G.825.~~

### 2.6 Subclause A.5.1.1, ODCa, ODCb, and ODCr jitter generation

*In Table A.2, replace the ODU3/OTU3 high band jitter generation value of 0.1 UI with 0.14 UIpp, in line with 40G optical and technology capabilities as follows:*

**Table A.2/G.8251 – ODCa, ODCb, and ODCr jitter generation requirements**

Interface	Measurement bandwidth, –3 dB frequencies (Hz)	Peak-to-peak amplitude (UIpp) (Note 2)
ODU1, OTU1	5 k to 20 M	0.3
	1 M to 20 M	0.1
ODU2, OTU2	20 k to 80 M	0.3
	4 M to 80 M	0.1
ODU3, OTU3	20 k to 320 M	1.2 (Note 1)
	16 M to 320 M	0.14
NOTE 1 – See IV.4 for additional information.		
NOTE 2 – ODU1 $1 UI = \frac{238}{(239)(2.48832)} [\text{ns}] = 400.2 \text{ ps}$		
ODU2 $1 UI = \frac{237}{(239)(9.95328)} [\text{ns}] = 99.63 \text{ ps}$		
ODU3 $1 UI = \frac{236}{(239)(39.81312)} [\text{ns}] = 24.80 \text{ ps}$		
OTU1 $1 UI = \frac{238}{(255)(2.48832)} [\text{ns}] = 375.1 \text{ ps}$		
OTU2 $1 UI = \frac{237}{(255)(9.95328)} [\text{ns}] = 93.38 \text{ ps}$		
OTU3 $1 UI = \frac{236}{(255)(39.81312)} [\text{ns}] = 23.25 \text{ ps}$		

## 2.7 Subclause A.5.1.2, ODCp jitter generation

In Table A.3, replace the 40G high band jitter generation value of 0.1 UI with 0.14 UI<sub>pp</sub> in line with STM-256 specification and technology capabilities, and remove invalid Note 1:

**Table A.3/G.8251 – ODCp jitter generation requirements**

Interface	Measurement bandwidth, –3 dB frequencies (Hz)	Peak-to-peak amplitude (UI <sub>pp</sub> ) (Note-2)
CBR2G5 ODU1	5 k to 20 M	1.0
	1 M to 20 M	0.1
CBR10G ODU2	20 k to 80 M	1.0
	4 M to 80 M	0.1
CBR40G	80 k to 320 M (Note-4)	1.0
	16 M to 320 M	0.14
<p><del>NOTE 1 – Values for STM-256 are provisional and are not present in ITU-T Rec. G.825 at the time of publication of this Recommendation.</del></p> <p>NOTE-2 – CBR2G5 <math>1 \text{ UI} = \frac{1}{2.48832} \text{ [ns]} = 401.9 \text{ ps}</math></p> <p>CBR10G <math>1 \text{ UI} = \frac{1}{9.95328} \text{ [ns]} = 100.5 \text{ ps}</math></p> <p>CBR40G <math>1 \text{ UI} = \frac{1}{39.81312} \text{ [ns]} = 25.12 \text{ ps}</math></p> <p>ODU1 <math>1 \text{ UI} = \frac{238}{(239)(2.48832)} \text{ [ns]} = 400.2 \text{ ps}</math></p> <p>ODU2 <math>1 \text{ UI} = \frac{237}{(239)(9.95328)} \text{ [ns]} = 99.63 \text{ ps}</math></p>		



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