

International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.671
Amendment 1
(03/2006)

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

Transmission media characteristics – Characteristics of
optical components and subsystems

Transmission characteristics of optical components
and subsystems

Amendment 1

ITU-T Recommendation G.671 (2005) – Amendment 1



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ITU-T Recommendation G.671

Transmission characteristics of optical components and subsystems

Amendment 1

Summary

This amendment contains modifications of the text of ITU-T Rec. G.671 (2005) to add specifications for an "optical branching component (wavelength non-selective) for PONs".

Source

Amendment 1 to ITU-T Recommendation G.671 (2005) was approved on 29 March 2006 by ITU-T Study Group 15 (2005-2008) under the ITU-T Recommendation A.8 procedure.

FOREWORD

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Transmission characteristics of optical components and subsystems

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1 Clause 2 References

Add the following new references:

- [24] ITU-T Recommendation G.983.1 (2005), *Broadband optical access systems based on Passive Optical Networks (PON)*.
- [25] ITU-T Recommendation G.983.3 (2001), *A broadband optical access system with increased service capability by wavelength allocation*.
- [26] ITU-T Recommendation G.984.2 (2003), *Gigabit-capable Passive Optical Networks (G-PON): Physical Media Dependent (PMD) layer specification*.
- [27] IEC 61753-2-3 (2001), *Fibre optic interconnecting devices and passive components performance standard – Part 2-3: Non-connectorised single-mode 1×N and 2×N non-wavelength-selective branching devices for Category U – Uncontrolled environment*.

2 Clause 3.2.26 reflectance

Add the following new Note 3 and renumber Note 3 as Note 4 as follows:

NOTE 3 – Where the total reflection from the component is made up of reflections from multiple points, the component reflectance must include all such contributions.

NOTE ~~4~~ – Generally within ITU-T, components are specified in terms of their reflectance (a negative value in dB) while systems are specified using the term "return loss" (a positive value in dB). In some IEC documents, components (which may have multiple interfaces) are normally specified in terms of return loss.

3 Clause 5 Parameter test methods and values

Add two new notes (Notes 10 and 11) as follows:

NOTE 10 – These values are derived from calculating the minimum loss of one of the ports if all of the other ports show identical loss while assuming no excess loss and meeting the maximum values of uniformity requirement. If this is done the minimum loss is:

$$\text{Min_loss} = 10 \text{Log} \left(\frac{U}{U + X - 1} \right)$$

where:

U is the linear uniformity, i.e., $U = 10^{\frac{\text{uniformity}}{10}}$

X is the number of ways of the branching component (4, 8, 16 or 32)

NOTE 11 – While this component has a maximum operating wavelength in range WR2 of 1660 nm, the operation of optical fibres such as G.652 at wavelengths beyond 1625 nm may not be ensured.

4 New clause 5.5 Optical branching component (wavelength non-selective) for PONs

Replace clause 5.5 "Optical connector" with the following:

5.5 Optical branching component (wavelength non-selective) for PONs

1 × X where X=4, 8, 16 and 32

Clause	Parameter		Max	Min	Test method
5.5.1	Insertion loss (dB)		See loss table below	See loss table below	IEC 61300-3-4 IEC 61300-3-7
5.5.2	Reflectance (dB)		-55	na	ffs
	Operating wavelength range (nm) (Note 1)				
5.5.3	WR1	1310 nm window	1360	1260	IEC 61300-3-7
		1550 nm window	1600	1450	
5.5.4	WR2	1310 nm window	1360	1260	IEC 61300-3-7
		1550 nm window	1660 (Note 11)	1450	
5.5.5	Polarization-dependent loss (PDL)		See PDL table below	na	IEC 61300-3-2 IEC 61300-3-12
5.5.6	Polarization dependent reflectance (dB)		ffs	na	ffs
5.5.7	Allowable input power (dBm)		ffs (Note 2)	na	ffs
5.5.8	Polarization mode dispersion (PMD) (ps)		ffs	na	G.650 (Note 3)
5.5.9	Directivity (dB)		na	55	ffs
5.5.10	Uniformity (dB)		See uniformity table below	na	ffs

Insertion loss requirements

	For normal reach				For extended reach			
	WR1		WR2		WR1		WR2	
	Min. IL (dB) (Note 10)	Max. IL (dB)	Min. IL (dB) (Note 10)	Max. IL (dB)	Min. IL (dB) (Note 10)	Max. IL (dB)	Min. IL (dB) (Note 10)	Max. IL (dB)
4	5.4	7.4	5.3	7.6	5.6	7.1	5.4	7.3
8	8.2	10.6	7.9	10.9	8.2	10.5	7.9	10.8
16	10.8	14.1	10.5	14.5	10.8	13.7	10.5	14.1
32	13.3	17.5	12.8	18.1	13.6	17.1	13.0	17.7

Branching component should comply with the insertion loss requirement for both WR1 and WR2.

Polarization-dependent loss requirements

X	Maximum values (dB)
4	0.2
8	0.25
16	0.3
32	0.4

Uniformity requirements

X	Maximum values (dB)			
	For normal reach		For extended reach	
	WR1	WR2	WR1	WR2
4	0.8	1.0	0.6	0.8
8	1.0	1.3	1.0	1.3
16	1.3	1.7	1.3	1.7
32	1.8	2.4	1.5	2.1

Branching component should comply with uniformity requirement for both WR1 and WR2.

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