INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.957

Amendment 1
(12/2003)

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Digital sections and digital line system – Digital line systems

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Optical interfaces for equipments and systems relating to the synchronous digital hierarchy

Amendment 1

ITU-T Recommendation G.957 (1999) – Amendment 1

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ITU-T Recommendation G.957

Optical interfaces for equipments and systems relating to the synchronous digital hierarchy

Amendment 1

Summary

This amendment contains modifications of the text of ITU-T Rec. G.957 (1999) to define the 0 dB frequency of the optical reference receiver (in clause B.2) and to modify the definition of extinction ratio (in clause 6.2.4) to bring it into line with the definitions in ITU-T Recs G.691, G.693 and G.959.1.

Source

Amendment 1 to ITU-T Recommendation G.957 was approved on 14 December 2003 by ITU-T Study Group 15 (2001-2004) under the ITU-T Recommendation A.8 procedure.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. 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.

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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, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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ITU-T Recommendation G.957

Optical interfaces for equipments and systems relating to the synchronous digital hierarchy

1) Clause 6.2.4

Modify clause 6.2.4 as follows:

6.2.4 Extinction ratio

The convention adopted for optical logic level is:

– emission of light for a logical "1";

– no emission for a logical "0".

The Extinction ratio (*EX*) is defined as:

$$EX = 10\log_{10}\left(\frac{A}{B}\right)$$

where *A* is the average optical power level at the centre of ~~for~~ a logical "1" and *B* is the average optical power level at the centre of ~~for~~ a logical "0". Measurement methods for the extinction ratio are under study.

2) Clause B.2

Modify the beginning of clause B.2 as follows:

B.2 Transfer function of the optical reference receiver

The nominal transfer function of the optical reference receiver is characterized by a fourth-order Bessel-Thomson response according to:

$$H(p) = \frac{1}{105}\left(105 + 105y + 45y^2 + 10y^3 + y^4\right)$$

with:

$$p = j\frac{\omega}{\omega_r}$$

$$y = 2.1140\,p$$

$$\omega_r = 1.5\pi f_0$$

f_0 = bit rate

The reference frequency is f_r = 0.75 f_0. The nominal attenuation at this frequency is 3 dB, where 0 dB is defined to be the attenuation at 0.03 f_r. The corresponding attenuation and group delay distortion at various frequencies are given in Table B.1. Figure B.2 shows a simplified circuit diagram for the low-pass filter used for measuring the mask of the eye diagram of the optical transmit signal.

The remainder of clause B.2 remains unchanged.

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