



INTERNATIONAL TELECOMMUNICATION UNION

**CCITT**

THE INTERNATIONAL  
TELEGRAPH AND TELEPHONE  
CONSULTATIVE COMMITTEE

**G.707**

(11/1988)

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

General aspects of digital transmission systems; terminal  
equipments

General

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**SYNCHRONOUS DIGITAL HIERARCHY  
BIT RATES**

Reedition of CCITT Recommendation G.707 published in  
the Blue Book, Fascicle III.4 (1988)

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## NOTES

1 CCITT Recommendation G.707 was published in Fascicle III.4 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

**Recommendation G.707**

**SYNCHRONOUS DIGITAL HIERARCHY BIT RATES**

*(Melbourne, 1988)*

The CCITT,

*considering*

(a) that Recommendation G.702 specifies a number of digital hierarchy bit rates for 1544 kbit/s and 2048 kbit/s based digital networks;

(b) that the various hierarchy levels specified in Recommendation G.702 are interconnected by means of digital multiplexing employing justification methods;

(c) that synchronous digital multiplexing and a related synchronous digital hierarchy offer advantages such as:

- simplified multiplexing/demultiplexing techniques;
- direct access to lower speed tributaries, without need to multiplex/demultiplex the entire high speed signal;
- enhanced Operations, Administration and Maintenance (OAM) capabilities;
- easy growth to higher bit rates in step with the evolution of transmission technology;

(d) that the synchronous digital hierarchy rates need to be chosen such that they allow the transport of digital signals:

- at hierarchical bit rates as specified in Recommendation G.702;
- at broadband channel bit rates;

(e) that Recommendation G.708 specifies the Network Node Interface (NNI) for the synchronous digital hierarchy;

(f) that Recommendation G.709 specifies the synchronous multiplexing structure;

(g) that Recommendations G.707, G.708 and G.709 form a coherent set of specifications for the synchronous digital hierarchy and NNI.

*recommends*

(1) that the first level of the synchronous digital hierarchy shall be 155 520 kbit/s;

(2) that higher synchronous digital hierarchy bit rates shall be obtained as integer multiples of the first level bit rate;

(3) that higher synchronous digital hierarchy levels should be denoted by the corresponding multiplication factor of the first level rate ;

(4) that the following bit rates should constitute the synchronous digital hierarchy:

TABLE 1/G.707

Synchronous digital hierarchy level	Hierarchical bit rate kbit/s
1	155 520
4	622 080

*Note* – The specification of higher synchronous digital hierarchy levels requires further study. Possible candidates are:

<i>Level</i>	<i>Bit rate</i>
8	1 244 160 kbit/s
12	1 866 240 kbit/s
16	2 488 320 kbit/s



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