INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

G.707

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

(03/93)

GENERAL ASPECTS OF DIGITAL TRANSMISSION SYSTEM

SYNCHRONOUS DIGITAL HIERARCHY BIT RATES

ITU-T Recommendation G.707

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The 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 Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation G.707 was revised by the ITU-T Study Group XVIII (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR, or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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; revised Geneva 1991 and Helsinki, 1993)

The ITU-T,

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 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:

Synchronous digital hierarchy level	Hierarchical bit rate (kbit/s)
1	155 520
4	622 080
16	2 488 320
NOTE – The specification of levels higher than 16 requires further study.	

5) that low/medium capacity SDH transmission systems based on radio and satellite technologies which are not designed for the transmission of STM-1 signals shall operate at a bit rate of 51 840 kbit/s across digital sections. However, this bit rate does not represent a level of the SDH or a NNI bit rate.

Abbreviations

For the purpose of this Recommendation the following abbreviations are used:

NNI Network Node Interface

OAM Operations Administration and Maintenance

SDH Synchronous digital hierarchy

STM-N Synchronous Transport Module-N

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