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ITU-T

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TELEGRAPHY

TELEGRAPH TRANSMISSION

CODE AND SPEED INDEPENDENT TDM SYSTEM FOR ANISOCHRONOUS TELEGRAPH AND DATA TRANSMISSION

ITU-T Recommendation R.111

(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 R.111 was revised by the ITU-T Study Group IX (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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.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.

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CONTENTS

		<i>Page</i>
1	64 kbit/s aggregate	1
1.1	General.....	1
1.2	Aggregate bearer channel	2
1.3	Frame structure	2
1.4	Type of multiplexing	2
1.5	Allocation of information bits.....	2
1.6	Telegraph and data channels.....	2
1.7	Frame alignment	3
1.8	Loss of telegraph input	3
1.9	Bearer interface.....	3
1.10	Telegraph interface	4
2	Aggregate bearer rates lower than 64 kbit/s.....	4
2.1	General.....	4
2.2	Aggregate bearer channels.....	4
2.3	Frame structure	4
2.4	Type of multiplexing	5
2.5	Allocation of information bits.....	5
2.6	Telegraph and data channels.....	5
2.7	Frame alignment	5
2.8	Loss of telegraph input	6
2.9	Bearer interface.....	6
2.10	Telegraph interface	6
3	Compatibility.....	6
	Annex A – Transition coding process	8
	References	9

Recommendation R.111

**CODE AND SPEED INDEPENDENT TDM SYSTEM
FOR ANISOCHRONOUS TELEGRAPH
AND DATA TRANSMISSION**

*(Geneva, 1976; amended at Geneva, 1980,
Malaga-Torremolinos, 1984 and at Helsinki, 1993)*

The CCITT,

considering

- (a) that the use of voice-frequency telegraph (VFT) equipment on voice channels provided by frequency division multiplexing of a primary group or by time slots in a pulse code modulation (PCM) transmission system may not always be the optimum solution for telegraph and low-speed data transmission, if aspects of transmission quality, equipment complexity, technological progress, miniaturization, power consumption and overall cost are globally considered;
- (b) that the economic transmission of telegraph and low-speed anisochronous data signals requiring code- and speed-independent channels may be achieved by using time division techniques;
- (c) that a relatively simple TDM (time division multiplex) system, even if less efficient in bandwidth utilization, might be preferred in some (e.g. short-haul) applications;
- (d) that Administrations might be interested in conserving code and speed independence inherent in VFT systems when replacing them by TDM systems;
- (e) that code and speed independent transmission systems are capable of transmitting any type of digital signal (anisochronous, isochronous, telegraph, data, signalling for switching purposes);
- (f) that a code and speed independent TDM system can adapt its inherent telegraph distortion to the needs of a network, depending on the number of circuits connected in tandem;
- (g) that a code and speed independent TDM system can adapt to a number of different types of channels (each being defined by its maximum modulation rate and inherent distortion);
- (h) that a basic 64 kbit/s telegraph multiplexer may provide interfaces for remote submultiplexers if required. The submultiplexers may be associated in some applications with Recommendations X.50 [1] and X.51 [2] data multiplexers and with telephone channel modems and/or baseband modems,

unanimously declares the following views

1 64 kbit/s aggregate

1.1 General

1.1.1 Where code and speed independent TDM systems for transmission of telegraph and low-speed anisochronous data signals utilize the whole 64 kbit/s capacity (e.g. provided by a PCM time slot or a primary group), the equipment shall be manufactured to comply with the following standards.