INTERNATIONAL TELECOMMUNICATION UNION

ITU-T R.118

TELECOMMUNICATION
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OF ITU

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TELEGRAPHY

TELEGRAPH TRANSMISSION

PERFORMANCE AND AVAILABILITY MONITORING IN REGENERATIVE TDM

ITU-T Recommendation R.118

(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.118 was prepared 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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.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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Recommendation R.118

PERFORMANCE AND AVAILABILITY MONITORING IN REGENERATIVE TDM

(Helsinki, 1993)

The CCITT,

considering

(a) that the error rate is the main performance criterion for end-to-end connection with regeneration;

(b) that code- and speed-dependent multiplexers are regenerators;

(c) that multiplexers conforming to Recommendations R.101(B), R.102, R.105 and R.112 use the same synchronization scheme in a specific channel and the same modulation rate (50 bauds);

(d) that the general performance objectives are defined in Recommendation R.117,

unanimously recommends

that multiplexing systems with regeneration should enable channel performance and availability to be monitored in accordance with the following principles:

1 The error rate of the aggregate will be monitored by checking the synchronization bits.

2 The occurrence of a faulty synchronization bit (or word) when the TDM system is synchronized should be signalled to internal or external equipment.

3 If possible, such events and the time of occurrence should be recorded to use the analysis of their cause and thus improve performance in the long term.

4 Thresholds can be set such that alarm devices will alert operators:

- the first threshold set for “errored intervals”;
- the second set for “severely errored intervals”.

5 The monitoring of invalid synchronizm pulses is discontinued from the moment when the TDM system signals a loss of synchronism to that when it is restored.

6 A sudden isolated loss of synchronism should not be counted by the device monitoring the severely-errored intervals, but must be recorded among the errored intervals.

7 Operators must be warned whenever the “severely-errored interval” state is reached. This may entail precautionary measures such as locking channels designated for switched circuits in order to avoid their seizing (since an error during the numbering phase is generally more troublesome and it is not desirable to initiate a call unless a minimum performance level can be assured).

8 Loss of synchronism in a TDM system must be monitored in such a way as to obtain information on the availability of the transmission system.

9 The interface between the telegraph muldex and the measuring and monitoring equipment must meet the national standards.

10 The monitoring equipment can be either a simple gauge or a computerized system; the system “dead time” may be between 20 and 1000 ms; the exact figure remains to be decided.