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TELEGRAPHY

TELEGRAPH TRANSMISSION

MAINTENANCE LOOPS FOR TDM-SYSTEMS

ITU-T Recommendation R.115

(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.115 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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.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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Recommendation R.115**MAINTENANCE LOOPS FOR TDM-SYSTEMS***(Malaga-Torremolinos, 1984; amended at Melbourne, 1988 and at Helsinki, 1993)*

The CCITT,

considering,

- (a) the increasing use of TDM transmission systems;
- (b) the volume of information circulating on data and telegraph transmission networks;
- (c) the savings to be made by reducing interruption time on such links;
- (d) the importance of being able to determine responsibilities between the several parties who, of necessity, are involved in maintenance questions for the networks;
- (e) the advantages of standardization regarding maintenance,

unanimously declares the following:

1 The locating of faults can be facilitated in many cases by looping and other maintenance procedures in the TDM equipments. These maintenance facilities allow local or remote measurements to be carried out optionally by the Administrations and/or users concerned.

2 Location of the loops

The maintenance loops are positioned in order to make it possible for the Administrations to locate faults to the following function blocks:

- aggregate modem;
- TDM central logic;
- tributary interface unit;
- aggregate line;
- subscriber line.

The loops necessary to fulfil the above listed demands are shown in Figure 1. Additional loops may be used for the location of faulty boards but these loops are relevant to each particular manufacturer's implementation and are not included here. The number of maintenance loops may be extended to include the subscriber terminal equipment. These loops are left for further study.

3 Names, types and definitions of the loops

See Figure 1.

3.1 Loop a – Digital multiplexer aggregate loop

This loop is a one-way or optionally an echo-back loop (see Figures 2 and 3) that shall connect the aggregate data output to the aggregate data input of the TDM central logic. This loop shall be accomplished as close as possible to the digital aggregate interface.

3.2 Loop b – Analogue aggregate modem loop

This loop is a one-way loop or optionally an echo-back loop (see Figures 2 and 3). With this loop, the line signal from the output of the aggregate modem is looped back to the input of the aggregate modem. The loop should include the maximum number of aggregate modem components used in normal working.