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PUBLIC DATA NETWORKS MAINTENANCE

PRINCIPLES OF MAINTENANCE TESTING FOR PUBLIC DATA NETWORKS USING DATA TERMINAL EQUIPMENT (DTE) AND DATA CIRCUIT - TERMINATING EQUIPMENT (DCE) TEST LOOPS

ITU-T Recommendation X.150

(Extract from the *Blue Book*)

NOTES

- 1 ITU-T Recommendation X.150 was published in Fascicle VIII.3 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.

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**PRINCIPLES OF MAINTENANCE TESTING FOR PUBLIC DATA NETWORKS
USING DATA TERMINAL EQUIPMENT (DTE) AND
DATA CIRCUIT-TERMINATING EQUIPMENT (DCE) TEST LOOPS**

(Geneva, 1980; amended at Malaga-Torremolinos, 1984)

1 Introduction

The CCITT,

considering

- (a) the increasing use being made of data transmission systems;
- (b) the volume of the information circulating on data transmission networks;
- (c) the savings to be made by reducing interruption time on such data circuits;
- (d) the importance of being able to determine responsibilities (of necessity involving several parties) in maintenance questions for networks; and
- (e) the advantages of standardization in this field,

unanimously declares

that the locating of faults can be facilitated in many cases by data circuit loop testing procedures in DTEs and DCEs.

2 Scope

This Recommendation specifies the principles of maintenance testing for public data networks using the DTE/DCE test loops. The definition of the loops, the principles for the control of the loops and the principles for the indications to be presented when the loops are activated are described herein for general application with all DTE/DCE interfaces. Specific details concerning the implementation of these principles are contained in the individual DTE/DCE interface Recommendations. The maintenance philosophy, definitions and general principles are applicable to interface Recommendations, such as X.20, X.20 *bis*, X.21, X.21 *bis*, and X.22.

2.1 Maintenance philosophy

The provision of DTE and DCE test loops in public data networks is based upon the following maintenance philosophy:

- a) test loops may be used by an Administration's test centre(s) to test the operation of either leased lines or circuit-switched network subscriber lines, including either all or part of the DCE, without necessarily requiring the dispatch of network maintenance personnel to the subscriber's premises;
- b) where, allowed by national testing principles, DCE test loops may also be used by a DTE to test the operation of network connection or leased lines. Where provided, the intent is for the DTE to make initial tests to isolate a trouble condition either in the DTEs or in the data circuit.

2.2 Loop testing principles

The provision of loop testing capabilities should be based on the following principles:

- a) the loops should be transparent, e.g. they should be bit sequence independent;
- b) loop testing is a disruptive type of testing, e.g. when a loop has been established transmission of data is not possible;
- c) test loops may be established from any state; however, when loop testing is commenced from the *data transfer* state, the same test procedures may be used for both leased lines and circuit-switched connections;