



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

M.1355

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

**MAINTENANCE: INTERNATIONAL DATA
TRANSMISSION SYSTEMS**

**MAINTENANCE OF INTERNATIONAL DATA
TRANSMISSION SYSTEMS OPERATING
IN THE RANGE 2.4 TO 14.4 kbit/s**

ITU-T Recommendation M.1355

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation M.1355 was published in Fascicle IV.2 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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Recommendation M.1355

MAINTENANCE OF INTERNATIONAL DATA TRANSMISSION SYSTEMS OPERATING IN THE RANGE 2.4 TO 14.4 kbit/s

1 General

1.1 This Recommendation deals with maintenance procedures applicable to international data systems in the range 2.4 to 14.4 kbit/s.

1.2 The constituent parts of the data system are shown in Figures 1/M.1300 and 2/M.1300.

1.3 In some instances it may be necessary to provide modems at a centre, for testing purposes only, to achieve adequate performance in fault localization.

2 Fault reporting procedures

2.1 As far as possible, the provisions of Recommendations M.1012, M.1013 and M.1014 apply. Any additional special procedures must be devised by the Administrations concerned.

3 Fault localization

3.1 Upon receipt of a complaint about the performance of an international data transmission system the control or sub-control station should obtain specific assurance that all terminal equipment has been tested and is working correctly.

3.2 The control station should first ensure that all major systems are performing normally, then efforts should be made to localize and clear the fault.

3.3 It is essential that the control and sub-control stations inform each other of all relevant information and significant actions taken which may assist their efforts.

3.4 Control and sub-control stations should arrange that a suitable test pattern is transmitted in each direction. Then, if the fault is not cleared, suitable modems and test equipment can be applied at intermediate points as appropriate in order to isolate the fault to a particular section.

3.5 To localize the fault, the data transmission system should normally be tested in sections so that the need for international cooperation is reduced and rapid progress is made. In some instances loops may be utilized in order to isolate the faulty section. Care must be taken to avoid the simultaneous operation of loops if the system configuration is such that erroneous results would occur.

3.6 The purpose of the initial fault localization process is to identify as quickly as possible whether the fault lies in one of the national sections or the international section. This allows the Administrations to begin the detailed investigation necessary to clear the fault.

3.7 See Figure 1/M.1375 for a guide to fault localization.

4 Overall data system check

4.1 When the fault has been localized to the international or a national section and cleared, that section should be tested to ensure that its bit error ratio meets the requirements of § 5 below.

4.2 The overall data transmission system should also meet the requirements of § 5, and the data transmission performance should be tested before the system is offered back to the renter.

5 Maintenance parameters

5.1 Maintenance measurements should normally be evaluated by comparison with those made during the line-up of the system and with the specified limits given in Recommendation M.1350.

5.2 For data transmission performance, it will normally be sufficient to check the bit error ratio over 15 minutes. Alternatively, error free seconds may be used as a measure of performance, where agreed between Administrations concerned. The maintenance standards are given in Table 1/M.1350.