INTERNATIONAL TELECOMMUNICATION UNION

# ITU-T M.732

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

## MAINTENANCE:

## INTERNATIONAL TELEPHONE CIRCUITS

---

# SIGNALLING AND SWITCHING ROUTINE MAINTENANCE TESTS AND MEASUREMENTS

## ITU-T Recommendation M.732

(Extract from the *Blue Book*)

---

**NOTES**

1 ITU-T Recommendation M.732 was published in Fascicle IV.1 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.

**Recommendation M.732**

## SIGNALLING AND SWITCHING ROUTINE MAINTENANCE TESTS AND MEASUREMENTS

The object of routine maintenance tests and measurements of signalling and switching is to detect changes in the functioning of signalling and switching which are likely to cause a reduction in the quality of service provided. These changes are those which occur in relation to the values indicated in the specifications for the signalling systems concerned (see the pertinent Series Q Recommendations). In the various sections of the Series Q Recommendations, limits are laid down within which:

– no action is necessary,

– action is required by the maintenance service at either of the terminal exchanges.

For Signalling Systems Nos. 4, 5, 6, 7 and R2, reference should be made to Recommendations Q.139 [1], Q.163 [2], Q.295 [3], Q.707 [4] and Q.490 [5] respectively which contain guidance on the methods to be used for signalling and switching routine tests, together with the minimum frequencies at which such tests should be carried out. On routes where ATME No. 2 (Recommendation O.22 [6]) is in use, many of the required tests and measurements can be performed by that equipment. Supervision and fault localization functions included in the exchange and/or in the transmission system also reduce or remove the need for routine maintenance tests and measurements.

Where staffing arrangements permit, manual and semi-automatic routine maintenance of signalling and switching equipment should be done at times when traffic is light. Any routines performed during normal working hours must be carried out with great care to ensure that the effect on live traffic is minimized.

In stored program control (SPC) and digital exchanges many of the required checks for correct functioning of signalling and switching equipment are carried out automatically by supervisory functions within the exchange, thus removing the need for the majority of manual and semi-automatic routine tests. One of the characteristics of such supervisory functions is that performance “thresholds” have to be set which, if exceeded, cause appropriate outputs to alert maintenance staff (for example, alarms, printouts, etc.). Maintenance staff should not only ensure that all relevant supervisory functions are invoked, but must regularly review the thresholds set to ensure that faults and problems will be detected before service is unacceptably affected.

Where the outputs to maintenance staff from SPC and digital exchanges indicate that a fault exists or is suspected, suitable action must be taken to localize the problem. Before seeking cooperation from the distant maintenance centre, maintenance staff shall ensure that the problem is not within their own exchange. As examples, ATME No. 2 (Recommendation O.22 [6]) the facilities given in Recommendation O.11 [7] and the internal self-diagnostic routines within the exchange should be used to this end.

In view of the variety of different types of international exchange now in use and the differing facilities offered by these exchanges, it is not possible to specify any particular periodicity for routine maintenance tests on signalling and switching equipment. The most appropriate periodicity must be established by the Administration concerned based on such factors as:

– the availability of staff;

– the technology of the exchange (for example, crossbar, Strowger, digital);

– the incidence of faults and problems within the exchange;

– the possible need for cooperation from distant maintenance centres;

– the periodicities recommended by the manufacturer of the exchange or equipment involved;

– the periodicities given in the Series Q Recommendations cited above.

**References**

[1] CCITT Recommendation *Manual testing*, Vol. VI, Rec. Q.139.

[2] CCITT Recommendation *Manual testing*, Vol. VI, Rec. Q.163.

[3] CCITT Recommendation *Testing and maintenance – Overall tests of Signalling System No. 6*, Vol. VI, Rec. Q.295.

[4] CCITT Recommendation *Testing and maintenance*, Vol. VI, Rec. Q.707.

[5] CCITT Recommendation *Testing and maintenance*, Vol. VI, Rec. Q.490.

[6] CCITT Recommendation *CCITT automatic transmission measuring and signalling testing equipment ATME No. 2*, Vol. IV, Rec. O.22.

[7] CCITT Recommendation *Maintenance access lines*, Vol. IV, Rec. O.11.