INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

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STANDARDIZATION SECTOR
OF ITU

M.610

MAINTENANCE :
INTERNATIONAL TELEPHONE CIRCUITS

PERIODICITY OF MAINTENANCE MEASUREMENTS ON CIRCUITS

ITU-T Recommendation M.610

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation M.610 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.610

PERIODICITY OF MAINTENANCE MEASUREMENTS ON CIRCUITS

Routine maintenance measurements should be made on a complete circuit[1)] and should comprise measurements of:

a) overall loss and levels at one frequency;

b) overall loss and levels at several frequencies;

c) stability (for two-wire audio circuits or sections of circuit only);

d) signalling;

e) noise;

f) echo control devices.

The periodicity for measurements of loss, noise, stability and signalling is given in Tables 1/M.610 and 2/M.610; in addition, other types of measurements are given in Table 1/M.610 for which the periodicity may be determined by the Administrations concerned.

Table 1/M.610 shows the periodicity for measurements on the types of circuit normally used in the international telephone network (except for frontier circuits). When automatic transmission measuring and testing equipments are available, transmission measurements and signalling tests may be carried out more frequently than indicated in this table.

Echo control devices (echo suppressors or cancellers) may be tested using semi-automatic/automatic test instruments or facilities when such are deployed by Administrations. If semi-automatic/automatic instruments, etc., are not available, Administrations should agree bilaterally regarding these tests.

These circuits are:

– 4-wire audio-frequency circuits. Included also in this category are circuits on carrier systems providing a small number of telephone channels. No distinction is made between circuits in underground cables and circuits on open-wire lines unless the open-wire section is equipped with repeaters;

– 4-wire carrier circuits on telephone channels of systems providing at least one group;

– 4-wire circuits of mixed constitution, i.e. consisting of a mixture of audio and carrier sections.

Table 2/M.610 shows the periodicity of measurements to be made on short-distance international circuits that are generally used for terminal traffic, but which can, when necessary, be used to extend more important international circuits. It is desirable that the same recommendations be applied to national circuits that are frequently used for international communications.

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1) This is the general rule. In a few exceptional cases, however, routine measurements may be found desirable on constituent elements of circuits if they can give indications not otherwise readily obtained. For example, in accordance with Recommendation G.131 § 2.4 [1], echo suppressors are not necessarily permanently associated with circuits and must then be checked by separate in-station tests as provided in Recommendation M.660. Also, in some special cases mentioned in the introductory notes to that Recommendation, the complete-circuit measurements afforded by the ESTS instrument, specified in Recommendation O.25 [2], might be found inadequate.

TABLE 1/M.610

Periodicity of measurements and tests to be made on international telephone circuits
(circuits normally used in the international network)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6		Column 7	
Type of Circuit	Description	Measurement of overall loss at one frequency and measurement of noise [a]	Measurements of overall loss at several frequencies	Systematic subjective testing Signal-to-crosstalk ratio between *go* and *return* paths Frequency translation error	Signalling tests		Echo control devices	
					Manual circuits	Automatic circuits	Suppressors [b]	Cancellers [c]
Audio frequency 4-wire	1 to 14 repeaters	Monthly	Half-yearly	None	To be tested at the same time as the measurement of overall loss at several frequencies	Testing to follow the Series Q Recommenda-tions	6 months	6 months
	15 or more repeaters	Weekly	Half-yearly					
	Same, with open-wire section with at least one repeater	At least monthly or as agreed	Half-yearly					
Wholly carrier	Circuits set up on channels on a simple group link and terminating at the same points as the group	Two-monthly or as agreed	Yearly	As agreed in accordance with need and experience				
	Circuits routed over several groups	Monthly	Yearly	As agreed in accordance with need and experience				
4-wire circuits of mixed constitution		At least monthly or as agreed	Yearly	As agreed in accordance with need and experience				

a) Measurements of overall loss at one frequency and of noise shown in column 3 are included in the measurements made at several frequencies shown in column 4.

b) Assumes the use of an echo suppressor test facility as part of an ATME as specified in Recommendation O.22 [3].

c) Assumes the use of an echo canceller test facility as part of an ATME as specified in Recommendation O.22 [3].

TABLE 2/M.610

Periodicity of measurements to be made on international telephone circuits
(Types of circuit not normally used in the international network)

<table>
<tr><td>Column 1</td><td>Column 2</td><td>Column 3</td><td>Column 4</td><td>Column 5</td><td colspan="2">Column 6</td></tr>
<tr><td rowspan="2">Category of circuit</td><td rowspan="2">Type of circuit</td><td rowspan="2">Measurements of overall loss at one frequency and measurement of noise [a)]</td><td rowspan="2">Measurements of overall loss at several frequencies</td><td rowspan="2">Measurements of stability</td><td colspan="2">Signalling tests</td></tr>
<tr><td>Manual circuits</td><td>Automatic circuits</td></tr>
<tr><td rowspan="5">Audio-frequency</td><td>2-wire circuits with one repeater</td><td>Yearly</td><td>Yearly</td><td>Yearly</td><td rowspan="5">At the same time as measurements of overall loss and levels at several frequencies (see column 4)</td><td rowspan="5">As agreed between Administrations</td></tr>
<tr><td>2-wire circuits with two or three repeaters</td><td>Half-yearly</td><td>Yearly</td><td>Half-yearly</td></tr>
<tr><td>2-wire circuits with at least four repeaters</td><td>Quarterly</td><td>Half-yearly</td><td>Quarterly</td></tr>
<tr><td>2-wire circuits including an open-wire section with at least one repeater</td><td>Monthly</td><td>Half-yearly</td><td>Monthly</td></tr>
<tr><td>4-wire circuits with a 2-wire section having at least one repeater</td><td colspan="3">As agreed between Administrations</td></tr>
</table>

[a)] Measurements of overall loss at one frequency and of noise shown in column 3 are included in the measurements made at several frequencies shown in column 4.

References

[1] CCITT Recommendation *Stability and echo*, Vol. III, Rec. G.131.

[2] CCITT Recommendation *Semi-automatic in-circuit echo suppressor testing system (ESTS)*, Vol. IV Rec. O.25.

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