



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

O.62

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

SPECIFICATIONS FOR MEASURING EQUIPMENT

**SOPHISTICATED EQUIPMENT
TO MEASURE INTERRUPTIONS
ON TELEPHONE-TYPE CIRCUITS**

ITU-T Recommendation O.62

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation O.62 was published in Fascicle IV.4 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 O.62

SOPHISTICATED EQUIPMENT TO MEASURE INTERRUPTIONS ON TELEPHONE-TYPE CIRCUITS

(Geneva, 1972; amended at Melbourne, 1988)

The requirements for the characteristics of a sophisticated interruption counter equipment capable of detecting short interruptions in transmission on audio channels are described below and must be adhered to in order to ensure compatibility between equipments standardized by the CCITT and produced by different manufacturers.

1 Definitions

1.1 interruption

For the purpose of this specification an interruption shall be regarded as a break in transmission or drop in the level of a 2 kHz test tone below a designated threshold.

1.2 dead time

The dead time is defined for the purpose of this specification as the time after which the counter is ready to record another interruption following the end of the preceding interruption.

2 The detector

2.1 General

The detector shall be capable of recognizing an interruption having a nominal duration of 0.3 ms in accordance with the probability curve given in Figure 1/O.62.

This means that all interruptions exceeding 0.5 ms and 3 dB below the threshold to which the instrument is set are detected with 100% certainty whereas only 50% of these breaks occurring at 0.3 ms will be detected.

2.2 Interruption detection threshold

The threshold level selector shall be adjustable in steps to the values 3, 6, 10 and 20 dB below the normal test signal level at the input to detector.

The accuracy of the instrument at these threshold levels shall be as follows:

3, 6 and 10 dB: ± 1 dB

20 dB: ± 2 dB.

2.3 Input conditions

2.3.1 The detector shall respond to a test signal of 2000 Hz \pm 100 Hz. (See also § 4.)

2.3.2 The instrument shall be capable of adjustment for input levels between +10 dBm and -30 dBm.

2.3.3 *Input impedance* (frequency range 300 Hz to 4 kHz)

– Balanced, earth free.

– Input longitudinal interference loss ≥ 46 dB

2.3.4 *Terminating impedance* (other impedances optional)..... 600 ohms

– Return loss ≥ 30 dB

2.3.5 *High impedance* approx. 20 kohms

– Bridging loss across 300 ohms ≤ 0.15 dB

2.4 Auxiliary detector output

A socket shall be provided permitting the connection of the detector logic output to an outside recording device such as a tape recorder or a computer. The output from this connector shall have a two-state digital signal:

logic "0": signal level above the threshold;

logic "1": interruption, signal level below the threshold.

The output levels shall be as supplied by TTL integrated circuits.

The output impedance shall be less than 2000 ohms, the precise value depending on the requirements of individual Administrations.

2.5 Dead time

The instrument shall have at least two dead times:

- 1) shortest possible, in accordance with the curve in Figure 1/O.62;
- 2) 125 ms \pm 25 ms for special testing purposes.

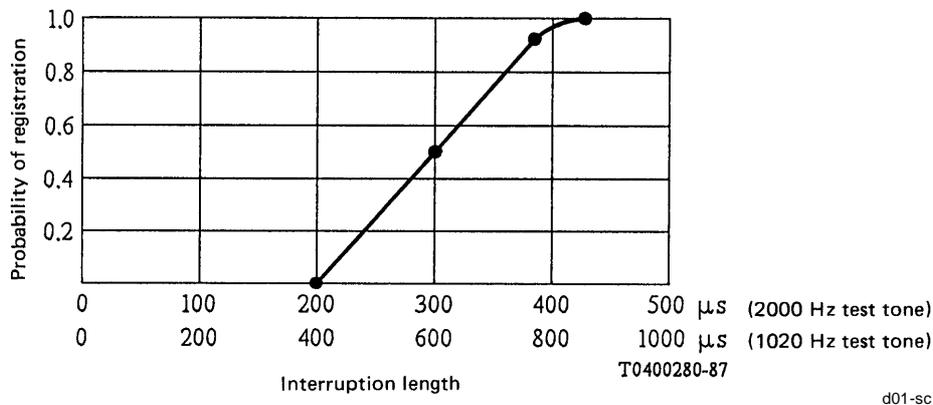


FIGURE 1/O.62

Probability curve for the detection of an interruption

2.6 Visual indication

A visual indication shall be provided showing the condition of *interruption*.

3 Display of measurement results

3.1 Interruption counters

The detected interruptions shall be divided into the following time categories for recording purposes:

- a) 0.3 ms (0.6 ms-3 ms (optional, see Note),
- b) 3 ms-30 ms,
- c) 30 ms-300 ms,
- d) 300 ms-1 min,
- e) 1 min and over (optional).

Facility for adjusting to other time groupings may be provided at the option of the Administrations. The count shall be presented on a visual display.

Note – The value of 0.6 ms applies to the 1020 Hz test tone.

3.2 *Relative duration of interruption events* (optional)

To allow an easier estimation of data transmission errors which may result from interruptions, the instrument shall provide means to calculate and indicate the relative duration of interruption events. This quantity is the ratio of the time where the test tone is below a designated threshold to the total measurement time. Interruptions between 3 ms and 1 minute shall be taken into account. Results shall be indicated in a range 1×10^{-1} to 1×10^{-8} .

3.3 *Seconds containing an interruption* (optional)

As a further option, the instrument shall provide means to calculate and indicate the percentage of seconds containing one or more interruptions of a duration ≥ 3 ms. Results shall be indicated in a range 0 to 100% with one digit after the decimal point.

3.4 *Power failure*

In the event of a power failure any loss of measurement results should be clearly indicated on a display for later observation.

4 Simultaneous measurements

The measurement of interruptions may be provided in an instrument which also makes measurements of other transient impairments, e.g., amplitude and phase hits. A test signal frequency of $1020 \text{ kHz} \pm 2 - 7 \text{ Hz}$ (see Recommendation O.6), may be used to facilitate the integration of several measurements of transient phenomena in such a combined instrument. In all other respects, the measurement of interruptions shall be in accordance with the principles of this Recommendation.

5 Operating environment

The electrical performance requirements shall be met when operating at the climatic conditions as specified in Recommendation O.3, § 2.1.