



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

R.2

TELEGRAPHY

TELEGRAPH TRANSMISSION

ELEMENT ERROR RATE

ITU-T Recommendation R.2

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation R.2 was published in Fascicle VII.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 R.2

ELEMENT ERROR RATE

(Geneva, 1964)

The CCITT,

considering

(a) that in practice, the error rate on transitions is not used and, with the development of data transmission, it is the notion of element error rate that has come into use,

(b) that in general, the expression *element error rate* is used with the meaning of *error rate on unit elements*. Although this equivalence of meaning is acceptable for isochronous signal trains, this is not so for start-stop signal trains. In fact, there may be elements in start-stop signal trains whose duration is different from that of the unit elements (for example, the stop element of a start-stop signal in accordance with International Telegraph Alphabet No. 2),

unanimously declares the view

(1) that the following definitions be adopted:

element error rate: the ratio of the number of incorrectly received elements to the number of emitted elements.

unit element error rate for isochronous modulation: the ratio of the number of incorrectly received elements to the number of emitted elements.

(2) that, for start-stop signal trains, the notion of character error rate be used;

(3) that, when error rates are measured to assess the quality of a communication, the original message acting as a reference for the calculation of the error rate shall be considered as being free of error;

(4) that measurement of the element error rate assumes that it has been possible to record the elements received in such a way that they can be recognized as being correctly or incorrectly recorded. As the result of an error rate measurement thus depends on the recording system at the end of the connection, this system must be specified when the results of the element error rate are given. Whenever possible the element error rate should be measured at the output of the regenerating device which normally precedes the translation device; the signals should be translated for checking purposes.