INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

R.4

TELEGRAPHY

TELEGRAPH TRANSMISSION

METHODS FOR THE SEPARATE MEASUREMENTS OF THE DEGREES OF VARIOUS TYPES OF TELEGRAPH DISTORTION

ITU-T Recommendation R.4

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation R.4 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.4

METHODS FOR THE SEPARATE MEASUREMENTS OF THE DEGREES OF VARIOUS TYPES OF TELEGRAPH DISTORTION

(New Delhi, 1960; amended at Geneva, 1980)

For separate measurements of the degrees of characteristic distortion, bias distortion and fortuitous distortion affecting a telegraph modulation or restitution, the following is recommended where circuits and voice-frequency telegraph (VFT) channels are used to carry information employing International Telegraph Alphabet No. 2, without regeneration;

1 Measure the degree of overall distortion (at the actual mean modulation rate) on text, for instance the **QKS** text specified in Recommendation R.51 *bis*. Let Δ be the measurement obtained.

2 Measure the degree of distortion on reversals at the modulation rate used in the measurement of § (1) above. Let Δ_1 be the measurement obtained. Δ_1 is the sum of the bias and fortuitous distortions.

3 By using a compensator fitted to the distortion-measuring equipment, for example a compensating winding on the distortion meter relay, reduce the degree of distortion reading obtained to its minimum value. Let this figure be δ. For practical purposes δ is the fortuitous distortion. $\Delta_1 - \delta$ is, for practical purposes, the bias distortion.

4 Keep the distortion meter adjusted as for the measurement of δ. Measure the degree of distortion at the actual mean modulation rate on text (**QKS** text, for instance). Let Δ' be the reading. $\Delta' - \delta$ is, for practical purposes, the characteristic distortion.

Note 1 – This method gives approximate results, it is possible that the equation $\Delta_1 + \Delta' - \delta = \Delta$ may not be exactly satisfied.

Note 2 – The method can be applied by using either an isochronous distortion-measuring set or a start-stop distortion-measuring set.

Note 3 – The fact that the separate measurement of degrees of different types of distortion is said to be possible and that a method is recommended for such a measurement does not mean that separate measurements of the degrees of different types of distortion are to be recommended when international routine maintenance measurements are carried out.