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CCITT

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

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SERIES R: TELEGRAPH TRANSMISSION

Telegraph distortion

**CONVENTIONAL DEGREE OF DISTORTION
TOLERABLE FOR STANDARDIZED
START-STOP 50-BAUD SYSTEMS**

Reedition of CCITT Recommendation R.54 published in
the Blue Book, Fascicle VII.1 (1988)

NOTES

- 1 CCITT Recommendation R.54 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.54

CONVENTIONAL DEGREE OF DISTORTION TOLERABLE FOR STANDARDIZED START-STOP 50-BAUD SYSTEMS

(former CCIT Recommendation B.51, Geneva, 1956; amended at Geneva, 1964,
and at Mar del Plata, 1968)

The CCITT,

considering

(a) that in telegraph communications used in the public telegram service, in the telex service and for leased circuits, over land lines and submarine cables, using 5-unit start-stop equipment at the modulation rate of 50-bauds, a maximum admissible rate of error of 3 per 100 000 alphabetic telegraph signals transmitted is recommended by Recommendation F.10 [1];

(b) that at present, interruptions of the telephone-type circuit account for a much higher error rate than that recommended by the CCITT;

(c) that to fix the objectives to be reached to curb interruptions and noise in telephone-type bearer circuits, it is of interest to indicate how this tolerable error rate of 3 per 100 000 telegraph signals can be distributed among the telegraph equipment and the circuits bearing the telegraph systems;

(d) that telegraph apparatus, particularly the transmitter and the receiver, is itself liable to fortuitous failures and it is difficult to distinguish between errors due to these causes and errors due to the probability that the degree of telegraph distortion can exceed the receiver margin, which cannot be ignored;

(e) but in planning telegraph circuits, it may be convenient to limit the conventional degree of gross start-stop distortion of complete circuits (including telegraph transmitting apparatus) to the nominal margin of the receiving apparatus;

(f) that moreover, if the individual degree to distortion at apparatus input exceeds the margin by about once in 100 000, the measurements show that the combined effect of telegraph distortion and fortuitous apparatus failures is manifested by an error rate of about 2 per 100 000 telegraph signals.

Note – The result is that the error rate due to interruptions and noise on telephone-type circuits carrying telegraph systems should not exceed 1 per 100 000.

unanimously declares the view

(1) that the conventional degree of distortion should be the individual degree of distortion whose probability of being exceeded is 1 in 100 000;

(2) that theoretical and planning studies should be carried out in such a way that the conventional degree of distortion at the receiver input is not more than the nominal margin.

Note 1 – The notion of conventional degree of distortion is useful above all for theoretical studies and planning.

Note 2 – For the relation between conventional degree of distortion and practical measurements, reference should be made to [2], [3] and [4].

References

- [1] CCITT Recommendation *Character error rate objective for telegraph communication using 5-unit start-stop equipment*, Rec. F.10.
- [2] *Conventional degree of distortion*, Blue Book, Vol. VII, Supplement No. 4, ITU, Geneva, 1964.
- [3] *Relation between the results of routine measurements of distortion and the conventional degree of distortion*, Blue Book, Vol. VII, Supplement No. 5, ITU, Geneva, 1964.
- [4] CCITT – Question 7/IX, Annex, Blue Book, Vol. VII, ITU, Geneva, 1964.

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