INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

R.54

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

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TELEGRAPHY

TELEGRAPH TRANSMISSION

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

ITU-T Recommendation R.54

(Previously “CCITT Recommendation”)

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation R.54 was revised by the ITU-T Study Group IX (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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, at Mar del Plata, 1968 and at Helsinki, 1993)

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;

(g) Recommendation R.9,

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 degre 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.

NOTES

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

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.