INTERNATIONAL TELECOMMUNICATION UNION

ITU-T G.133

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

TRANSMISSION SYSTEMS AND MEDIA

GENERAL CHARACTERISTICS OF THE 4-WIRE CHAIN FORMED BY THE INTERNATIONAL CIRCUITS AND NATIONAL EXTENSION CIRCUITS

GROUP-DELAY DISTORTION

ITU-T Recommendation G.133

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation G.133 was published in Fascicle III.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.

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Recommendation G. 133

GROUP-DELAY DISTORTION

(Geneva, 1964; amended at Geneva, 1980)

The network performance objectives for the permissible differences for a worldwide chain of 12 circuits each on a single 12-channel group link, between the minimum group delay (throughout the transmitted frequency band) and the group delay at the lower and upper limits of this frequency band are indicated in the Table 1/G.133.

Group-delay distortion is of importance over a band of frequencies where the attenuation is of importance, i.e. at which the attenuation is less than 10 dB relative to the value at 800 Hz. This will normally be the case for frequencies higher than about 260-320 Hz and lower than about 3150-3400 Hz respectively for the lower and upper limit of the frequency band as indicated in Table 1/G.133.

TABLE 1/G.133

	Lower limit of frequency band (ms)	Upper limit of frequency band (ms)
International chain	30	15
Each of the national 4-wire extensions	15	7.5
On the whole 4-wire chain	60	30

Note - Limits given in Table I/G.133 should be met both for analogue circuits and mixed circuits with analogue and digital sections.