



INTERNATIONAL TELECOMMUNICATION UNION

**ITU-T**

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

**Series G**  
**Supplement 17**  
(10/1984)

SERIES G: INTERNATIONAL ANALOGUE CARRIER  
SYSTEMS

Transmission media – Characteristics

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**Group-delay distortion performance of terminal  
equipment**

ITU-T G-series Recommendations – Supplement 17

Originally published in Red Book (1984) - Fascicle III.2

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## NOTES

1 Supplement 17 to the G-series Recommendations was approved in Málaga-Torremolinos (1984) and published in Fascicle III.2 of the *Red Book*. This file is an extract from the *Red Book*. While the presentation and layout of the text might be slightly different from the *Red Book* version, the contents of the file are identical to the *Red Book* version and copyright conditions remain unchanged (see below).

2 In this Supplement, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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**GROUP-DELAY DISTORTION PERFORMANCE OF TERMINAL EQUIPMENT**

*(Geneva, 1980; referred to in Recommendations G.233 and G.242)*

During the Study Period 1977-1980, Study Group XV has collected information on the group-delay distortions of group and supergroup translating equipment as well as through-group and supergroup filters with a view to preparing relevant Recommendations. (See Recommendations G.233 and G.242.)

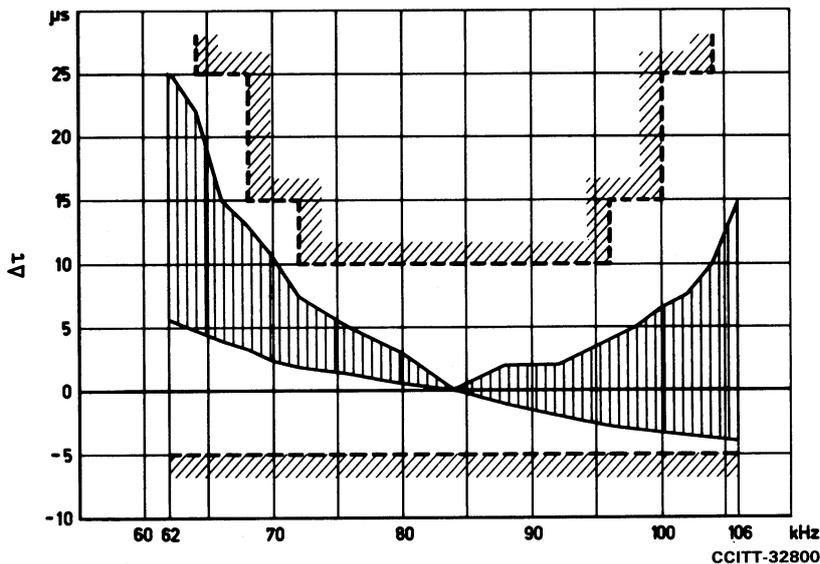
This Supplement contains a summary of the information made available, representing performance figures of modern type equipment.

It was not clear whether there is a necessity to extend the specified frequency range to 62 and 106 kHz respectively on group band circuits.

For information, the following maximum values, based on results of measurements, have been noted:

- at 62 kHz: 25  $\mu$ s for group translating equipment  
350  $\mu$ s for through-group filters
- at 106 kHz: 15  $\mu$ s for group translating equipment  
350  $\mu$ s for through-group filters.

It must be pointed out that the group-delay performance at these frequencies is extremely sensitive to component tolerances, temperature variation effects, etc.



**FIGURE 1**  
**Spread of limiting values of the group-delay distortion of the group translating equipment (from the contributions received)**

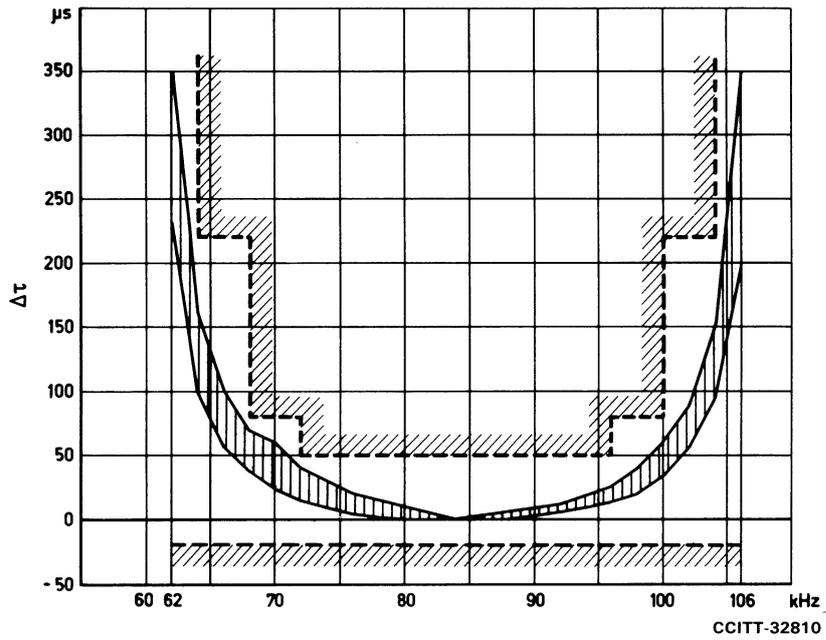


FIGURE 2  
 Spread of limiting values of the group-delay distortion of  
 through-group filters (from the contributions received)

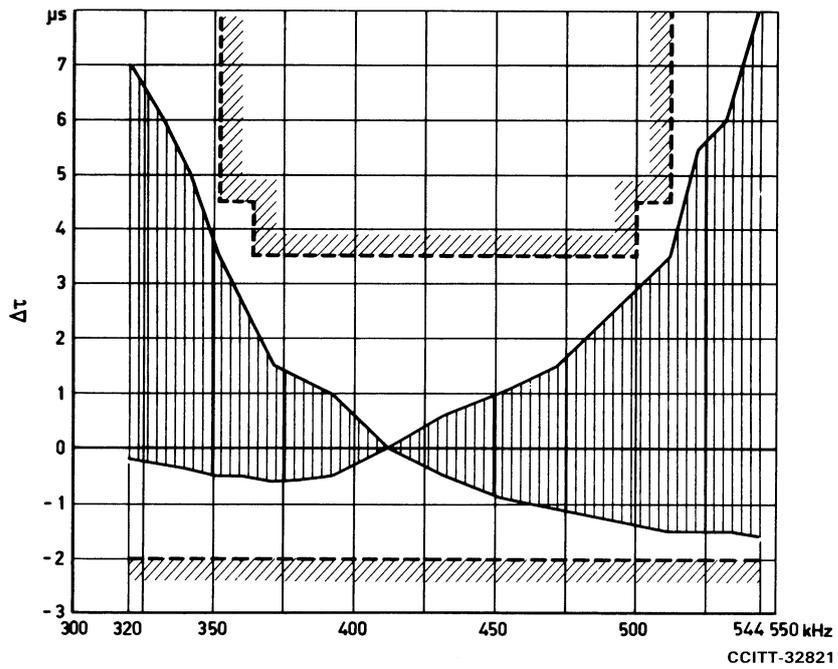


FIGURE 3  
 Spread of limiting values of the group-delay distortion of the supergroup  
 translating equipment (from the contributions received)

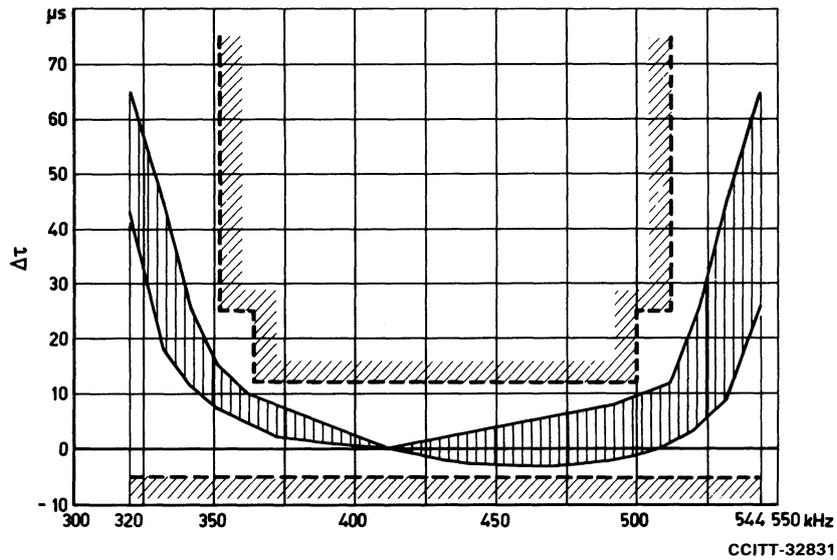


FIGURE 4  
 Spread of limiting values of the group-delay distortion of  
 through-supergroup filters (from contributions received)

Supplement No. 18

INFORMATION ON SUBMARINE CABLES USED IN DEEP WATER

*(Geneva, 1980; referred to in Subsection 6.3)*

The information received has been assembled in the two parts of this Supplement:

- one listing the main characteristics of ordinary cables with outer armouring or central carrier,
- the other indicating the possibilities of jointing different types of cable.

This Supplement is the report prepared by Mr. Blanchi (France), Special Rapporteur, during the Study Period 1968-1972. It has been updated on the basis of information received during the Study Periods 1973-1976 and 1977-1980.





