



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.243

**INTERNATIONAL ANALOGUE CARRIER SYSTEMS
GENERAL CHARACTERISTICS COMMON TO ALL
ANALOGUE CARRIER-TRANSMISSION SYSTEMS**

**PROTECTION OF PILOTS AND
ADDITIONAL MEASURING FREQUENCIES
AT POINTS WHERE THERE IS
A THROUGH - CONNECTION**

ITU-T Recommendation G.243

(Extract from the *Blue Book*)

NOTES

- 1 ITU-T Recommendation G.243 was published in Fascicle III.2 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.

© ITU 1988, 1993

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.

**PROTECTION OF PILOTS AND ADDITIONAL
MEASURING FREQUENCIES AT POINTS WHERE
THERE IS A THROUGH-CONNECTION**

(amended at Geneva, 1964; further amended)

1 Interconnection of telephone circuits at audio frequency

It is necessary that the interconnection of telephone circuits at audio frequency may be made without restriction and without causing interference between the sent and received group and supergroup pilots. It is therefore recommended that Recommendations G.232, § 13 and G.234 [1] be met, which specify an attenuation of at least 20 dB in both modulating and demodulating equipments for the leaks of group pilots (channels 6 and 7 or 1 and 2) and supergroup pilots (channels 1 and 2 or 11 and 12).

2 Through-group connection

2.1 *Group routed on a supergroup equipped with pilots 411.860 and 411.920 kHz*

To permit unrestricted through-group connection without causing interference between the sent and received supergroup pilots Recommendation G.233, § 9.1.2, has to be followed. Otherwise, it is necessary at least to follow Recommendation G.233, § 9.1.1 and, moreover, to avoid routing a through group in position 3 in two successive supergroup links.

2.2 *Group routed on a supergroup equipped with pilot 547.920 kHz*

The same provisions as in § 2.1 apply, but to the group in position 5 and not in position 3 (in accordance with Recommendation G.233, § 9.1.2).

3 Through-supergroup connection

3.1 *Protection of a line-regulating pilot against additional measuring frequencies*

To prevent interference with a line-regulating pilot lying adjacent to a through-connected supergroup, arising from an additional measuring frequency on an adjacent line link, it is recommended that the combined through-supergroup equipment, plus any additional blocking filter (e.g. associated with the through-supergroup equipment or provided as a pilot suppression filter immediately preceding the point on the line at which the line-regulating pilot is injected) should provide the following discrimination (relative to 412 kHz):

- over the range $308\text{ kHz} \pm 8\text{ Hz}$, not less than 40 dB;
- over the range $308\text{ kHz} \pm 40\text{ Hz}$ and the range $556\text{ kHz} \pm 40\text{ Hz}$, not less than 20 dB.

Note 1 - In making this recommendation, it has been assumed that the addition of the various frequency components within pilot-operated line regulators will follow a square or average law of addition.

Note 2 - If, by mutual agreement, Administrations use an auxiliary line-regulating pilot, an additional attenuation giving a discrimination of at least 40 dB relative to the attenuation at 412 kHz should be provided over a suitable frequency range around 556 kHz and in particular in the range $556\text{ kHz} \pm 10\text{ Hz}$ in the case of a 2792-kHz pilot, for which the CCITT has recommended that the frequency variations should not exceed $\pm 5\text{ Hz}$.