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**SERIES G: INTERNATIONAL ANALOGUE CARRIER
SYSTEMS**

Transmission media – Characteristics

**Estimating the signal load margin of FDM
wideband amplifier equipment and transmission
systems**

ITU-T G-series Recommendations – Supplement 26

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NOTES

- 1 Supplement 26 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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- [13] CCITT Recommendation *Transmission losses, relative levels and attenuation distortion*, Orange Book, Vol. III-1, Rec. G.141, A.a, Note 3, ITU, Geneva, 1977.
- [14] CCITT Recommendation *Reduction of the risk of instability by switching means*, Vol. VI, Rec. Q.32.
- [15] CCITT Recommendation *Echo suppressors suitable for circuits having either short or long propagation times*, Orange Book, Vol. III-1, Rec. G.161, B, c.2, ITU, Geneva, 1977.
- [16] CCITT Recommendation *General performance objectives applicable to all modern international circuits and national extension circuits*, Vol. III, Rec. G.151, § 4.2.3.
- [17] CCITT Recommendation *Subjective effects of direct crosstalk*, Vol. V, Rec. P.16.
- [18] CCITT Recommendation *General performance objectives applicable to all modern international circuits and national extension circuits*, Vol. III, Rec. G.151.

Supplement No. 26

ESTIMATING THE SIGNAL LOAD MARGIN OF FDM WIDEBAND AMPLIFIER EQUIPMENT AND TRANSMISSION SYSTEMS

(Malaga-Torremolinos, 1984)
(referred to in Recommendation G.223)

This Supplement contains information supplied by British Telecom describing the test methods that they have adopted for their national networks in order to estimate the signal load margin of wideband amplifier equipment and analogue transmission systems. As such, it may be of interest to other Administrations.

1 Test methods used by British Telecom

Both single tone and white noise tests are used to determine the load margins of systems and repeaters, and these tests are applied as follows:

	<i>Single tone</i>	<i>White noise</i>
Prototype testing of amplifier equipment in British Telecom laboratories	Yes	Yes
Acceptance testing of amplifier equipment in factories	Yes	No
Acceptance testing of systems in the field	Yes	Yes

2 Single tone testing

a) Single tone testing is used to determine empirically a point on the input level versus output level curve at which a 1 dB increase in the input level results in an output level change of 1 ± 0.25 dB. This point is referred to as the "overload point" but clearly this is a convention adopted for the sake of convenience and is not intended to be an expression of some fundamental law of physics. It is a reasonably easy measurement to instrument, not requiring filters, and once the region in which the change in slope occurs has been found, it can be more closely explored to determine the position of the point to within a few tenths of a decibel. Hence, there is in practice no ambiguity in the result of the test.