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INTERNATIONAL ANALOGUE CARRIER SYSTEMS INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES

GENERAL CHARACTERISTICS RECOMMENDED FOR SYSTEMS ON SYMMETRIC PAIR CABLES

ITU-T Recommendation G.322

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation G.322 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.

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Recommendation G.322

GENERAL CHARACTERISTICS RECOMMENDED FOR SYSTEMS ON SYMMETRIC PAIR CABLES

This Recommendation applies to systems using types of cable so far recommended by the CCITT (see Recommendation G.611) and providing 1, 2, 3, 4 or 5 groups or 2 supergroups.

1 General recommendations

1.1 Hypothetical reference circuits

1.1.1 The hypothetical reference circuit on symmetric pairs is 2500 km long, and is set up on a symmetric pair carrier system. For each direction of transmission, it has a total of:

- three pairs of channel modulators and demodulators,
- six pairs of group modulators and demodulators,
- six pairs of supergroup modulators and demodulators¹⁾.

Figure 1/G.322 shows a diagram of the hypothetical reference circuit on symmetric pairs. It will be seen that there is a total of 15 modulations and 15 demodulations for each direction of transmission supposing that each modulation or demodulation is effected by a single stage¹⁾.

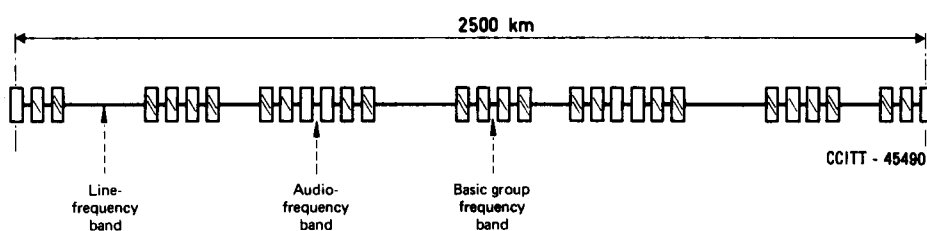


FIGURE 1/G.322

Diagram of the hypothetical reference circuit on symmetric cable pairs

This hypothetical reference circuit consists of 6 homogeneous sections of equal length (see Recommendation G.212).

The number of pairs in the cable is assumed to be the same in all sections.

The hypothetical reference circuit on symmetric pairs thus defined is used for systems providing 1, 2, 3, 4 or 5 groups.

¹⁾ Where systems provide 1, 2, 3 or 4 groups, it is possible to have a smaller number of modulations, but this does not detract from the usefulness of the idea of a hypothetical reference circuit on symmetric pairs.

1.1.2 The composition of the hypothetical reference circuit for a 10-group (2-supergroup) carrier system should be the same as that of the hypothetical reference circuit for a 16-supergroup coaxial cable system (see [1]).

1.2 *Design objectives for circuit noise*

The objectives mentioned in Recommendation G.222 are applicable to hypothetical reference circuits in the circumstances indicated in Recommendation G.223.

In practice, it is sufficient to check by calculation that, for every telephone channel as defined by the hypothetical reference circuit on symmetric pairs, the mean psophometric power at the end of the channel referred to a point of zero relative level does not exceed 10 000 pW0p during any period of one hour.

The subdivision of the total noise between:

- basic noise,
- intermodulation noise,
- noise due to crosstalk,

is left entirely to the designer of the system, within the limits of 2500 pW0p for the terminal equipment and 7500 pW0p for the line.

Note - In planning a carrier system on symmetric pairs, calculation of the noise due to crosstalk could be carried out by the methods described in [2], [3] and [4].

1.3 *Line-frequency spectrum*

1.3.1 *Systems providing 1, 2 or 3 groups*

The line-frequency spectrum should be in accordance with the scheme shown in Figure 2 a)/G.322.

1.3.2 *Systems providing 4 groups*

The frequency spectrum transmitted to line should be in accordance with Scheme 1 of Figure 2 b) /G.322.

Note - By agreement between the Administrations concerned, it is possible to omit one group of supergroup 1* shown in Scheme 2 of Figure 2 c)/G.322, for systems with five groups; if this is done, Scheme 1 bis of Figure 2 b) /G.322, is obtained.

1.3.3 *Systems providing 5 groups*

The frequency spectrum transmitted to line should be in accordance with Scheme 2 of Figure 2 c)/G.322.

Note 1 - Where there is direct interconnection between a system with 5 groups on symmetric pairs and systems with a smaller number of groups, by agreement between the Administrations concerned, the system with 5 groups, shown in Scheme 2 bis of Figure 2 c)/G.322, may be used.

Note 2 - By agreement between the Administrations concerned, the arrangement in Figure 3/G.322 can be used for a supergroup on a coaxial cable system which is to be interconnected at basic supergroup frequencies (312-552 kHz) with either a 5-group system on symmetric pairs using Scheme 2 bis [Figure 2 c)/G.322], or with a 4-group system using Scheme 1 [Figure 2 b)/G.322].

Supplement No. 8 [5] shows a simple way of assembling basic groups B into a supergroup in accordance with one of the schemes shown in Figure 3/G.322 and in Figure 1/G.338 [6] and vice versa.

1.3.4 *Systems providing 2 supergroups*