



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

M.390

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

MAINTENANCE:

**INTERNATIONAL TRANSMISSION SYSTEMS
(ANALOGUE)**

**NUMBERING IN SYSTEMS
ON SYMMETRIC PAIR CABLE**

ITU-T Recommendation M.390

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation M.390 was published in Fascicle IV.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 M.390

NUMBERING IN SYSTEMS ON SYMMETRIC PAIR CABLE

1 Systems providing 12 telephone carrier circuits on a symmetric pair in cable (12 + 12) systems

In systems of the 12 + 12 type, 12 go and 12 return channels constitute one 12 circuit group.

For the arrangement of the line frequencies transmitted for 12 + 12 cable systems using transistors, the Administrations concerned in setting up such an international system can make their choice from scheme 1 or scheme 2 of Figure 1/M.390. Systems using scheme 2 can use only pilot frequencies of 54 kHz or 60 kHz.

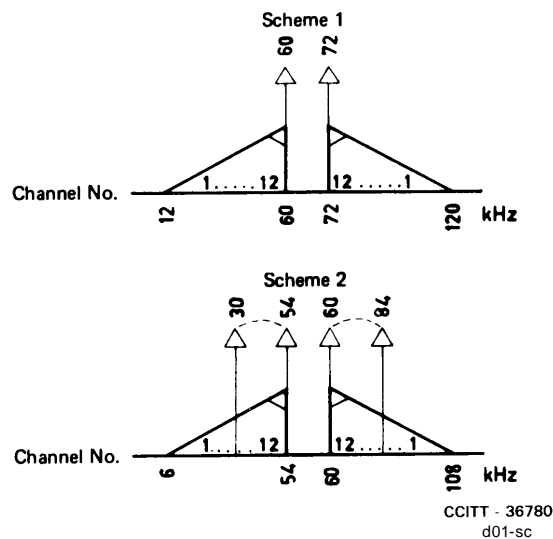


FIGURE 1/M.390

Figure 1/M.390 also applies to (12 + 12) systems using valves, provided that in the case of scheme 2 the indicated line-regulating pilots of 54 kHz and 60 kHz, or 30 kHz and 84 kHz, can be chosen as pilot frequencies.

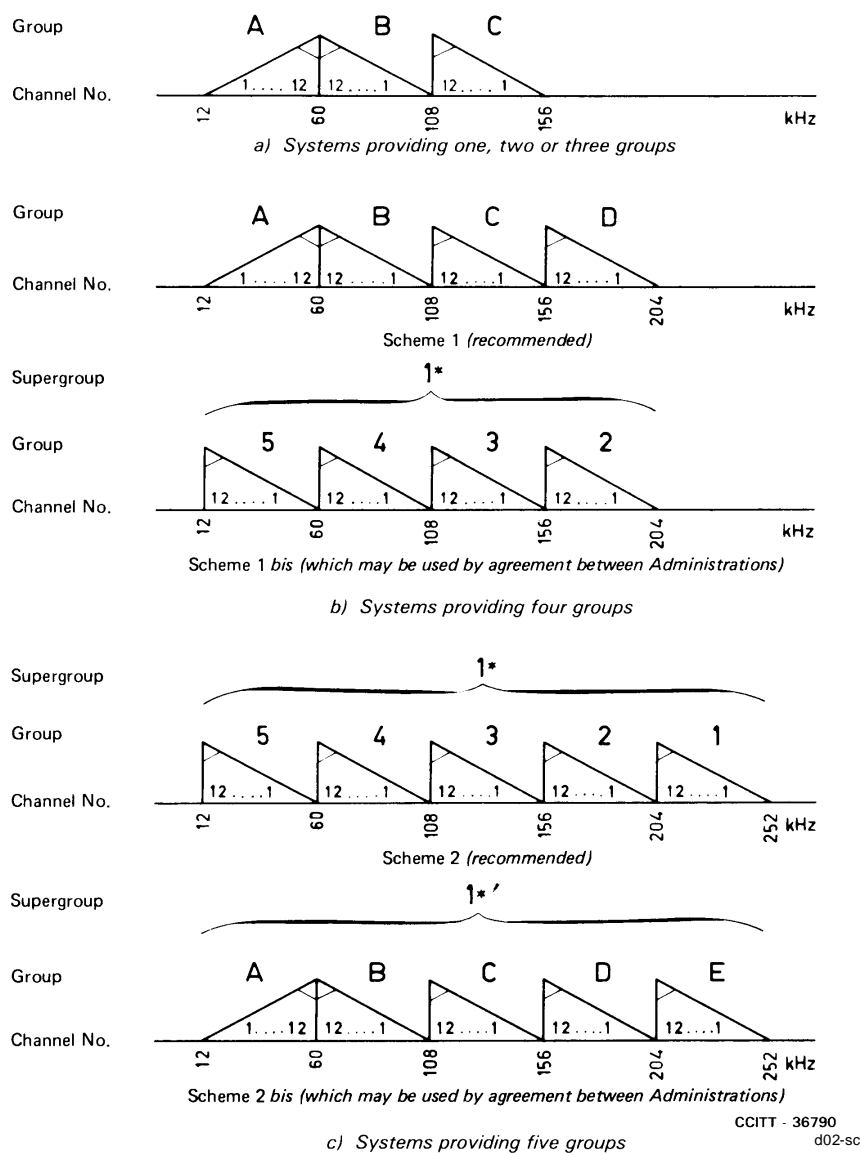
2 Systems providing five groups or less

2.1 Numbering in systems comprising both erect and inverted groups

2.1.1 Designation of groups

The following indications are used to define the position of the group on the line, as shown in Figure 2/M.390:

- A: 12-60 kHz group; B: 60-108 kHz group; C: 108-156 kHz group;
- D: 156-204 kHz group; E: 204-252 kHz group.



Note — This figure also shows the channel numbering in the case of 12-channel groups. For the channel numbering of 8-channel and 16-channel groups respectively, see Figures 1/M.320 and 3/M.320.

FIGURE 2/M.390
 Line-frequency allocation and arrangement of sidebands for carrier systems on symmetric pair cables

2.1.2 Designation of channels

The position occupied by a telephone channel of a carrier system is designated by means of a letter giving the position of the group (transmitted on the line) containing the channel and by means of the number of the channel within this group.

The designation of a channel on such a carrier system is therefore of the form A-7, C-9, D-4, etc. (i.e. group A, channel 7, etc.).

2.2 Numbering in systems with inverted groups

In this case, all the groups are in the same sense. For systems with five groups on symmetric pair cable, this is the normal arrangement which is as shown in Scheme 2 of Figure 2/M.390 c).

2.2.1 Numbering of the groups

The five groups, all in the same sense, are numbered in the direction of ascending frequency, 5, 4, 3, 2, 1 and the assembly constitutes a supergroup having a displacement by 48 kHz towards the lower frequencies of supergroup 1 of 4-MHz coaxial system. For this reason the assembly of groups in the figure is designated by the number 1*, in order to integrate this supergroup with the general numbering for supergroups.

2.2.2 Numbering of channels

The place occupied by a telephone channel in such a carrier system is also designated by three numbers, e.g. 1*-4-11 (i.e. supergroup 1*, 12 channel group 4, channel 11).

2.3 Systems with four groups

By agreement between the Administrations concerned, one group of supergroup 1* may be omitted, but the above numbering of the groups and channels in the groups should be retained as if no group had been omitted [see scheme 1 bis of Figure 2/M.390 b)].

3 Systems providing two supergroups

3.1 Alternative frequency arrangements

The two recommended frequency arrangements are shown in scheme 3 and scheme 4 of Figure 3/M.390. In scheme 4, the line-frequency allocation is the same as that for coaxial cable systems, and permits satisfactory interconnection at basic supergroup frequencies (312-552 kHz) between supergroups in these coaxial systems and the two supergroups on symmetric pair cable systems.

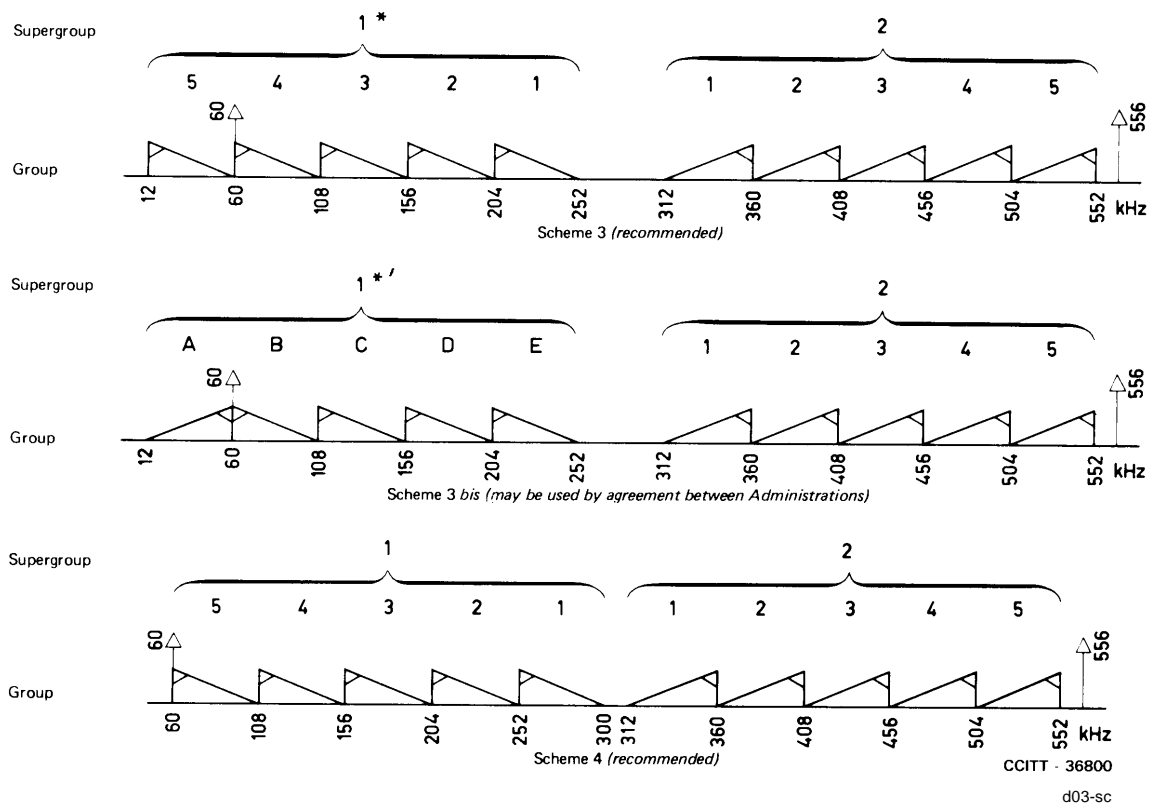


FIGURE 3/M.390

Line-frequency allocation for carrier systems providing two supergroups on symmetric pair cables

In scheme 3, the line-frequency allocation for supergroup 1* is the same as that recommended for a 5 group system on symmetric pair cables [scheme 2, Figure 2/M.390 c)].

The frequency allocation shown for supergroup 1* in scheme 3 *bis* may be used by agreement between Administrations where interconnection with existing systems having five groups or less is required.

3.2 *Numbering of supergroups, groups and channels*

3.2.1 The numbering of the groups and channels on a 2 supergroup system follows the principles given in Recommendations M.320 and M.330.

3.2.2 For supergroup 2 in each scheme and for supergroup 1 in scheme 4 the numbering used is that given in Recommendations M.320 and M.330 for coaxial systems.

3.2.3 For supergroup 1* and 1*' the numbering used is the same as that shown for scheme 2 and scheme 2 *bis* in Figure 2/M.390 c).