INTERNATIONAL TELECOMMUNICATION UNION

ITU-T G.344

TELECOMMUNICATION
STANDARDIZATION SECTOR
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INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES

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6 MHz SYSTEMS ON STANDARDIZED 1.2/4.4 mm COAXIAL CABLE PAIRS

ITU-T Recommendation G.344

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation G.344 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.

Recommendation G.344

6 MHz SYSTEMS ON STANDARDIZED 1.2/4.4 mm COAXIAL CABLE PAIRS

(Geneva, 1964; further amended)

Preliminary note

The present Recommendation describes a 6 MHz system which may be used for transmitting a maximum of 1,260 telephone channels.

A system of this kind can be produced by halving the length of the elementary cable section of a 1.3 MHz system (as described in Recommendation G.341) if this length is 6 km, corresponding to a nominal repeater spacing of 3 km for the 6 MHz system.

1 Line frequencies

The CCITT recommends the three frequency allocation plans in Figure 1/G.344, each plan forming a whole within the line-frequency band.

Plans 1 and 2 show the supergroup allocations and Plan 3 the mastergroup allocations.

In Plan 1, the supergroups are assembled by means of carriers produced from a single frequency at 124 kHz. There are two possible methods of assembling the supergroups in the band 4404 to 5636 kHz. The first is to use carriers at 4092, 4340, 4588, 4836 and 5084 kHz and to keep the upper modulation band (the first two frequencies being the carriers corresponding to supergroups 15 and 16). The second method is to translate the assembly of supergroups 4 to 8, which are those of the basic mastergroup, using a carrier frequency of 6448 kHz obtained by multiplying by 4 the carrier frequency of 1612 kHz corresponding to supergroup 5.

In Plan 2, the five supergroups reversed in band 4332 to 5564 kHz correspond to mastergroup 4 of the 12 MHz line allocation, but they also represent a plan conveniently obtained with supergroup and group carrier frequencies.

Plan 3 consists of mastergroups 1-4 of the 12 MHz system (see § 1 of Recommendation G.332).

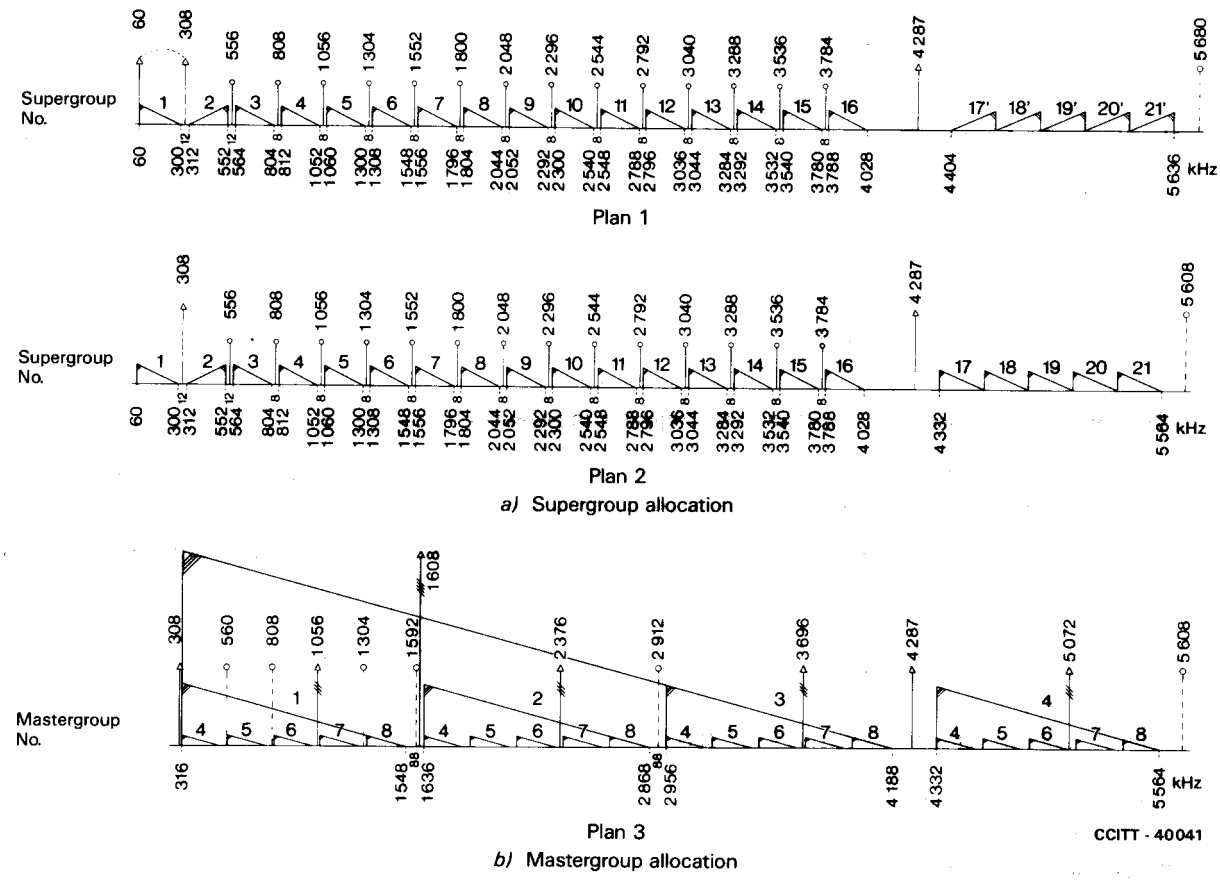

FIGURE 1/G.344

Allocation of line frequencies in international 6 MHz carrier system on 1.2/4.4 mm coaxial cable pairs

2 Pilots and additional measuring frequencies

2.1 *Line-regulating pilots*

The frequencies recommended are 308 kHz on the one hand, and 4287 kHz or 6200 kHz on the other.

Note - The pilot at 4287 kHz cannot be used with television transmissions.

In every instance, the recommended stability is $\pm 1 \times 10^{-5}$, the power level recommended is -10 dBm0, while the tolerances at this level are the same as in Recommendation G.332, § 2.1. The harmonics of the 308 kHz pilot should each have a level not higher than -70 dBm0.

2.2 *Frequency comparison pilots*

Plans 1 and 2 - The same recommendation as for the 4 MHz system (Recommendation G.343, § 2.2).

Plan 3 - The same recommendations as for the 12 MHz system (Recommendation G.332, § 2.2).

2.3 *Additional measuring frequencies*

Plans 1 and 2 - All the additional measuring frequencies given in Recommendation G.343 (supergroups) should be used. In addition, in the frequency band above 4287 kHz, the following additional measuring frequencies are recommended:

- Plan 1: 5680 kHz,
- Plan 2: 5608 kHz.

However, the harmonics of the additional measuring frequencies below 2.8 MHz should comply with the relevant conditions indicated in Recommendation G.343.

Plan 3 - The additional measuring frequencies recommended for the 12 MHz system in the same frequency band (Recommendation G.332) should be used.

3 Hypothetical reference circuits

Same Recommendations as for the 4 MHz system (see § 3 of Recommendation G.343).

4 Noise

Recommendation G.341, § 4 applies.

5 Matching of the coaxial-pair impedance and repeater impedances

For an elementary cable section about 3 km in length the sum N of the three terms defined in Recommendation G.332, § 5) must be at least equal to 60 dB at all frequencies above 300 kHz.

A figure of 50 dB is recommended at 60 kHz. Between 60 and 300 kHz the acceptable limit varies progressively.

6 Relative levels and interconnection

6.1 *Relative levels at repeater output at 4287 MHz:*

Approximately -17 dBr.

6.2 *Pre-emphasis characteristics*

It has not been possible to reach agreement for recommending a pre-emphasis characteristic applicable to all cases. The pre-emphasis used in practice varies between 7 and 14 dB. Some Administrations use a pre-emphasis characteristic corresponding to the formula:

$$A = 10 \log_{10} \left[1 + \frac{a}{1 + \frac{b}{\left(\frac{f}{f_r} - \frac{f_r}{f} \right)^2}} \right] \text{(dB)}$$

For the constants, a, b and f_r, the following figures may be indicated:

1) $a = 10$	$b = 2.20$	$f_r = 5.75$ MHz
2) $a = 24$	$b = 8.50$	$f_r = 6.40$ MHz

7 Interconnection

Interconnection should be in conformity with Recommendation G.352.

8 Power-feeding and alarm systems

Recommendation G.341 also applies to systems conforming to the present Recommendation.