INTERNATIONAL TELECOMMUNICATION UNION

ITU-T G.431

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

INTERNATIONAL ANALOGUE CARRIER SYSTEMS

GENERAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON RADIO - RELAY OR SATELLITE LINKS AND INTERCONNECTION WITH METALLIC LINES

HYPOTHETICAL REFERENCE CIRCUITS FOR FREQUENCY - DIVISION MULTIPLEX RADIO - RELAY SYSTEMS

ITU-T Recommendation G.431

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation G.431 was published in Fascicle III.2 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.431

HYPOTHETICAL REFERENCE CIRCUITS FOR FREQUENCY-DIVISION MULTIPLEX RADIO-RELAY SYSTEMS[1)]

(modified at Geneva, 1964)

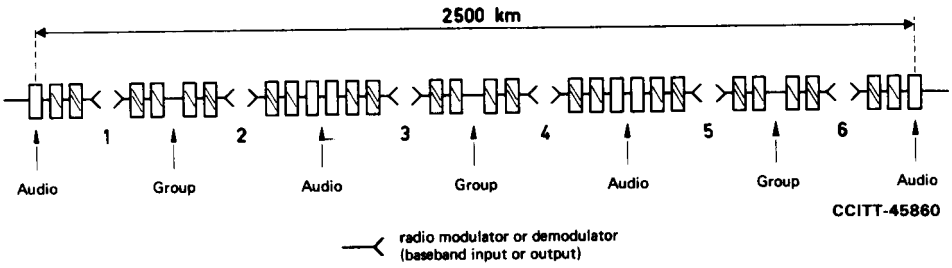
1 Hypothetical reference circuit for radio-relay systems providing 12 to 60 telephone channels

The hypothetical reference circuit defined in CCIR Recommendation 391 [1], for frequency-division multiplex radio-relay systems with a capacity of 12 to 60 telephone channels per radio channel, has a length of 2500 km.

This circuit has for each direction of transmission:

- three pairs of channel modulators,
- six pairs of group modulators,
- six pairs of supergroup modulators,

it being understood that a "pair of modulators" comprises a modulator and a demodulator (see Figure 1/G.431).



Note - The meaning of the symbols used in this Figure is given in the *Preliminary notes* to this fascicle.

FIGURE 1/G.431

Hypothetical reference circuit for frequency-division multiplex radio-relay systems with a capacity of 12 to 60 telephone channels per radio channel

1) This Recommendation applies only to line-of-sight or near line-of-sight radio-relay systems.

This circuit also has six sets of radio modulators and demodulators, for each direction of transmission, so that they divide the circuit into six homogeneous sections of equal length (see Recommendation G.322).

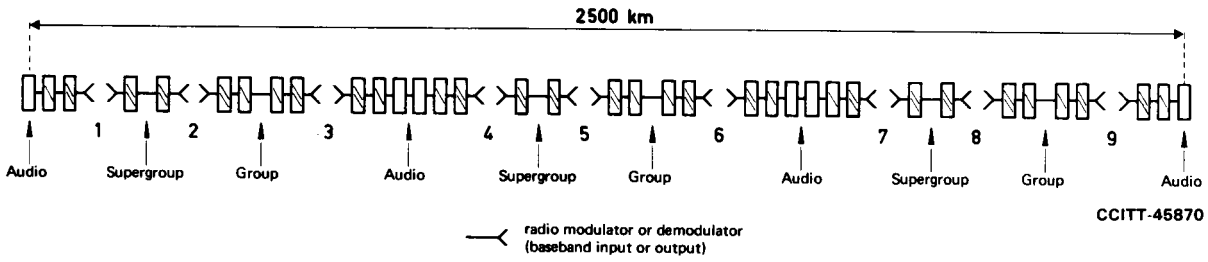
2 Hypothetical reference circuit for radio-relay systems providing more than 60 telephone channels

The hypothetical reference circuit defined in CCIR Recommendation 392 [2], for frequency-division multiplex radio-relay systems with a capacity of more than 60 telephone channels per radio channel, has a length of 2500 km.

This circuit has for each direction of transmission:

- three pairs of channel modulators,
- six pairs of group modulators,
- nine pairs of supergroup modulators,

it being understood that a "pair of modulators" comprises a modulator and a demodulator (see Figure 2/G.431).



Note - The meaning of the symbols used in this Figure is given in the *Preliminary notes* to this fascicle.

FIGURE 2/G.431

Hypothetical reference circuit for frequency-division multiplex radio-relay systems with more than 60 telephone channels per radio channel

This circuit also has nine sets of radio modulators and demodulators for each direction of transmission so that they divide the circuit into nine homogeneous sections of equal length (see Recommendation G.322).

References

[1] CCIR Recommendation *Hypothetical reference circuit for radio-relay systems for telephony using frequency-division multiplex with a capacity of 12 to 60 telephone channels*, Vol. IX, Rec. 391, Dubrovnik, 1986.

[2] CCIR Recommendation *Hypothetical reference circuit for radio-relay systems for telephony using frequency-division multiplex with a capacity of more than 60 telephone channels*, Vol. IX, Rec. 392, Dubrovnik, 1986.