



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

R.20

TELEGRAPHY

TELEGRAPH TRANSMISSION

TELEGRAPH MODEM FOR SUBSCRIBER LINES

ITU-T Recommendation R.20

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation R.20 was published in Fascicle VII.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 R.20

TELEGRAPH MODEM FOR SUBSCRIBER LINES

(Geneva, 1980; amended at Malaga-Torremolinos, 1984 and at Melbourne, 1988)

The CCITT,

considering

(a) that the use of high-level telegraph transmission with single or double current may cause disturbing impulse noise in adjacent cable pairs that may be eliminated by applying low-level transmission with telegraph modems;

(b) that telegraph modems would substantially reduce the power consumption in the central office;

(c) that where connection to a subscriber has to be achieved over a non-metallic pair (e.g., a voice-channel frequency-division multiplex or pulse code modulation system) a telegraph modem has to be utilized;

(d) that the frequencies given below are already standardized in Recommendation V.21 [1];

(e) that suitable inexpensive telegraph modems can be used for full duplex transmission on 2-wire circuits at modulation rates up to 300 bauds;

unanimously declares the view

that where low-level telegraph transmission is used, the following method of transmission should be recommended for all modulation rates up to 300 bauds.

1 Channel allocation

The method of transmission is based on Recommendation V.21 [1] with the following frequency designations:

Central office to subscriber (channel 1) $F_A = 1180$ Hz,

$F_Z = 980$ Hz;

Subscriber to central office (channel 2) $F_A = 1850$ Hz,

$F_Z = 1650$ Hz.

The characteristic frequencies as measured at the telegraph modem line output should not differ by more than ± 3 Hz from the nominal figures.

The modem shall continue to operate with a ± 6 Hz change in receive frequency.

It should be noted that there is equipment in use that applies alternative frequencies to those shown in this Recommendation.

2 Interface

Where the modem is a separate, self-contained unit, the following interchange circuits shall be used:

Common return (e.g. circuit 102 in Recommendation V.24 [2])

Transmitted data (e.g. circuit 103 in Recommendation V.24 [2])

Received data (e.g. circuit 104 in Recommendation V.24 [2])

Carrier detect (e.g. circuit 109 in Recommendation V.24 [2])¹⁾.

¹⁾ This is considered optional, particularly at the subscriber's location.