



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

V.21

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

DATA COMMUNICATION OVER THE TELEPHONE NETWORK

300 BITS PER SECOND DUPLEX MODEM STANDARDIZED FOR USE IN THE GENERAL SWITCHED TELEPHONE NETWORK

ITU-T Recommendation V.21

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation V.21 was published in Fascicle VIII.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 V.21

300 BITS PER SECOND DUPLEX MODEM STANDARDIZED FOR USE IN THE GENERAL SWITCHED TELEPHONE NETWORK¹⁾

(Geneva, 1964; amended at Mar del Plata, 1968,
and at Geneva, 1972, 1976 and 1980,
and at Malaga-Torremolinos, 1984)

Note - The modem, designed for use on connections set up by switching in the general telephone network, can obviously be used on leased lines.

A system of data transmission at a low data signalling rate, such that data could be transmitted over a telephone circuit operated alternatively for telephone calls and data transmissions, using simple input/output equipment and easy operating procedures, would be economical.

The data signalling rate must be such as to allow the use of current types of data sources and sinks, especially electromechanical devices.

The system for data transmission will be duplex, either for simultaneous two-way data transmission or for the transmission of signals sent in the backward direction for error-control purposes. The transmission must be such that use can be made of normal telephone circuits, and this applies both to the bandwidth available and to the restrictions imposed by signalling in the telephone networks.

The two correspondents are brought into contact by a telephone call, and the circuit is put into the data-transmission position:

- a) manually by agreement between the operators, or
- b) automatically.

For these reasons, the CCITT

unanimously declares the following view

1 Data transmission may take place at low data signalling rates on telephone calls set up on switched telephone circuits (or on leased telephone circuits).

2 The communication circuit for data transmission is a duplex circuit whereby data transmission in both directions simultaneously is possible at 300 bit/s or less.

The modulation is a binary modulation obtained by frequency shift, resulting in a modulation rate being equal to the data signalling rate.

Note - Attention is drawn to the fact that there may be in operation some old-type V.21 modems for which the maximum data signalling rate is 200 bit/s.

3 For channel No. 1, the nominal mean frequency is 1080 Hz.

For channel No. 2, it is 1750 Hz.

The frequency deviation is ± 100 Hz. In each channel, the higher characteristic frequency (F_A) corresponds to a binary 0.

¹⁾ See Note under § 2 of this Recommendation.