INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

V.13

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

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DATA COMMUNICATION OVER THE TELEPHONE NETWORK

SIMULATED CARRIER CONTROL

ITU-T Recommendation V.13

(Previously “CCITT Recommendation”)

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation V.13 was revised by the ITU-T Study Group XVII (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Recommendation V.13

SIMULATED CARRIER CONTROL

(Melbourne, 1988; revised Helsinki, 1993)

The CCITT

considering

(a) that there is a wide variety of duplex data systems available;

(b) that some data terminal equipment (DTE) operate 2-way alternate over these systems.

recommends

that the following procedure be employed for simulated circuit 105 to circuit 109 operation, when specifically called for in a CCITT Recommendation.

1 Scope

This Recommendation applies wherever a requirement for control of a remote circuit 109 by a local circuit 105 exists, and where switching OFF and ON of a modem carrier is impossible or impractical. Examples of such environments are:

- sub-channels of modems containing multiplex facilities;
- modems with long equalizer/echo canceller training sequences;
- high efficiency multiplexers containing no control channels;
- PCM channels used for 64 bit/s data transmission.

2 Location of the simulation function

Within this Recommendation the function is described as though it were located between the DTE and the remaining part of the data circuit-terminating equipment (DCE). Location with respect to the loop device as defined in Recommendation V.54 is for further study.

3 Operation

When circuit 105 is OFF the DCE will transmit a pattern of bits (idle pattern) produced by scrambling a binary 1 with the polynominal $1 + x^{-3} + x^{-7}$, in lieu of data bits for that port. No particular starting state is specified for the scrambler. When circuit 105 turns ON, the DCE will immediately transmit a pattern of 8 bits (ON pattern) produced by scambling a binary 0 with the polynomial $1 + x^{-3} + x^{-7}$, after which data bits are sent (Note 1). Circuit 106 may be turned ON within 8 bit intervals after circuit 105 turns ON, and the first bit appearing on circuit 103 after circuit 106 turns ON should be sent as the first data bit (see Note 2). When circuit 106 is turned ON before transmission of the ON pattern has been completed, data bits appearing on circuit 103 are stored in a data buffer for subsequent transmission.

At the remote DCE circuit 109 is turned OFF whenever a sufficient number of successive bits in the above idle pattern is detected (see Note 3). Circuit 109 is turned ON after detecting a pattern of 8 bits produced by scrambling a binary 0 with the polynominal $1 + x^{-3} + x^{-7}$ (Note 4). Circuit 104 (received data) is held at binary 1 when circuit 109 is OFF (see also Notes 5, 6, 7).

NOTES

1 The starting state of the scrambler used for scrambling a binary 0 with the polynomial $1 + x^{-3} + x^{-7}$ should be the same as the ending scrambler state after scrambling binary 1.

2 Additional circuit 106 turn ON delays may be provided as manufacturer's options.

3 The number of successive bits of the idle pattern required to be detected to turn circuit 109 OFF is recommended to be 48-64. Before circuit 109 turns OFF, the idle pattern may appear on circuit 104.

4 It is recommended that circuit 109 be turned ON only if the ON pattern is preceded by a sufficient number of consecutive scrambled ones. The protection against failure to recognize the ON pattern when transmission errors occur is subject to further study. The length of the ON pattern required to be detected to turn circuit 109 ON is provisionally fixed to 8.

5 Following an ON to OFF transition of circuit 105, circuit 105 should be ignored for at least 128 bit intervals so that at least 128 bits produced by scrambling a binary 1 are sent to the remote modem.

6 When circuit 105 is OFF, precaution should be taken that the output of the scrambler is not continuous 1, but rather is a 127 bit pseudo-random sequence.

7 Circuit 109 may be erroneously turned ON at the time of receiving the idle pattern, or circuit 109 may remain OFF at the time of receiving the ON pattern, when transmission errors occur. It may also turn OFF due to simulation by user data.

8 In order to prevent circuit 109 form incorrectly staying in the OFF condition, due to a failure to detect the ON pattern, it is recommended that circuit 109 should be placed in the ON condition, following a reasonable period of time during which the OFF parttern has not been detected.