Recommendation U.24

REQUIREMENTS FOR TELEX AND GENTEX OPERATION TO BE MET BY SYNCHRONOUS MULTIPLEX EQUIPMENT DESCRIBED IN RECOMMENDATION R.44

(Mar del Plata, 1968)

The CCITT,

considering

(a) that it may be desirable to use synchronous systems described in Recommendation R.44 in the teleprinter switching networks;

(b) that it is essential to transmit the full range of telex signals for types A, B and C signalling;

unanimously declares the view

(1) that where it is necessary to receive signals with a nominal cycle of 7 units (see the Recommendation cited in [1]), it will be necessary to insert suitable storage to reconcile the two character rates (400 and 411 per minute);

(2) that type A and B signals in accordance with Recommendation U.1 and U.2 and type C signals in accordance with Recommendation U.11 should be accepted for transmission through the synchronous system. However, in the case of type A signalling, the delay between the start of the call—confirmation signal and the proceed—to—select signal should be increased to, at least, 150 ms;

(3) that the call signal should be transmitted through the synchronous system with the minimum delay obtainable with the particular method of multiplexing in use, e.g., element interleaving, in order to reduce the incidence of head—on collisions with both—way operation. The maximum delay due to the multiplex equipment should be limited to 60 ms;

(4) that the maximum delay on the call—confirmation signal due to the multiplex equipment should be 60 ms in the case of type A signalling, and 120 ms in the case of type B signalling;

(5) that the maximum delay on the start of the reception—confirmation signal due to the multiplex equipment should be 60 ms in the case of type C signalling;

(6) that the maximum delay on the proceed—to—select signal due to the multiplex equipment should be 450 ms in the case of type A signalling, and 120 ms in the case of type B signalling;

(7) that the maximum delay on the call—connected signal due to the multiplex equipment should be 450 ms (type A and type B signalling);

(8) that the maximum delay on a teleprinter character due to the multiplex equipment should be 450 ms;

(9) that the maximum delay on the clear and clear—confirmation signals due to the multiplex equipment should be 450 ms;

(10) that the tolerance of the type A and B pulse signals after retransmission through the synchronous multiplex system will be stated below:

a) *Call—confirmation and proceed—to—select signal — type B signalling*

The duration of the pulse after transmission through the synchronous system will not be less than 17.5 ms nor more than 50 ms.

b) *Dial pulses — type B signalling*

Speed — ± 3% of the mean speed of input measured for digit 0 (normally 9 to 11 pulses per second).

Ratio — The duration of stop polarity pulses will not be less than 32 ms; the duration of start polarity pulses will not be less than 44 ms.

Under certain circumstances the retransmitted dial signals may include pulses of stop polarity having durations of up to 73 ms and pulses of start polarity having durations of up to 98 ms. Where this is so and the incoming switching equipment cannot accept pulses with these characteristics a dial pulse regenerator should be inserted between the output of the multiplex circuit and the input of the switching equipment.

c) *Service signals for ineffective calls — type B signalling*

The duration of the period of stop polarity, whether followed by teleprinter signals or not, will, after transmissions through a synchronous system, be not less than 145 ms and not more than 292 ms.

If several synchronous systems are placed in tandem, the duration of the period of stop polarity of the service signal at the output of this group of systems should not exceed 440 ms.

At the input of a synchronous system, a type B service signal will cause the return of a clear—confirmation signal from the synchronous equipment without waiting for the return of the clear—confirmation signal from the distant end of the connection. Following the recognition of the clearing signal in the service signal, permanent start polarity will be transmitted over the synchronous system.

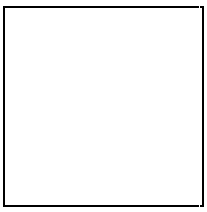
d) *Call—connect — type A signalling*

The duration of the pulse of start polarity after transmission through several synchronous systems will be within the limits 140 ms to 160 ms.

ANNEX A

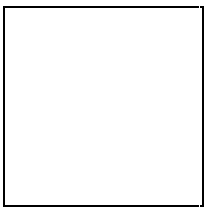
(to Recommendation U.24)

TABLE A—1/U.24



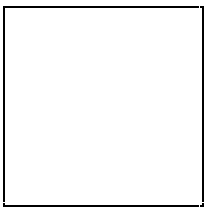
Montage: Reprendre les originaux du Livre Rouge (sans corr.)

TABLE A—2/U.24



Montage: Reprendre les originaux du Livre Rouge (sans corr.)

TABLE A—3/U.24



Montage: Reprendre les originaux du Livre Rouge (sans corr.)

Reference

[1] CCITT Recommendation *Transmission characteristics of the load end with its termination (ITA No. 2)*, Rec. S.3, § 1.6.