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SERIES N: MAINTENANCE OF INTERNATIONAL SOUND-PROGRAMME AND TELEVISION TRANSMISSION CIRCUITS

International videoconference transmissions – Line-up, service commissioning and maintenance of videoconference systems

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Line-up and service commissioning of international videoconference systems operating at transmission bit rates of 1544 and 2048 kbit/s

Reedition of CCITT Recommendation N.86
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NOTES

1 CCITT Recommendation N.86 was published in Fascicle IV.3 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.

Recommendation N.86

LINE-UP AND SERVICE COMMISSIONING OF INTERNATIONAL VIDEOCONFERENCE SYSTEMS OPERATING AT TRANSMISSION BIT RATES OF 1544 AND 2048 kbit/s

1 General

This Recommendation deals with the line-up and service commissioning of international videoconference systems routed over transmission paths operating at transmission bit rates of 2048 and 1544 kbit/s. In this context an international videoconference system comprises the international videoconference connection and the videoconference rooms which are interconnected.

Figure 1/N.86 shows the constituent parts of an international videoconference connection. Recommendation H.110 [1] describes hypothetical reference connections for videoconferencing.

The video codecs are normally located within the videoconference studios but in some circumstances are located elsewhere so that the local tail serving the videoconference studio may be provided on wideband analogue (e.g. 5.5 MHz) or higher order digital transmission systems (e.g. 140 Mbit/s). Codecs are described in Recommendation H.120 [2].

The location of any 2048/1544 kbit/s remultiplexers which may be involved will be as agreed between the Administrations.

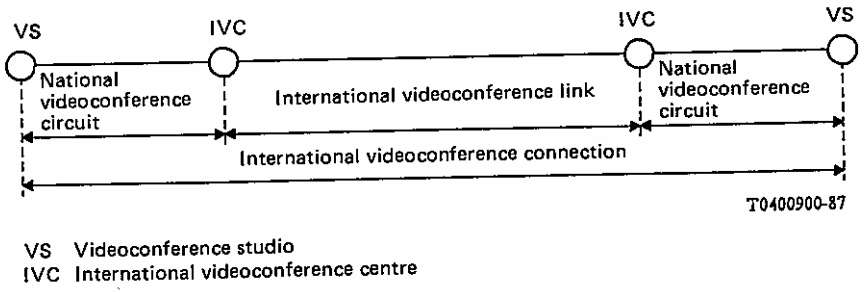

FIGURE 1/N.86

The constituent parts of an international videoconference connection

Supplement No. 5.2 gives guidance on the setting up and testing arrangements for videoconference studios.

The international videoconference centre provides the interconnection point of the national videoconference circuit and the international link. This interconnection may be made manually or by automatic means.

Normally the international videoconference link will be common for all videoconference calls between the two Administrations concerned, whereas the national videoconference circuits will vary from call to call. Thus, in addition to the setting up and lining up of the constituent parts of the international videoconference connection, service commissioning tests are made between videoconference studios prior to the opening of an international videoconference service to ensure that a service can be satisfactorily sustained.

2 Setting up and lining up the constituent parts of the connection

2.1 *National videoconference circuits*

The national videoconference circuits should be set up and tested in accordance with the national procedures of the Administrations concerned. This will include the line up of any sections which may not be provided as 2048 or 1544 kbit/s digital paths. The 2048 and 1544 kbit/s data performance limits to be met are given in Table 1/N.86 and it is recommended that two data tests should be made, each of one hour's duration, on different days and at times that cover the peak traffic periods on the route concerned.

2.2 *International link*

The international videoconference link will only need to be set up and tested when establishing the first service between two Administrations. The procedures of Recommendation 555 [3] should apply.

A data test should be made of five hours duration and should be scheduled so as to include the peak traffic period on the route concerned. The test results should meet the data performance limits given in Table 1/N.86.

3 Performance check codec-to-codec

The constituent parts of the connection having been satisfactorily lined up and connected together at the international videoconference centres, three data tests (each of one hour's duration) should be made between the codecs. The tests should be made on different days and at times to cover the peak traffic periods for the route. The testers should be connected at the digital line side of the codecs, as close to the codecs as possible. Each test should meet the data performance limits given in Table 1/N.86.

Where loop facilities exist, loop measurements may be made in order to obtain reference measurements for subsequent maintenance. Care must be taken to avoid simultaneous operation of loop facilities.

TABLE 1/N.86

Path performance test limits [a]

	Nominal data rate [b] (kbit/s)	Bit error ratio (BER)	Max. errors in 1 hour	Severely errored events [c] in 1 hour	Error-free seconds (EFS) (%)
National videoconference circuit	2048	1×10^{-6}	7 142	0	92
	1544	1×10^{-6}	5 530	0	92
International videoconference link	2048	1×10^{-6}	7 142	2	92
	1544	1×10^{-6}	5 530	2	92
International videoconference connection	2048	3×10^{-6}	21 427	2	92
	1544	3×10^{-6}	16 589	2	92

[a] The limits are provisional and subject to further study.

[b] Structured formatting required with a consequent reduction in actual test data rate as follows:

At 2048 kbit/s, test data rate = 1984 kbit/s (time slots 1 to 31 only);
At 1544 kbit/s, test data rate = 1536 kbit/s (8 bits used for frame alignment).

[c] Severely errored events are defined by the particular data tester used, e.g. 20 000 errors in 100 000 bits. A continuous period of up to 10 seconds, during which severely errored transmission persists, will be considered as a single severely errored event.

Note 1 – In addition to the above limits the BER shall be no worse than 1×10^{-5} over any 5-minute period during the tests (5952 errors at 2048 kbit/s and 4608 errors at 1544 kbit/s). If this test fails, then corrective action shall be taken on the offending section.

Note 2 – For loop-tests, the above limits should be doubled (92% EFS becoming 84% EFS).

4 Digital test equipment

The data tester required for the above tests shall be capable of transmitting and receiving a test pattern within a signal structured in accordance with Recommendation G.732 [4] for 2048 kbit/s interfaces or Recommendation G.733 [5] for 1544 kbit/s interfaces. The nature of the test pattern is undefined but should be the subject of further study.

When working through a 2048/1544 kbit/s remultiplexer, the test signal should be restricted to time slots 1-24 with time slots 25-31 being vacant.

If compatible testers are not available at both ends of the link or connection under test, then one tester should be used to transmit and receive with a loop being provided at the other end.

5 Videoconference studios

All videoconference studios that will be used for international videoconference calls should comply with agreed design standards. Providers and operators of such studios are encouraged to adopt the provisions of Supplement No. 5.2 until CCITT Recommendations are specified. The adoption of common standards facilitates the interworking between any pair of studios in different countries with pre-call adjustments reduced to a minimum.

6 Service commissioning tests

6.1 *General*

The international videoconference connection having been satisfactorily tested, functional video and audio service commissioning tests should be undertaken between the videoconference studios.

6.2 *Test videoconference studios*

The videoconference studio chosen by an Administration for commissioning tests should be typical (with regard to the parameters of Supplement 5.2) of all the other studios to be used fo the service. This studio should then serve as a reference studio for any future tests between videoconference studios with other Administrations.

The reference studio for each Administration should be identified to all other Administrations. The parameters of this studio should also be shared with all other Administrations.

6.3 *Commissioning test*

The end-to-end commissioning tests between videoconference studios are described in Supplement 5.2. The purpose of the tests is to demonstrate that the international videoconference system performs adequately when the constituent parts are connected together. The tests include a subjective assessment of the main functions of each videoconference studio and selected objective tests. The tests are not intended to be exhaustive, but should serve as sample checks in compliance with the standards and as a confident indicator to both Administrations before the opening of an internatinal videoconference service.

References

[1] CCITT Recommendation *Hypothetical Reference Connections for Videoconferencing using primary digital group transmission*, Vol. III, Rec. H.110.

[2] CCITT Recommendation *Codecs for videoconferencing using primary digital group transmission*, Vol. III, Rec. H.120.

[3] CCITT Recommendation *Bringing international digital blocks, paths and sections into service*, Vol. IV, Rec. M555.

[4] CCITT Recommendation *Characteristics of primary PCM multiplex equipment operating at 2048 kbit/s*, Vol. III, Rec. G.732.

[5] CCITT Recommendation *Characteristics of primary PCM multiplex equipment operating at 1544 kbit/s*, Vol. III, Rec. G.733.

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