INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

J.68

(ex CMTT.603)

(02/82)

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

TELEVISION AND SOUND TRANSMISSION

HYPOTHETICAL REFERENCE CHAIN FOR TELEVISION TRANSMISSIONS OVER VERY LONG DISTANCES

ITU-T Recommendation J.68

(Formerly Recommendation ITU-R CMTT.603)

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 J.68 (formerly Recommendation ITU-R CMTT.603) was elaborated by the former ITU-R Study Group CMTT. See Note 1 below.

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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector (ITU-R).

Conforming to a joint decision by the World Telecommunication Standardization Conference (Helsinki, March 1993) and the Radiocommunication Assembly (Geneva, November 1993), the ITU-R Study Group CMTT was transferred to ITU-T as Study Group 9, except for the satellite news gathering (SNG) study area which was transferred to ITU-R Study Group 4.

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

Recommendation J.68[1)]

HYPOTHETICAL REFERENCE CHAIN FOR TELEVISION TRANSMISSIONS OVER VERY LONG DISTANCES

(1982)

The CCIR,

CONSIDERING

(a) that, in some parts of the world, television transmission chains much longer than 2500 km are either existing or are under consideration;

(b) that it is desirable to define one or more hypothetical reference chains corresponding to various typical connections;

(c) that the concept of hypothetical reference chains of known composition would be very useful in progressing the studies under Study Programmes 13C/CMTT and 14A/11;

(d) that Recommendation 567 recommends that the design objectives and tolerances for a terrestrial hypothetical reference circuit should be the same as those of a hypothetical reference circuit in the fixed-satellite service;

(e) that, for television, inter-continental and very long distance transmission is normally by satellite,

UNANIMOUSLY RECOMMENDS

1. that it is only necessary to define one hypothetical reference chain which represents very long distance connections enabling any two points on the Earth's surface to be interconnected;

2. that the hypothetical reference chain should be defined as equivalent to five hypothetical reference circuits in cascade;

3. that the performance of the hypothetical reference chain be determined from the performance of the hypothetical reference circuit as defined in Recommendation 567 by the use of the methods recommended in Part E of that Recommendation.

Note 1 – For the purpose of defining the hypothetical reference chain and using it to investigate the adequacy of the performance of very long distance connections, it is not essential to define what the five parts represent. However, by way of illustration they could be taken to represent two national networks, two satellite links and 2500 km of terrestrial network interconnecting the intermediate pair of earth stations and/or the terminal earth stations and the national networks; also, standards converters are likely to be present in very long distance connections. From this it can be seen that a chain comprising five hypothetical reference circuits is fully adequate to represent a very long television connection in all but the most extreme cases.

Note 2 – In real circuits of similar complexity to the hypothetical reference chain, clamps may be required to control the accumulation of power-supply hum, field-time waveform distortion and long-time waveform distortion.

Note 3 – In real circuits of similar complexity to the hypothetical reference chain, automatic correction of differential phase and/or linear waveform distortion may be desirable.

Note 4 – The view has been expressed that when a television signal is transmitted over a very long distance connection, as represented by the hypothetical reference chain, the picture quality may not be adequate. It would therefore be desirable to study further the performance of very long distance connections, as expressed in subjective terms.

BIBLIOGRAPHY

CCIR Documents

[1978-82]: CMTT/26 (United Kingdom); CMTT/40 (France); CMTT/56 (Japan); CMTT/75 (Canada).

1) Formerly Recommendation ITU-R CMTT.603.