INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

J.62

(ex CMTT.568)

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

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TELEVISION AND SOUND TRANSMISSION

SINGLE VALUE OF THE SIGNAL-TO-NOISE RATIO FOR ALL TELEVISION SYSTEMS

ITU-T Recommendation J.62

(Formerly Recommendation ITU-R CMTT.568)

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.62 (formerly Recommendation ITU-R CMTT.568) 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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector (ITU-R).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.62[1)]

SINGLE VALUE OF THE SIGNAL-TO-NOISE RATIO FOR ALL TELEVISION SYSTEMS

(1978)

The CCIR,

CONSIDERING

(a) that results of studies made by various administrations have shown the need for weighting the measured noise so that, in principle, a single value of signal-to-weighted noise ratio would result in the same subjective opinion value irrespective of the spectral distribution of the noise;

(b) that such studies have also shown that the various television standards have different sensitivities to random noise, and consequently various noise weighting characteristics have been produced by many administrations;

(c) that the acceptance of a single weighting characteristic for application to the hypothetical reference circuit for all television systems is necessarily based on a substantial compromise among the various noise weightings used by various administrations;

(d) that it is furthermore necessary to measure random noise in a unified bandwidth in order to specify a single value of signal-to-weighted noise ratio as an objective for all television systems, so as to avoid any possible confusion when comparing results obtained at different points along an international television circuit;

(e) that a general agreement has been obtained on a unified noise weighting network and on a single value of the signal-to-weighted noise ratio objective for application to the hypothetical reference circuit for all television systems,

UNANIMOUSLY RECOMMENDS

1. that the weighting characteristic and the weighting network shown in Annex II to part C of Recommendation 567 should be adopted for all international television circuits;

2. that the signal-to-weighted noise ratio should always refer to noise as measured in the band 0.01 to 5 MHz;

3. that a single value of signal-to-weighted noise ratio of 53 dB should be the objective for the 2500 km hypothetical reference circuit for 99% of any month.

Note 1 – Measurements for colour television systems using the unified weighting network can be considered as giving a valid indication of the subjective impairment due to the noise only in cases where the noise power per unit bandwidth at 5 MHz does not exceed that at 1 MHz by more than about 11 dB. This condition will be met in the majority of cases with existing transmission systems and only the recommended weighting network will be used for operational purposes. For new systems that would not meet this condition, designers should verify by other means that signal-to-weighted noise ratio is satisfactory and that the recommended network gives suitable results (see Annex I).

Note 2 – There may be administrations which need for national purposes values of signal-to-noise ratio which differ from 53 dB.

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1) Formerly Recommendation ITU-R CMTT.568.

ANNEX I

TREATMENT OF SPECIAL CASES

In cases of new transmission systems where the noise spectral distribution might not meet the requirement given in Note 1 (of the Recommendation) it should be verified during the design stage that the proposed noise distribution will give satisfactory results for all colour television systems. Some guidance on how to do this is given below.

– For system I, the signal-to-weighted noise ratio may be determined by the Hypothetical Composite Weighting Network [Allnatt and Prosser, 1966] and in this case it should not be worse than 49 dB;

– In Italy, for PAL colour systems B and G, the measurement may be carried out with the weighting characteristic indicated in [CCIR, 1966-69];

– For systems D and K the measurement may be carried out with the weighting characteristic indicated in [CCIR, 1970-74].

REFERENCES

ALLNATT, J. W. and PROSSER, R. D. [1966] Subjective quality of colour television pictures impaired by random noise. *Proc. IEE*, **113**, 551-557, Appendix 7.3.

CCIR Documents:

[1966-69]: CMTT/160 (Italy).

[1970-74]: CMTT/72 (USSR).