



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

J.16

TELEVISION AND SOUND TRANSMISSION

**MEASUREMENT OF WEIGHTED NOISE
IN SOUND - PROGRAMME CIRCUITS**

ITU-T Recommendation J.16

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation J.16 was published in Fascicle III.6 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.

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Recommendation J.16

MEASUREMENT OF WEIGHTED NOISE IN SOUND-PROGRAMME CIRCUITS

(Geneva, 1972; amended at Geneva, 1976 and 1980)

The noise objectives for sound-programme circuits are defined in terms of psophometrically weighted noise power levels at a zero relative level point. Psophometric weighting is used to ensure that the objectives and the results of measurements are directly related to the disturbing effect of the noise on the human ear. The psophometric weighting for sound-programme circuits consists of two operations:

- a frequency-dependent weighting of the noise signal, and
- a weighting of the time function of the noise signal to take account of the disturbing effect of noise peaks.

To achieve results which are comparable, it is recommended that for the measurement of noise in sound-programme circuits, a measuring set be used which conforms to the characteristics laid down in CCIR Recommendation 468 which is reproduced at the end of this Recommendation.

Annex A gives symbols and definitions used in noise measurements.

ANNEX A

(to Recommendation J.16)

Symbols and definitions used in noise measurements

A clear distinction should be made between measurements performed with equipment conforming to the Recommendation cited in [1] and those with equipment conforming to CCIR Recommendation 468.

It is recommended that the definitions and symbols in Table A-1/J.16 be used.

TABLE A-1/J.16

Definitions and symbols for the specification of noise measured on sound-programme circuits

Definitions	Symbols
Unweighted noise level, measured with a quasi-peak measuring instrument complying with CCIR Recommendation 468 and referred to a point of zero relative sound-programme level	dBq0s
Weighted noise level, measured with a quasi-peak measuring instrument complying with CCIR Recommendation 468 and referred to a point of zero relative sound-programme level	dBq0ps

Reference

- [1] CCITT Recommendation *Psophometers (apparatus for the objective measurement of circuit noise)*, Green Book, Vol. V, Rec. P.53, Part B, ITU, Geneva, 1973.

MEASUREMENT OF AUDIO-FREQUENCY NOISE VOLTAGE LEVEL IN SOUND BROADCASTING

(Question 50/10)

(1970 – 1974 – 1978 – 1982 – 1986)

The CCIR,

CONSIDERING

- (a) that it is desirable to standardize the methods of measurement of audio-frequency noise in broadcasting, in sound-recording systems and on sound-programme circuits;
- (b) that such measurements of noise should provide satisfactory agreement with subjective assessments,

UNANIMOUSLY RECOMMENDS

that the noise voltage level be measured in a quasi-peak and weighted manner, using the measurement system defined below:

1. Weighting network

The nominal response curve of the weighting network is given in Fig. 1 b which is the theoretical response of the passive network shown in Fig. 1 a. Table I gives the values of this response at various frequencies.

The permissible differences between this nominal curve and the response curve of the measuring equipment, comprising the amplifier and the network, are shown in the last column of Table I and in Fig. 2.

Note 1. – When a weighting filter conforming to § 1 is used to measure audio-frequency noise, the measuring device should be a quasi-peak meter conforming to § 2. Indeed, the use of any other meter (e.g. an r.m.s. meter) for such a measurement would lead to figures for the signal-to-noise ratio that are not directly comparable with those obtained by using the characteristics that are described in the present Recommendation.

Note 2. – The whole instrument is calibrated at 1 kHz (see § 2.6).

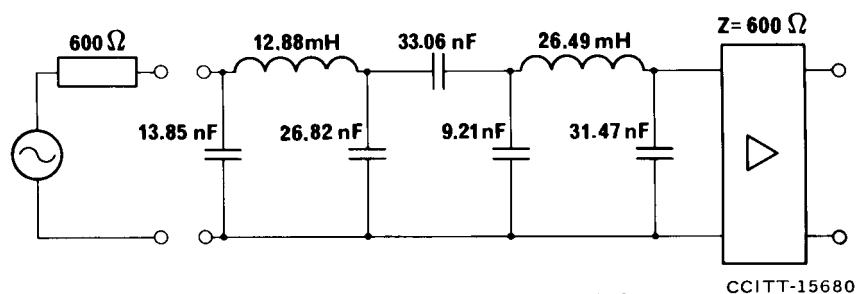


FIGURE 1a — *Weighting network, simple form*

(A constant-resistance realization is described in Annex I)

(A tolerance of at most 1% on component values and a Q -factor of at least 200 at 10 000 Hz are sufficient to meet the tolerances given in Table I.)
(The difference between the responses at 1000 Hz and 6300 Hz may be adjusted more precisely by a small adjustment of the 33.06 nF capacitor, or by a different approach using an active filter [CCIR, 1982-86a])