INTERNATIONAL TELECOMMUNICATION UNION

ITU-T J.14

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

TELEVISION AND SOUND TRANSMISSION

RELATIVE LEVELS AND IMPEDANCES ON AN INTERNATIONAL SOUND - PROGRAMME CONNECTION

ITU-T Recommendation J.14

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation J.14 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.

Recommendation J.14

RELATIVE LEVELS AND IMPEDANCES ON AN INTERNATIONAL SOUND-PROGRAMME CONNECTION

(former Recommendation J.13; amended at Geneva, 1972, 1976 and 1980, and at Melbourne, 1988)

1 Level adjustment on an international sound-programme connection

The CCITT recommends the use of the *constant voltage* method. If, to a zero relative level point of the international sound-programme connection, a zero absolute voltage level is applied (sine-wave signal of 0.775 volts r.m.s.) at the reference frequency 0.8 or 1 kHz, the absolute voltage level at the output of each sound-programme circuit (Points B, C, D . . . F of Figure 3/J.13) should be + 6 dB (i.e. 1.55 volts r.m.s.). Therefore these points have to be regarded as relative level points of + 6 dBrs according to Recommendations J.21, J.22 and J.23.

The zero relative level point is, in principle, the origin of the international sound-programme connection (Point A in Figure 3/J.13). Different conventions may be agreed between the telephone Administration and the broadcast organization within a country, provided that the levels on the international sound-programme link are unchanged.

A zero relative level point is, in principle, a point at which the sound-programme signals correspond exactly with those at the origin of the international sound-programme connection. At a point of zero relative levels, signals have been controlled in level by the broadcasting organization such that the peak levels very rarely exceed +9 dB relative to the peak values reached by a sine-wave signal of 0.775 volts r.m.s. (for a 600-ohm resistor load, when levels are expressed in terms of dBm).

In Recommendation 645, CCIR has defined test signals to be used on international sound-programme connections based on existing CCITT Recommendations.

2 Diagram of signal levels on an international sound-programme connection

All signal levels are expressed in terms of r.m.s. values of sine-wave signals with reference to 0.775 volts.

The voltage level diagram for an international sound-programme connection, however made up, should be such that the voltage levels shown will not exceed the maximum undistorted power which an amplifier can deliver to a sound-programme link when a peak voltage (i.e. +9 dB) is applied to a zero relative level point on the international sound-programme connection.

With these conditions, +6 dB is the nominal voltage level at the output of the terminal amplifiers of the sound-programme circuits making up the international sound-programme link (Points B, C, D . . . F of Figure 3/J.13).

Considering that rare excursions of the permitted maximum signal level may occur, and that adjustment errors and maintenance tolerance have to be taken into account, sound-programme circuits need a definite overload margin. The amount of this margin is still under study.

If a sound-programme circuit which is part of the international sound-programme link is set up on a group in a carrier system, the objective for a new design of equipment is that the relative level of the sound-programme circuit, with respect to the relative level of the telephone channel, should be chosen such that the mean value and the peak value of the load presented by the sound-programme channel should be no higher than that of the telephone channels which are replaced by the sound-programme channel. The effects of pre-emphasis and compandors should, where present, be taken into consideration.

It is recognized that this condition may not be observed in all cases, particularly in certain existing types of equipments. It is recommended that in those cases the zero relative level points of the sound-programme circuit and of the telephone channels should coincide.

It might be as well, however, if the equipment could, where possible, tolerate a maximum difference of ± 3 dB between the relative levels of the sound-programme and telephone transmissions, so that the best adjustment can be obtained, depending on any noise or intermodulation present, but at the same time observing the constraints imposed by the considerations on loading.

Note – The relative level at which the modulated sound-programme signal is applied to the group link is given in Recommendations J.31 for 15 kHz-type circuits, J.34 for 7 kHz-type circuits and in the Annex to Recommendation J.22 for 10 kHz-type circuits.

3 Definitions and abbreviations for new sound-programme signals

Definitions and symbols are in current use to define relative levels for telephony. However, additional definitions and symbols are necessary for the absolute and relative levels in respect of sound-programme signals. The corresponding definitions and symbols for telephony and sound-programme signals are given below.

3.1 **dBm0**[1)]

The absolute signal power level, in decibels, referred to a point of zero relative level.

3.2 **dBr**[1)]

The relative power level, in decibels.

3.3 **dBm0s**

The absolute signal power level, in decibels, referred to a point of zero relative sound-programme level.

3.4 **dBrs**

The relative (power) level, in decibels, with respect to sound- programme signals. (This abbreviation is only applicable at points in a sound-programme circuit where the signals can nominally be related to the input by a simple scaling factor.)

Note – The use of level definitions is given in CCIR Recommendation 574.

1) These symbols traditionally relate to telephony relative levels.