



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

N.13

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

**MAINTENANCE OF INTERNATIONAL
SOUND - PROGRAMME AND TELEVISION
TRANSMISSION CIRCUITS**

**MEASUREMENTS TO BE MADE BY
THE BROADCASTING ORGANIZATIONS
DURING THE PREPARATORY PERIOD**

ITU-T Recommendation N.13

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation N.13 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.

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Recommendation N.13

MEASUREMENTS TO BE MADE BY THE BROADCASTING ORGANIZATIONS DURING THE PREPARATORY PERIOD

After the broadcasting organizations have taken possession of the international sound-programme connection, they make measurements on the complete connection in the band of frequencies effectively transmitted, from the point where the programme is picked up to the point where the programme is received.

The broadcasting organizations should, for their measurements, send from the origin of the international sound-programme connection a sinusoidal signal at the reference frequency (800 or 1000 Hz) only, whose maximum amplitude is 9 dB below that of the maximum instantaneous voltage that should never be exceeded at this point in the course of a sound-programme transmission.

The duration of the period during which the signal at this level is sent should be kept as short as possible, for example, of the order of 30 seconds. If necessary, the ISPCs should verify that the received level at the access point on the international sound-programme circuit is equivalent to 0 dBm0.

When it is necessary, either for purposes of fault location or to maintain a watch on the continuity of the circuit, to send a continuous tone, or when making measurements at other frequencies than the reference frequency, the amplitude at the origin of the international sound-programme connection should be 21 dB below the voltage that should never be exceeded at this point during the course of a sound-programme transmission. Under these circumstances the level at the access point on the international sound-programme circuit is equivalent to -12 dBm0.

During the preparatory period a useful signal which can be used for the alignment of sound-programme connections is that shown in Figure A-1/N.13. The definitions and its method of use are given in Annex A of this Recommendation. A suitable automatic measuring equipment for this purpose is specified in Recommendation O.33 [1].

Note – The numerical values given above ensure that during the sound-programme transmission the peak voltage at a zero relative level point will not exceed that of a sinusoidal signal having an r.m.s. value of 2.2 volts.

The reason for sending the reference frequency only for short durations during this final line-up, at a voltage 9 dB below the peak voltage is that it is not desirable to subject carrier systems to overloading by continuously transmitting a test signal corresponding to the peak voltage reached only momentarily during the transmission of an actual programme.

ANNEX A¹⁾

(to Recommendation N.13)

Signals for the alignment of international sound-programme connections

A.1 *Definitions*

A.1.1 **source identification**

An announcement should be used to identify the originating point of the test signals and should be preferably as short as possible. It is suggested that such an announcement contain at least the following information:

- name of originating organization;
- location;
- country.

The sound programme signal should be controlled by the sending broadcaster so that the amplitudes of the peaks only rarely exceed the peak amplitude of the permitted maximum (sine-wave test) signal.

¹⁾ Based on CCIR Recommendation 661 [2].

A.1.2 *Test signal and level definitions*

A.1.2.1 **alignment signal (AS)**

Sine-wave signal at 1020 Hz at a level of 0 dBm0s, which is used to align the international sound-programme connection.

A.1.2.2 **measurement signal (MS)**

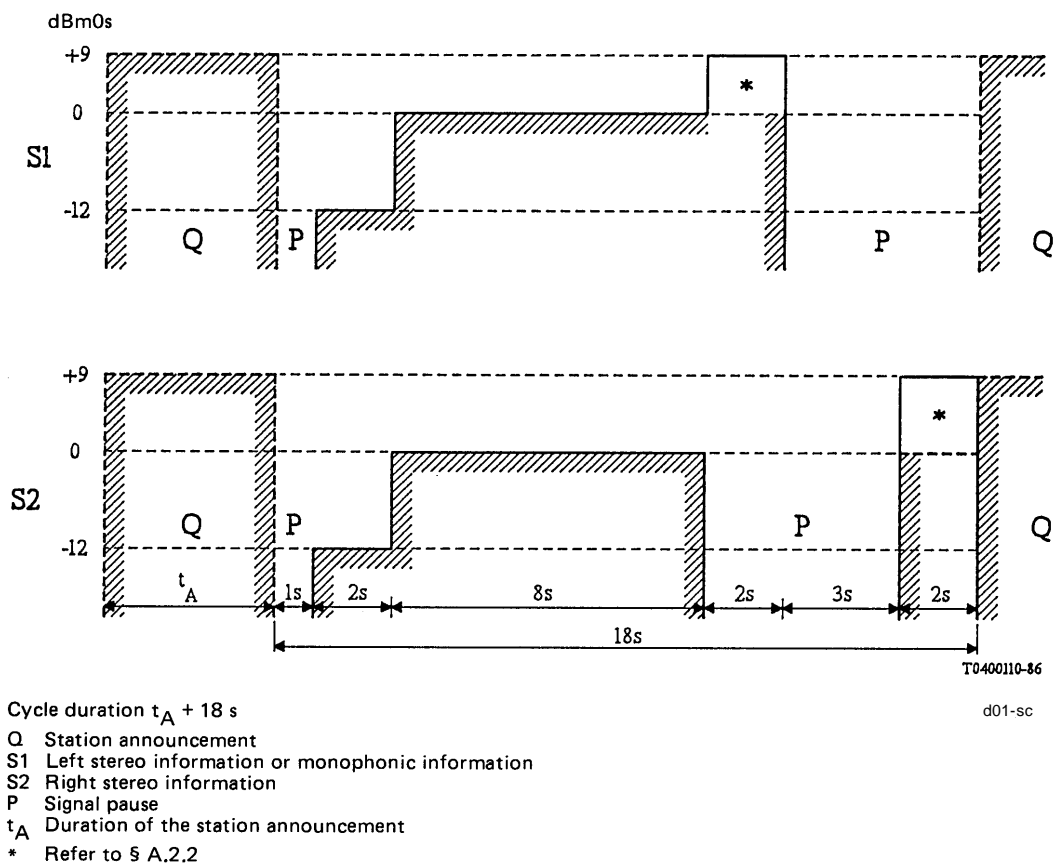
Sine-wave signal at 1020 Hz at a level 12 dB below the alignment signal level, which should be used for long-term measurements and measurements at all frequencies.

A.1.2.3 **permitted maximum signal (PMS)**

Sine-wave signal at 1020 Hz, 9 dB above the alignment signal level, equivalent to the permitted maximum programme-signal level.

A.2 *Test signal format*

A.2.1 A three-level sinusoidal test signal at a reference frequency of 1 kHz should be used to check the alignment of international sound programme connection. These three levels should be combined with the source identification and be repeated cyclically as specified in the format shown in Figure A-1/N.13 for monophonic and stereophonic connections.



Note – t_A varies depending on the length of the message.

FIGURE A-1/N.13

Format for the three-level test signal for sound-programme connections

A.2.2 Provisionally, the portion of the test signal designated at +9 dBm0s in Figure A-1/N.13 will be replaced by a signal at 0 dBm0s. The resulting two-level test signal is required until all transmission systems are capable of carrying sinusoidal signals at +9 dBm0s without producing excessive channel loading or crosstalk into other channels.

A.2.3 Some organizations may not have automatically generated test levels as defined in §§ A.2.1 and A.2.2. In these cases, the alignment level of 0 dBm0s at 1020 Hz should be used for the alignment of international sound programme connections.

A.3 *Measurement methods*

The fundamental concept of the test signals is to provide organizations with accurate and well defined levels. These levels are intended to provide rapid identification of level errors as well as to allow operational personnel sufficient time to make the necessary level adjustments at the appropriate points in the international sound programme connection. Alignment of the connection is made by adjusting the alignment signal to the appropriate point on the programme level meter. Identification of left and right channels is provided as shown in Figure A-1/N.13.

References

- [1] CCITT Recommendation *Automatic equipment for rapidly measuring stereophonic pairs and monophonic sound-programme circuits, links and connections*, Vol. IV, Rec. O.33.
- [2] CCIR Recommendation *Signals for the alignment of international sound-programme connections*, Vol. XII, Rec. 661, ITU, Geneva, 1986.