

RECOMMENDATION 645-2*

TEST SIGNALS AND METERING TO BE USED ON INTERNATIONAL
SOUND PROGRAMME CONNECTIONS

(Questions 82/10 and 19/CMTT)

(1986-1990-1992)

The CCIR,

considering

- a) that many impairments in international programme exchange on sound-programme connections are attributed to different national test signal definitions and methods of metering;
- b) that some existing definitions are found in different Recommendations of the CCITT and the CCIR;
- c) that for clarification, a list of those definitions should be available,

recommends

that for an international sound-programme connection only the test signals defined below should be used, in conjunction with methods of metering described in Annexes 2 and 3.

1. Alignment signal (AS)

Sine-wave signal at frequency of 1 kHz which is used to align the international sound-programme connection. The signal level corresponds to 0 dBu0s (see Note 1) (i.e. 0.775 V r.m.s. at a zero relative level point). In accordance with CCITT Recommendation N.13, the period of sending the alignment signal should be kept as short as possible – preferably to less than 30 s.

Note 1 – The notation “dBu0s” is defined in Recommendation 574. Other related texts of the CMTT use the notation “dBm0s” also defined in Recommendation 574.

2. Measurement signal (MS)

Sine-wave signal at a level 12 dB below the alignment signal level which should be used for long-term measurements and measurements at all frequencies (see CCITT Recommendations N.12, N.13, N.21 and N.23).

3. Permitted maximum signal (PMS)

Sine-wave signal at 1 kHz, 9 dB above the alignment signal level, equivalent to the permitted maximum programme-signal level. The sound-programme signal should be controlled by the sending broadcaster so that the amplitudes of the peaks only really exceed the peak amplitude of the PMS.

Note 1 – Under these conditions a peak programme meter will indicate levels not exceeding the level of the permitted maximum signal.

A numerical example may serve to clarify this definition. The alignment signal has an r.m.s. voltage of 0.775 V and a peak amplitude of 1.1 V at a zero relative level point. The instantaneous peak amplitude of the sound-programme signal at this point should only rarely exceed 3.1 V.

Although it is intended that the peaks of the sound-programme signal should not exceed the permitted maximum signal level, an overload margin must be provided so that rare excursions of the sound-programme signal above the permitted maximum signal level may be tolerated.

* The CMTT and Study Group 10 will coordinate the future development of this Recommendation. This Recommendation should be brought to the attention of Study Group IV of the CCITT.

Note 2 – Annex 1 describes the response of peak programme and vu meters to these test signals.

Annex 2 describes the principal characteristics of the various instruments used for monitoring the volume of peaks during programme transmissions.

Annex 3 gives an explanation of dBu0s and dBrs terminology.

ANNEX 1

Alignment using the recommended test signals with peak programme meters and vu meters

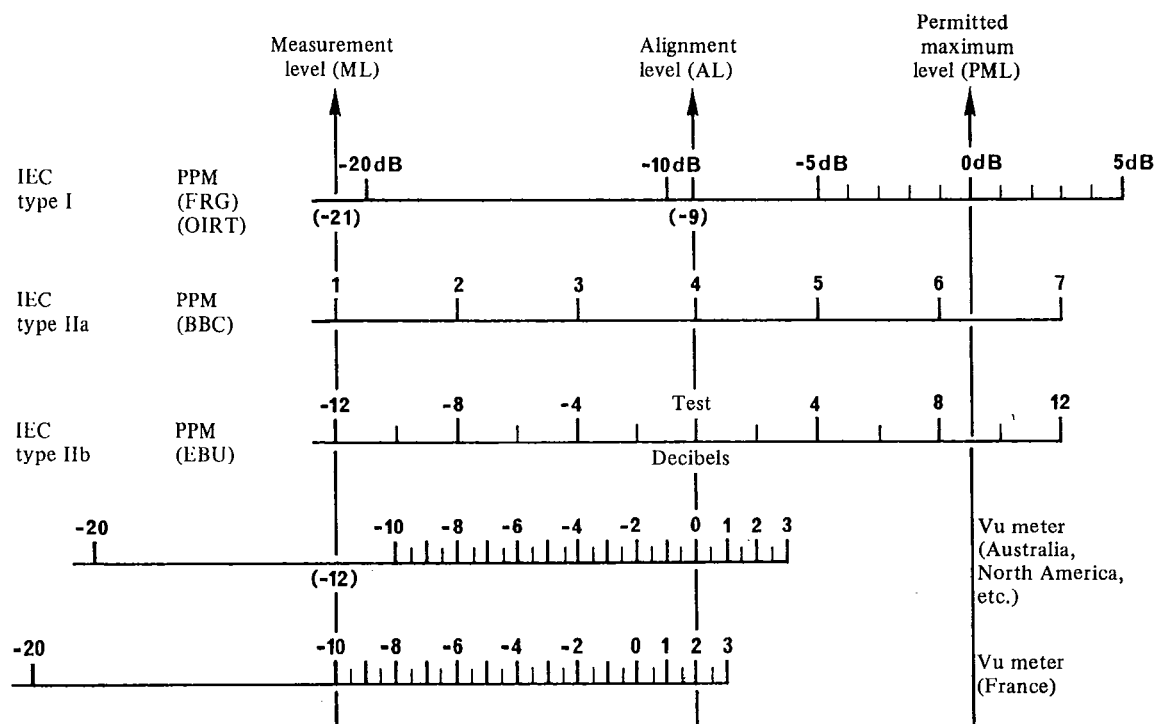
1. Broadcasters have evolved, over a period of forty years, procedures for using both types of meter to control programme levels. These procedures are satisfactory to the organizations using them, so that they produce neither over-modulation, leading to distortion, nor under-modulation, leading to impairment from noise.

Although different kinds of programme material deflect the two meters differently, the organizations using them have evolved techniques that produce satisfactory level control and artistic balance within the programme.

2. The sensitivity of peak programme meters (PPM) is such that a sine-wave signal at the alignment level, 0 dBu0s, indicates "test" on an EBU PPM (this corresponds to "4" on the BBC PPM and "–9" on the PPMs of the Federal Republic of Germany and the OIRT (see Fig. 1)).

FIGURE 1

Indications produced by various types of programme meter with the recommended test signals



Note 1 – Meter indications are schematic – not to scale.