

## SPECIFICATION OF AUDIO DISTORTION MEASUREMENTS

*This procedure deals with the main parameters used for the assessment of audio performance. The measurements cover only the transmitter (and lines) portion of the sound and television broadcast system and are based on specifications issued by Quality Control in Technical Memorandum Q.6.3.1. More detailed information of audio measurements in other areas of the broadcast system, including lines networks, is given in the appropriate sections of either the Quality Control or Lines Technical Memoranda handbook.*

*Specific ILR measurement techniques and system information is given in MIPs C.2.1.1 for VHF and C.3.1.1 for MF.*

### 1: Insertion gain

#### a) Adjustment error

When the input to a system which has a minimal gain of unity has been adjusted to -10dBm at 1kHz the difference between this and the output level is the adjustment error.

#### b) Stability

With the input level constant at -10dBm any change in output level over the specified period is defined as the stability.

The specified periods are defined as follows:

Short term stability - the greatest change occurring in 1 minute.

Medium term stability - the greatest change occurring in 1 hour.

Long term stability - the greatest change occurring in a period of not less than 24 hours which should be specified and would depend upon the application of the procedure.

#### c) Difference between A and B channels (stereophonic circuits)

When the input level to the A and B channels are at -10dBm, the difference between the output levels is the A-B channel gain difference and is normally specified separately over two frequency bands which are 125Hz to 10kHz and 40Hz to 15kHz.

### 2: Amplitude frequency response

Amplitude frequency response is the frequency dependent variation of level and is normally measured over the band from 40Hz to 15kHz. The input level should be adjusted to achieve a reference output of -10dBm at 1kHz.

The test is normally carried out using the following frequencies:

40Hz 60Hz 125Hz 250Hz 500Hz 1kHz  
2kHz 4kHz 6kHz 8kHz 10kHz 12kHz  
14kHz 15kHz

The bandwidth available over BT monophonic music circuits, to specification EPS81, is 50Hz to 10kHz. Over stereo circuits to specification EPS 84 the bandwidth is 40Hz to 15kHz.

### 3: Delay response

Phase difference between A and B channels (stereophonic circuits) is measured over the frequency range from 40Hz to 15kHz. The tolerance for a particular circuit or equipment is defined in the form of a profile. The break point for the profile should occur at frequencies of 200Hz and 4kHz as illustrated in Fig.1.

### 4: Noise

All noise measurements should be expressed with reference to a 1kHz tone at a level of 0dBm.

#### a) Unweighted:

This measurement is made in accordance with the CCIR Recommendation 468/3 using the appropriate noise meter or PPM. The standard bandwidth for this measurement is 22Hz to 22kHz.

#### b) Weighted

An audio weighting network, as defined in CCIR Recommendation 468-1 with an attenuation characteristic as shown in Fig.2, is used.

### 5: Non-linear (harmonic) distortion

#### Harmonic Factor

Harmonic distortion is the ratio of the total level of all harmonics of the received signal falling within the measurement bandwidth, to the level of the fundamental.

Measurement should be carried out using tones at 80Hz and 1kHz and at levels of -10dBm, 0dBm and +8dBm. Over BT networks a sending level of +9dBm is normally used.

### 6: Crosstalk

A to B interchannel crosstalk (stereophonic circuits)

This is the ratio of the level of an applied signal to channel A (or B) to the level of the unwanted signal appearing on the receiving end of channel B (or A).

It is measured over the frequency range 40Hz to 15kHz. The tolerance for a particular circuit or equipment is normally defined in the form of a profile.

# MAINTENANCE INSTRUCTIONS AND PROCEDURES

STATION OPERATIONS AND MAINTENANCE DEPARTMENT

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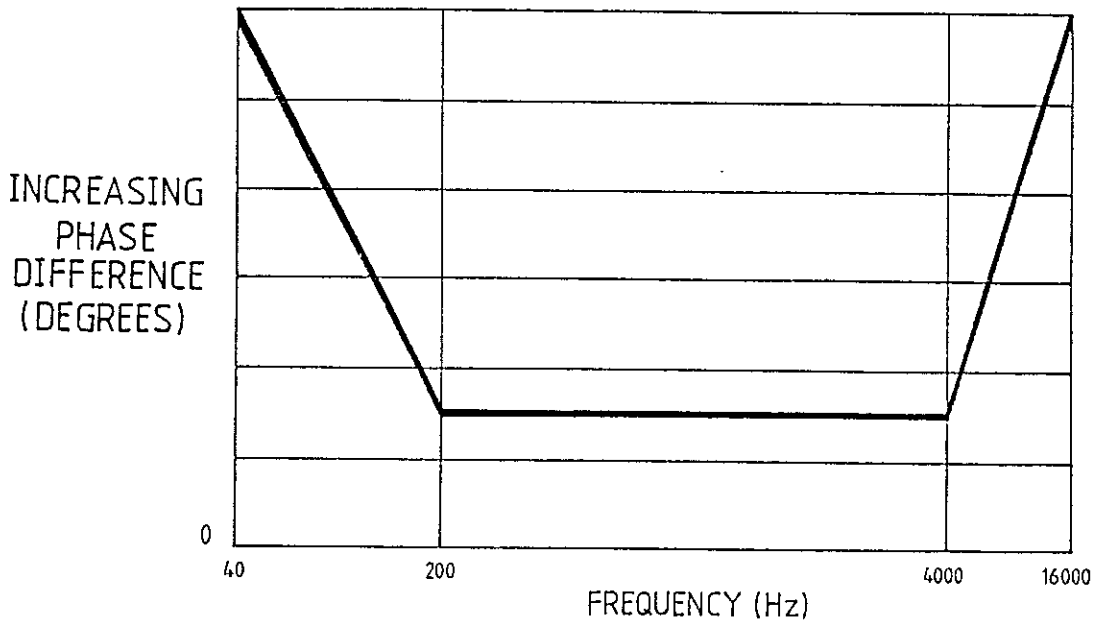


Fig.1 Phase difference between A and B channel

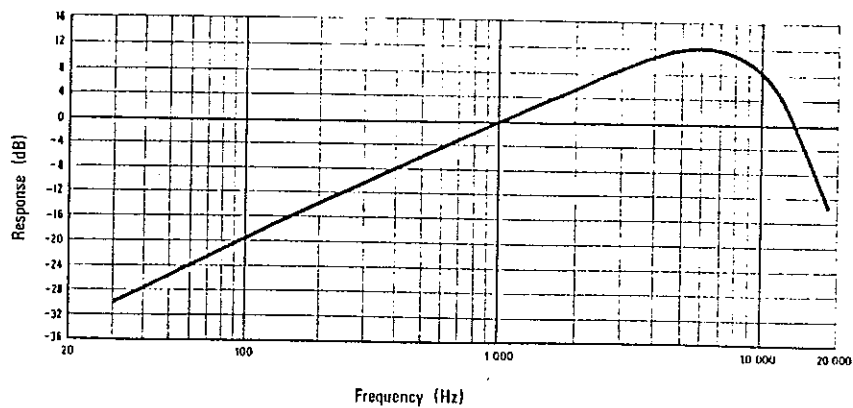


Fig.2 Amplitude-frequency response characteristic of the weighting network to CCIR recommendation 468-1