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SMPTE RECOMMENDED PRACTICE

RP 120-2005
Revision of RP 120-1994

Measurement of Intermodulation Distortion in Analog Audio Systems

1 Scope

This practice specifies the technique of measuring, by the intermodulation method, the signal distortion introduced by audio systems.

2 Test method

2.1 An arrangement of apparatus as shown in figure 1 may be used for the measurement of intermodulation distortion.

2.2 The signal supplied to the audio system under test shall consist of a linear combination of a low frequency, nominally 60 Hz; and a high frequency, nominally 7000 Hz. The amplitude of the high-frequency signal shall be 12 dB ± 1 dB below that of the low frequency. The test signals shall be not more than ± 3% from the nominal frequencies to be used. Neither frequency shall contain more than 0.5% harmonic distortion. The peak amplitude of the complex wave at either the input or the output of the audio system under test shall be specified along with the measurement results.

3 Test equipment

A block diagram of an acceptable intermodulation analyzer is shown in figure 2. The output of the analyzer shall be calibrated to provide an indication of percentage modulation of the high-frequency component after removal of the low-frequency component. The meter should be sensitive to modulating frequencies in the range from approximately 10 Hz to 400 Hz.

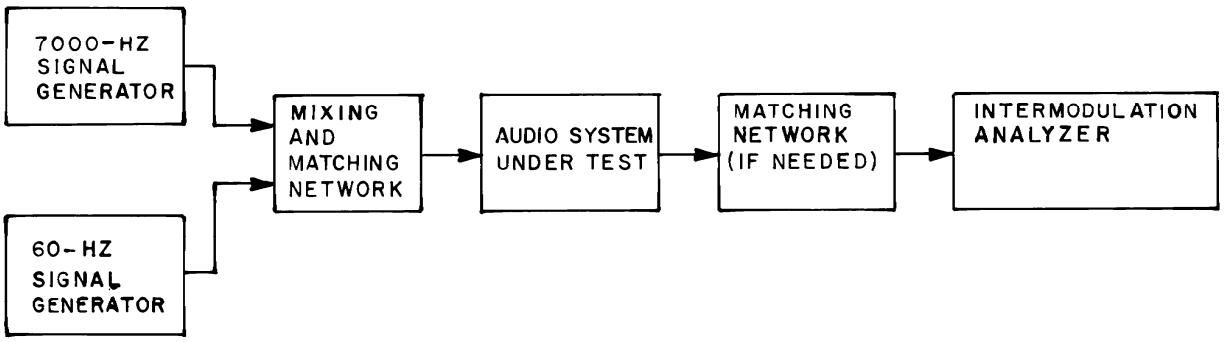

Figure 1 – Arrangement of intermodulation test apparatus to determine distortion in audio systems

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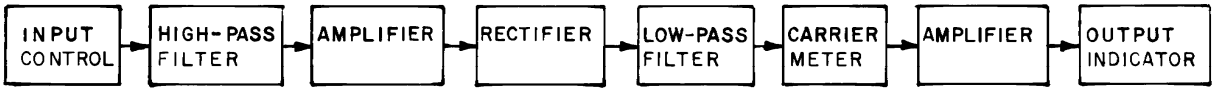

Figure 2 – Acceptable intermodulation analyzer

Annex A (informative)
Additional data

The method of measuring distortion by intermodulation was originally developed as a means for controlling the quality of variable-density audio tracks. Previous documents described the use of intermodulation tests for this purpose. Variable-density audio tracks have now become obsolete. However, a variation of the original intermodulation test, with a high frequency of 7000 Hz instead of the original 2000 Hz, is commonly used in the measurement of distortion in audio systems. It is this version of the test which is described in this practice. Those wishing to use the intermodulation test for control and evaluation of variable-density audio tracks are urged to consult the references listed in annex B.

Annex B (informative)
Bibliography

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