

# **AES standards project report - Methods for the measurement of audio video synchronization error**

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## **Abstract**

The synchronization of audio and video (A-V sync, or lip sync) in television continues to pose a problem for producers and broadcasters, because errors in synchronization continue to be a source of audience dissatisfaction.

Although digital television includes timing information that should keep audio and video properly synchronized, this in itself can simply be another source of problems. New display technologies, and separate audio and video signal paths within the living room, present new challenges for lip sync.

Project AES-X177 was started in an effort to help with creating the solution to the problem. It had the aim of standardizing a simple method of measuring lip sync. The task proved more difficult than anticipated and the project was subsequently closed. However this report gathers together two relevant documents that were produced by the British Broadcasting Corporation during the life-time of the project. One is a study of factors that affect perception of lip sync, the other is a study of operational practices in a real broadcast chain.

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### Foreword

This foreword is not part of the AES standards project report - *Methods for the measurement of audio video synchronization error*, AES-R11-2009

This report was developed by SC-02-01 in project AES-X177. Although digital television includes timing information that should keep audio and video properly synchronized, this in itself can simply be another source of problems. New display technologies, and separate audio and video signal paths within the living room, present new challenges for audio/video synchronization, or lip sync.

Project AES-X177 was started in an effort to help with creating the solution to the problem. It had the aim of standardizing a simple method of measuring lip sync. The task proved more difficult than anticipated and the project was subsequently closed. However this report gathers together two relevant documents that were produced by the British Broadcasting Corporation during the life-time of the project. One is a study of factors that affect perception of lip sync, the other is a study of operational practices in a real broadcast chain.

The document was developed in draft by A.Mason.

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# DRAFT

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### Introduction

This document is intended to inform readers of some of the factors that affect people's perception of lip sync, and to offer advice gained from a case study of operational practices in a real HDTV broadcast chain.

It is clearly still difficult to ensure correct lip sync in television, and, in an effort to end the "buck-passing" between audio people and video people, a project AES-X177 was started in AES SC-02-01 to address this problem, aiming to produce an AES standard measurement technique for lip sync. This would have had two benefits: not only would there be agreement on technical methods for testing and measurement, there would also be an increase in general awareness, and at least one tangible output document that would be widely available.

However, even this modest task proved more difficult than expected. A change in the priorities of the employer of the project leader meant that a new project leader was required. None has been proposed at the present time, and so that particular project was closed pending some new initiative.

This report gathers together two documents that were written during the lifetime of the project. The first, "Factors affecting perception of audio-video synchronization in television" is a BBC Research and Development White Paper that is a slightly revised version of a paper that was published at the 125th Audio Engineering Society Convention, New York, October 2008. Some additional figures from the presentation that was made at the convention have been included as an appendix to the paper. The second, "Managing a Real World Dolby E Broadcast Workflow" has also been published as a BBC Research and Development White Paper and gives careful consideration to system timing, audio-video synchronization, metadata control and monitoring in the BBC's high definition broadcast chain.

Together, they may serve as a repository of knowledge to inform future work on A-V sync.