STANDARDS AND INFORMATION DOCUMENTS

STANDARDS

AES Recommended Practice
Loudness Guidelines for Internet Audio
Streaming and On-Demand Distribution

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AES Recommended Practice
Loudness Guidelines for Internet Audio Streaming and On-Demand Distribution

Abstract

This AES Recommended Practice (RP) provides comprehensive recommendations establishing and implementing an effective Distribution Loudness for streaming and on-demand audio file playback. It is intended for use by distributors of Internet audio streams and on-demand audio files.

Implementing these guidelines will provide consistent Loudness and appropriate playback loudness range, will reduce audio quality degradation from excessive limiting, will preserve the original artistic intent, and will improve the listening experience. This document does not recommend Loudness Range (LRA), device target playback loudness or device dynamic range.

Contents

Foreword

This foreword is not part of the *Loudness Guidelines for Internet Audio Streaming and On-Demand Distribution*.

The Streaming Loudness subcommittee was formed in 2018 to study issues related to streaming audio Loudness variations. Its goal is to develop comprehensive recommendations, providing effective guidelines for managing audio Loudness of audio streaming and on-demand delivery files.

This group consists of volunteer members with expertise and/or interest in the creation, distribution and emission of professional audio. AES Standards membership is open to all stakeholders with a material interest in its work, regardless of AES membership status.

The members of the writing group that developed this document in draft are:

This draft standard was developed by writing group within task group SC-02-12-Q led by Bob Katz and David Bialik with the following members: David Bialik, Rob Byers, Jim Coursey, Eelco Grimm, Bob Katz, John Kean, Scott Norcross, Robert Orban, Shawn Singh, Jim Starzynski, Alessandro Travaglini,

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Morten Lave
Chair, Working Group SC-02-12
2023/04/28

Note on normative language

In AES standards documents, sentences containing the word "shall" are requirements for compliance with the document. Sentences containing the verb "should" are strong suggestions (recommendations). Sentences giving permission use the verb "may". Sentences expressing a possibility use the verb "can".

AES Recommended Practice
Loudness Guidelines for Internet Audio Streaming and On-Demand Distribution

0 Introduction

0.1 General

Internet audio streaming and on-demand file playback have become major sources of media delivery, affecting the ways that audio is recorded, mixed, post-produced and delivered. Excessive loudness compromises quality, inconsistent loudness annoys listeners. To resolve these issues, this document provides recommendations for establishing and implementing an effective distribution loudness for streaming and on-demand audio file playback.

This Document:

- Is intended for use by distributors of Internet audio streams and on-demand audio files.

- Does not provide recommendations for content production. However, content creators and producers will find it essential to their work.

- Is not intended for sound-with-picture content (Over-The-Top Television, or On-Demand Video). Guidelines for that material are covered in other industry recommendations and standards (e.g., AES71-2018) [1].

These recommendations provide a necessary step in an evolutionary process (see Section 4, Introduction) to accommodate the inadequate maximum gain and limited metadata capability of some current and older playback devices. Establishing this process addresses current needs while anticipating increased dynamic range capability and lower Distribution Loudness. Current metadata-enabled music services and their applications described in Annex A have significantly improved the listener experience; forthcoming metadata encoded streams and compliant de-vices can accommodate more extensive improvements. These future advancements make up step two of the evolutionary process, supporting a revision to this document at the appropriate time.

0.2 Patents

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. AES shall not be held responsible for identifying any or all such patent rights.

0.3 Documentation conventions

Capitalization denotes the term is defined in Section 3, Terms, definitions and abbreviations.

1 Scope

This document recommends appropriate loudness for streaming and On-Demand File Playback content to:

- Optimize distribution and the listener experience

- Recognize the evolutionary process by recommending a Distribution Loudness that is well-suited for current fixed and mobile listening, while creating awareness for Loudness Management using metadata encoded in streams and in future ANSI/CTA-2075 [2] devices

- Recommend a consistent real-time Distribution Loudness for streams

- Ensure loudness consistency of on-demand files and online streams from different sources

- Provide loudness consistency within a specific online stream composed of different Long-form Content and Interstitials, which will alleviate loudness jumps when Interstitial Content (ads, promos, PSA's) is inserted

- Prevent excessive peak limiting or other processing from degrading perceived audio quality

- Avoid loudness wars

- Encourage the use of audio metadata

Note that this document does not recommend Loudness Range (LRA), device target playback loudness or device dynamic range.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ITU-R BS.1770, *Algorithms to measure audio program loudness and true-peak audio level,* International Telecommunications Union, Geneva, Switzerland, https://www.itu.int/rec/R-REC-BS.1770/en

ITU-R BS.1771-1, *Requirements for loudness and true-peak indicating meters,* January 2012, International Telecommunications Union, Geneva, Switzerland, https://www.itu.int/rec/R-REC-BS.1771-1-201201-I/en