Loudness

THE NEED FOR STANDARDS AND BEST PRACTICES

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Agenda

- Background & current practices
- A look at broadcast standardization efforts
- The world of OTT & IBB
- Addressing the problem
- Way forward - standards and practices

Background

- Broadcast & OTT heavily affected by varying levels and audio quality
- Multiple reasons, need to be addressed as an industry initiative
- Different sources treated differently
  - Peak measurement vs loudness measurement
  - Lack of best practices and standard levels
  - Legacy content (mono and stereo) specified & measured using peak meters
- Playback environment not in control of the service provider
- Content aggregator faces challenge of loudness normalisation
- Consumer bears the brunt of variations in loudness
  - Between content and advertising/promotional material
  - Between different services
  - Between various playback devices and environments

Current practices

- Several types of loudness mismatch, due to a variety of reasons.
  - Measurement is not uniform. Some measurement is based on (legacy) peak metering and some on loudness. This leads to differences in levels.
  - Different treatment is applied to different content
    - Legacy channels typically metered on peak meters
    - Channels with surround sound metered on loudness meters
    - Ads - no target loudness, various levels, not metered?
    - QC and consistent loudness not fully implemented across all content (including breaks and advertising).

The loudness challenge

- Cinematic content can be controlled end-to-end in theatres
  - Loudness levels are specified and followed for both production and playback
  - Highly controlled environment
- Broadcast is a different playing field
  - Production is controllable, playback is not
  - Devices could be TVs, external speakers or home theatres
- OTT, IBB and other streaming services have an even bigger problem
  - Devices can range from fixed (Living Room) to portable (mobile phones, tablets, PCs etc.)
  - Content sources vary from broadcast or cinema originated to UGC or made-for-OTT content

Standardization efforts in broadcast

- ITU has global standards for loudness metering (ITU-R BS.1770 & 1771)
  - All other global metering standards are based on this.
- Recommended practices for program exchange specified in ITU-R BS.1864
- EBU recommendation for program levels (EBU R.128) - specifies all content at -23 LUFS, measured according to the ITU/EBU loudness specs.
- America follows ATSC A/85, also based on ITU standards. Specifies all content at -24 LKFS.
- No standards in India for recommended loudness levels or measurement methods
  - **Urgent need for local standards**

A look at OTT & IBB

- Significant study and standardization effort on loudness for streaming services by AES
- Multiple publications, from AES TD1004.1.15-10 in 2015 to AES71-2018
- ITU-R BS.2434 discusses loudness of broadcast-originated audio over Internet delivery
- More work needed
- Many challenges related to the OTT playback environment
  - Delivered to both living room and portable devices - widely varying audio capabilities
  - Playback environment severely compromised (outdoors, on public transport etc.)
  - Higher levels of playback to ensure intelligibility
  - Higher levels require careful handling of dynamic range to avoid clipping and distortion – generally, lower levels = less need for compression

Addressing the problem

- Establish local standards and practices in line with existing global references
- Ensure that loudness measurement follows ITU loudness metering specs for all content, and across all services
- Establish and publish loudness levels for production and playback for various delivery modes
  - -24 LKFS (USA, ARIB and others) and -23 LUFS (Europe) are the established reference points for broadcast content
  - For OTT & IBB delivery to fixed devices (similar to broadcast services) stay with broadcast levels – AES recommendation
  - For delivery to portable devices, higher levels with reduced dynamic range are required – levels of -16 dBFS have been recommended for broadcast-originated content.

Industry-wide initiative

- Needed across all services and content
  - Stop the loudness war – everyone on the same level
  - All stakeholders must agree on loudness level, and metering spec (ITU-R BS.1770)
  - Must specify and follow a standard based on global best practices
- Needs unified industry initiative (content producers, advertisers, operators etc.) to address the problem across all platforms, networks and services and enforce content standards
- All content acquisition & production specs (SD, HD, 4K) must be updated to a consistent loudness specification and enforced by platforms
- **Standards are a critical first step** - Needs active engagement from standards bodies and regulators to establish national standards
- In India BIS has initiated formulation of a loudness standard for broadcast; TRAI's participation would provide much needed impetus to this initiative.

Thank You