Extended Technical Metadata Acquisition and Usage

Technology Presentation

September 2025

VideoQ Productivity Tools and Media Ambit ™

VQPT is a suite of software modules
for advanced video processing workflow

videoq.com/vqpt.html

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1. VideoQ Philosophy of Extended Technical Metadata

1. Modern AI-based environment requires **fully automated modular tools** and a **smaller number of human operators** or **supervisors** should focus ***only*** on optional final checks and/or complicated cases.
2. And these operators must be equipped with appropriate **software tools and indicators** presenting all relevant parameters in a time-saving “easy to spot at a glance” way.
3. Automatically generated **E**xtended **T**echnical **M**etadata (ETM) and **Reports** are must be and must cover:

   *Video and audio level profiles, video spatial and temporal activities, integrated loudness, and other critical parameters, not only affecting the **AV content quality**, but also providing unique **signature data sets** suitable for **content identification** and **content processing optimization**.*

4. The VideoQ **VQPT** (**V**ideo**Q** **P**roductivity **T**ools) modules generate machine-readable JSON **Reports**, including **Timeline Profiles**, which can be used for fast and reliable **automated content identification** and **indexing** of large amount of media files. *See Appendix slides for real data derived examples*.

VideoQ tools handle various types of **files** and **streams**, on premises and in the cloud.

They use **ffmpeg** libraries and support all common **containers**, **codecs** and **protocols**,

such as: MP4, MOV, J2K, OGG, AC3, EAC3, AVC, HEVC, VP9, TCP, UDP, SRT, etc.

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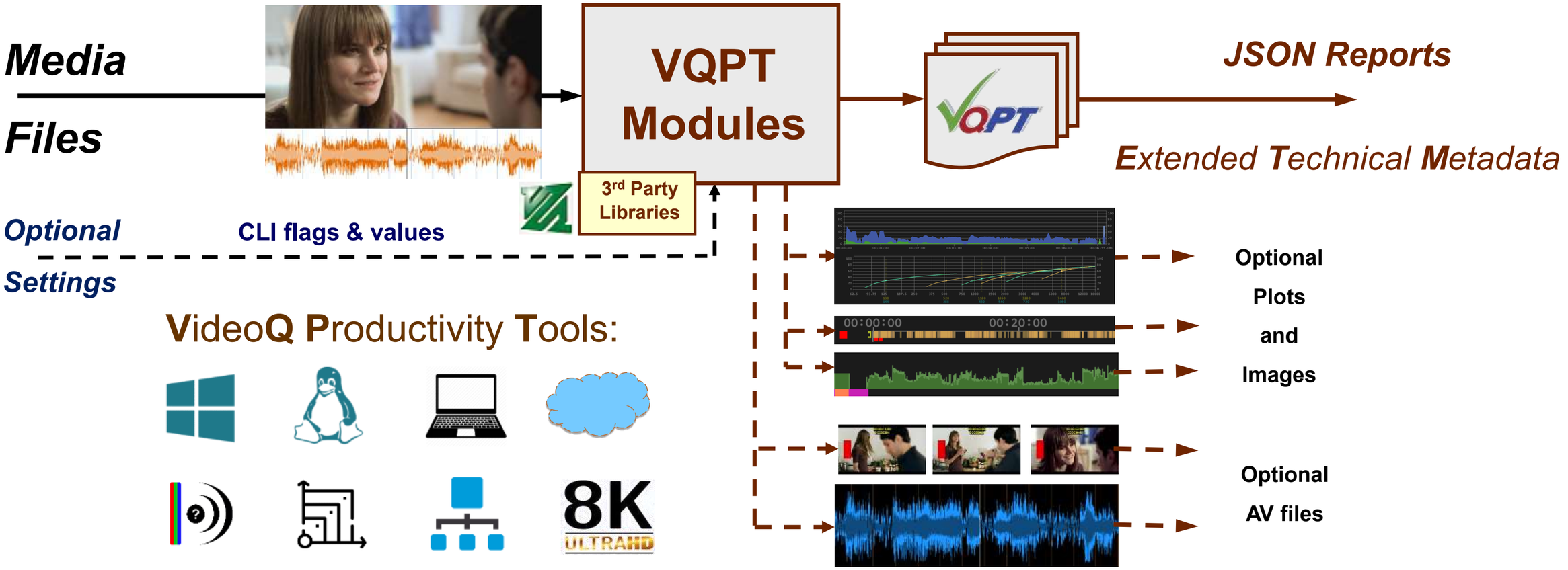
2. VideoQ Productivity Tools

VQPT is a suite of portable Windows/Linux CLI programs for on premises and cloud computing.

It can be used for production, post-production and distribution applications.

The program modules can be purchased and used separately or grouped for typical applications.



Learn more about **VQPT** suite:

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3. About Media Ambits

What it is:

- [*me·dia am·bit*] noun: Technical and semantic **metadata** about moving images, sounds, and timed text; **embedded** in files or **externally centralized**.
- Sentence example: Their system uses media ambits to automate ingest and delivery.
- Variations: Video Ambit, HDR Ambit, Audio Ambit, Timed Text Ambit, etc.

Ambit's Role for AI-based, Automated and Automation-Assisted Workflows:

- AI-based and robot-assisted human decision-making **tools**.
- Robots-learning-from-people (Machine Learning) **tools**.
- **Ambits repositories** and **machine services** optimized for automation, web services, and workflows.
- Automated and manual control of **optimized** video and audio processing/conversion
- Automated and manual **quality assurance** and **quality control** tools
- Measure, annotate and automatically **modify** files to match **target ambits**.
- **Notify** machines, people and dashboards in **automated workflows**.

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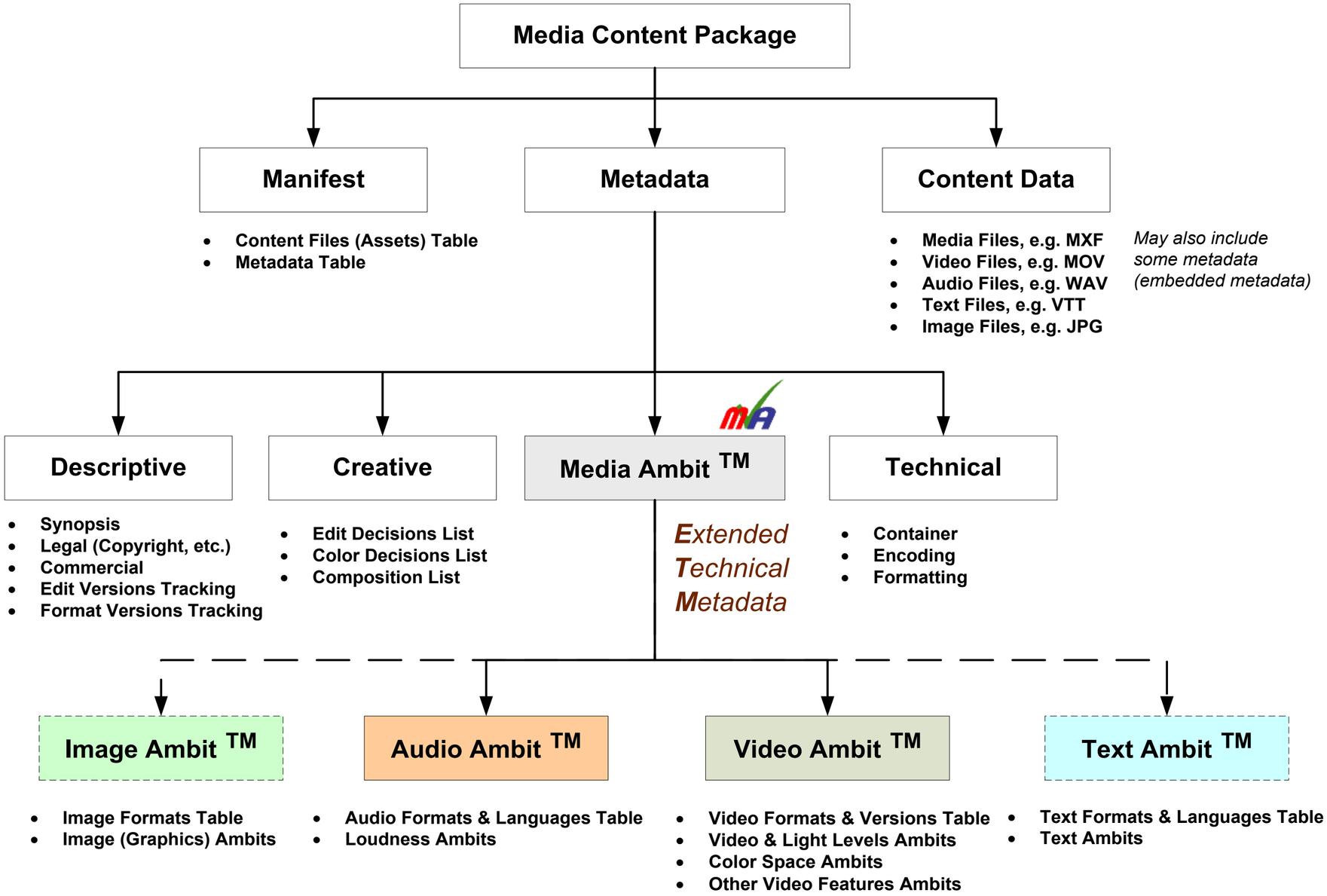
4. Media Ambit and Media Package Data Structure



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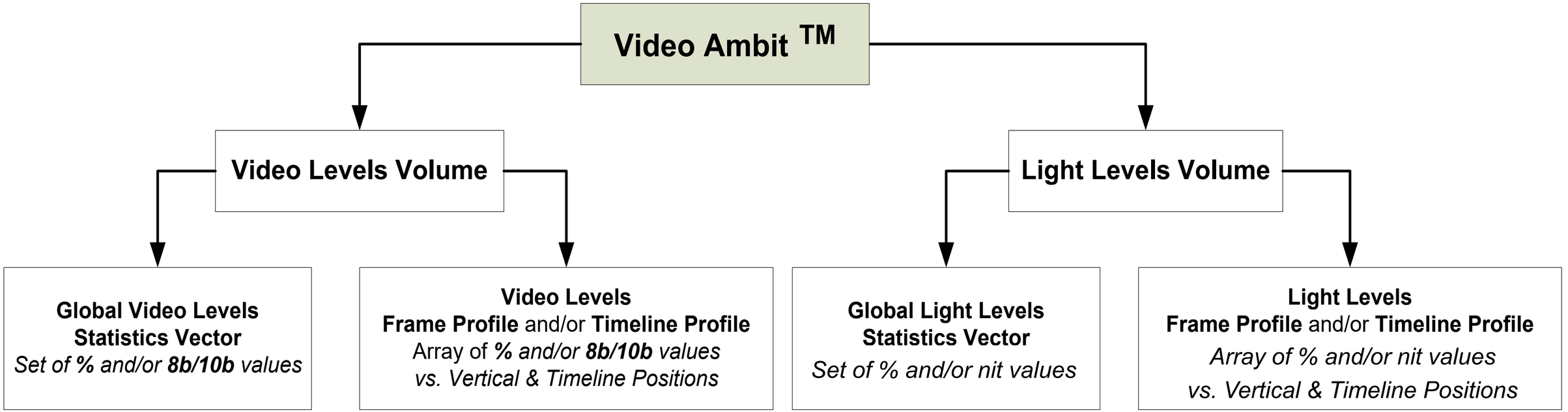
5. Video Ambit Data Structure Example



Video Levels in % are calculated by offsetting Video Levels by **Nominal Black** value and division by the specified **Nominal Range** of the corresponding **Channel**.

Model nit = **Video Levels** to **Light Level** Model output.
Standard Conversion Models: **SDR**, **HDR-PQ**, **HDR-HLG**

Examples of Video Ambit individual parameters:

- **F**rame **A**verage **L**ight **L**evel = **FALL**
- **FALL T**imeline **P**rofile = **FALLTLP**
- **G**lobal **M**ax **L**ight **L**evel = **GMLL**
- **F**rame **A**verage **Y L**evel = **FAYL**
- **L**ine **U**pper **M L**evel **F**rame **P**rofile = **LUMLFP**

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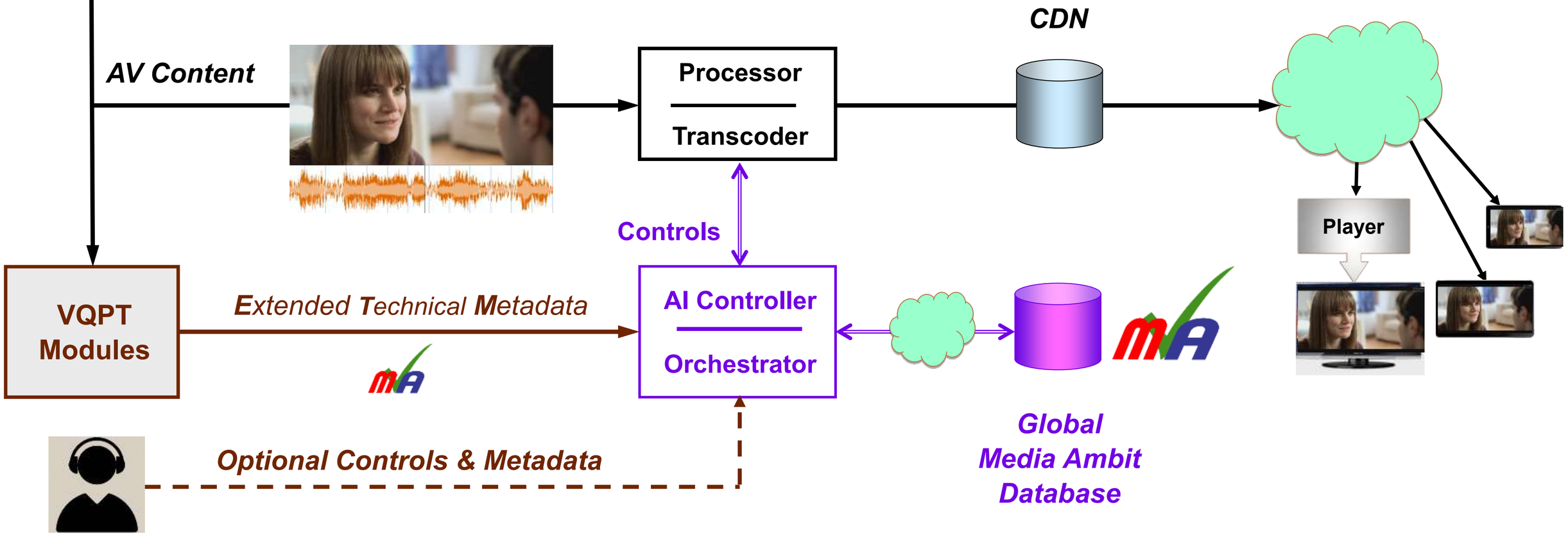
6. Extended Technical Metadata and AI-based Engines

- **Generative AI**
- **Studio**
- **Live Feed**

Extended **T**echnical **M**etadata facilitate AI-based metadata ***auto-tagging*** and content ***indexing***.
The **ETM** provide for faster and easier ***identification*** of content versions (see next slides for examples).
They also provide for the ***optimization*** of the AV content re-versioning, re-purposing, processing and delivery.
Storage of ETM together with other (technical and non-technical) metadata in **Global Media Ambit Database** significantly increases the **commercial value** of both the original and the processed content.



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7. About VideoQ

Customers & Partners

Company History

- Founded in 2005
- Formed by an Engineering Awards winning team sharing between them decades of global video technology.
- VideoQ is a renown player in calibration and benchmarking of Video Processors, Transcoders and Displays, providing tools and technologies instantly revealing artifacts, problems and deficiencies, thus raising the bar in productivity and video quality experience.
- VideoQ products and services cover all aspects of video processing and quality assurance - from visual picture quality estimation and quality control to fully automated processing, utilizing advanced VideoQ algorithms and robotic video quality analyzers, including latest UHD and HDR developments.

Operations

- Headquarters in CA, USA
- Software developers in Silicon Valley and worldwide
- Distributors and partners in several countries
- Sales & support offices in USA, UK

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A1. Appendix

More Info and Examples

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A2. VQPLA Picture Levels Analyzer

SDR file analyzed. **Well balanced full contrast video.** Plot below shows measured **FALL** and **CLL** Timeline Profiles.
VQPLA detected 92 sharp edit cut segments, very short Fade-In edit at start, and Fade-Out at the end.
Average Color is warm **reddish-yellowish Gray**, Floor LL = **0**, LL histogram is **spread over the valid range**.

Frame Average Light Level (FALL) **Frame Max Light Level (CLL)**

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A3. VQTSF Transcoding Segments Finder

File duration: 6min 55s. ***74 segments found***, segment durations from 0.64s to 25.2s.

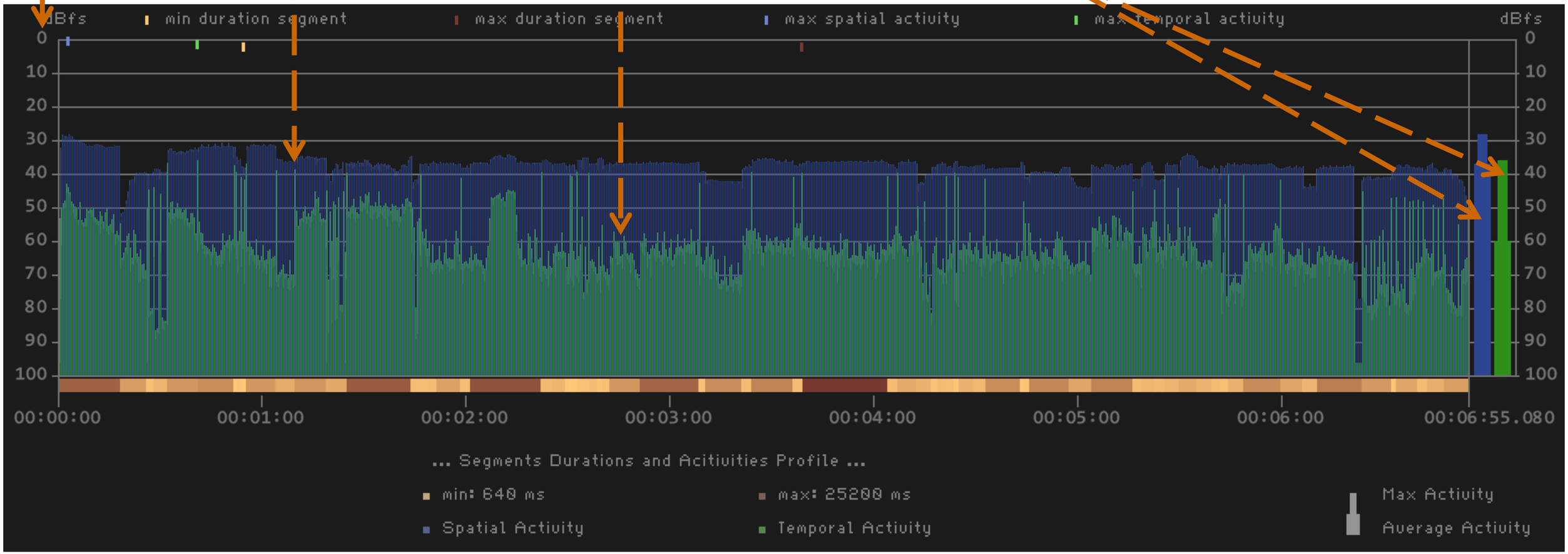
*Measured **Activity** profiles are of **medium** strength, so we can get relatively **good quality** at relatively **low bitrates**.*

Activity, %

Intra-frame Activity
(Static Details)

Inter-frame Activity
(Dynamic Details)

Activities Statistics Bargraphs



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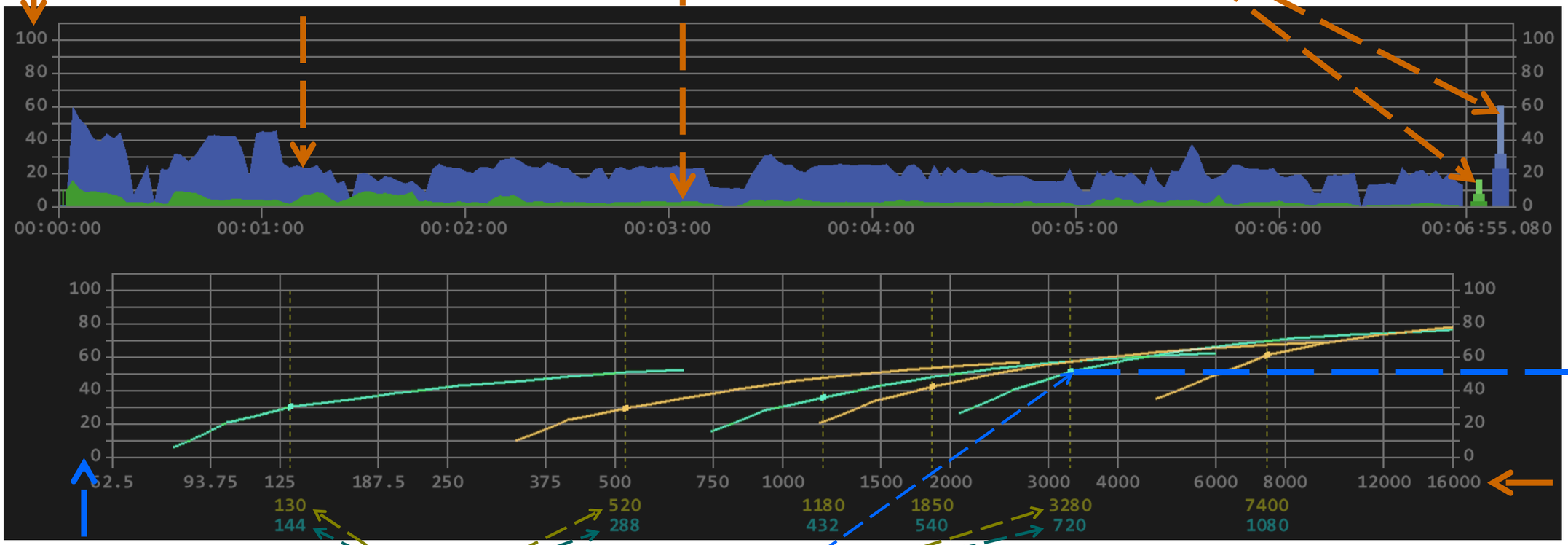
A4. VQBLA Bitrate Ladder Analyzer



Encoding with bitrates lower than critical results in compression artifacts, usually described as "Noticeable and annoying", bitrates above critical – as "Noticeable, but not annoying"

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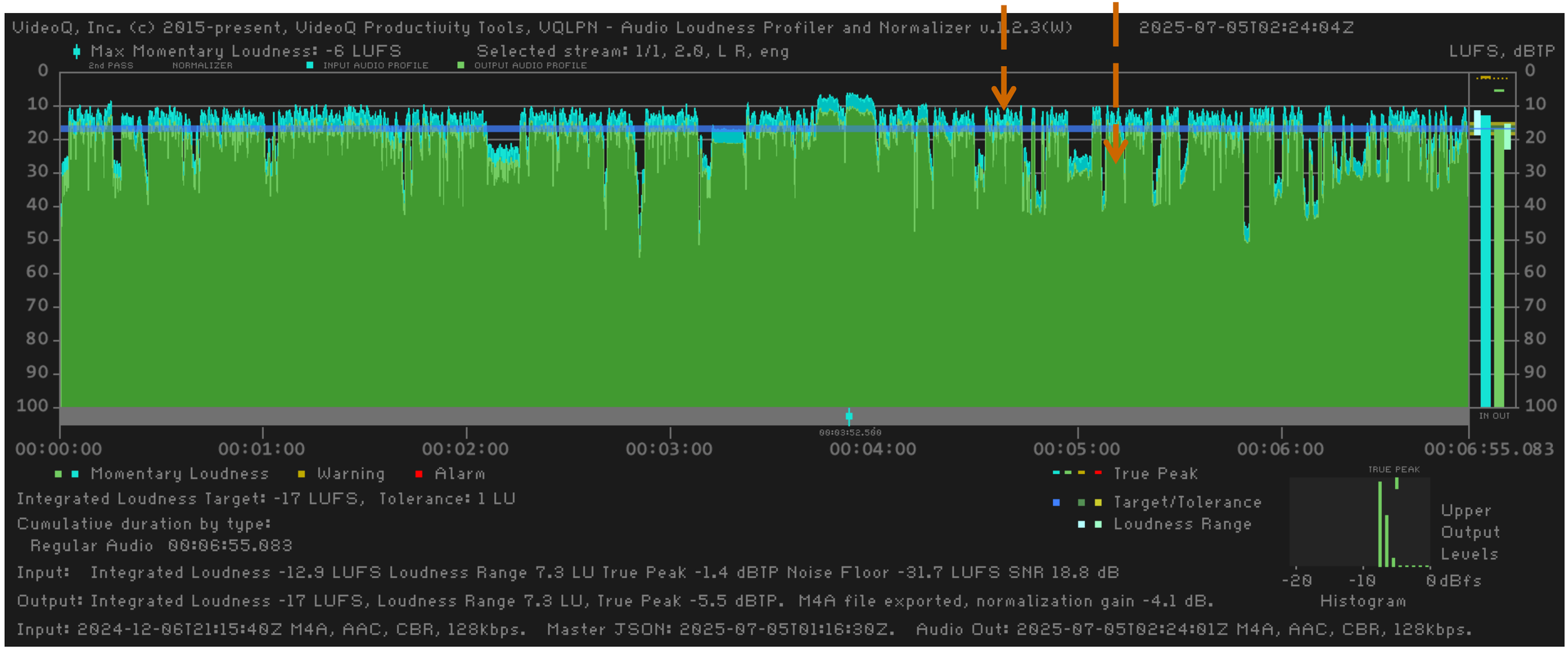
A5. VQLPN Loudness Profiler and Normalizer

- **Input Integrated Loudness** is **very high**: **IL** = **-12.9 LUFS** (*much higher than -17 LUFS target*), probably legacy content
- **Input True Peak** value is **relatively high: -1.7 dBTP**
- **Dual Mono** (L=R) stereo content detected, probably upconverted from mono original
- **Output Upper Levels Histogram** shows no **Clipping Distortions**.

Momentary Loudness (ML) Timeline Profiles: **Input** **Output**



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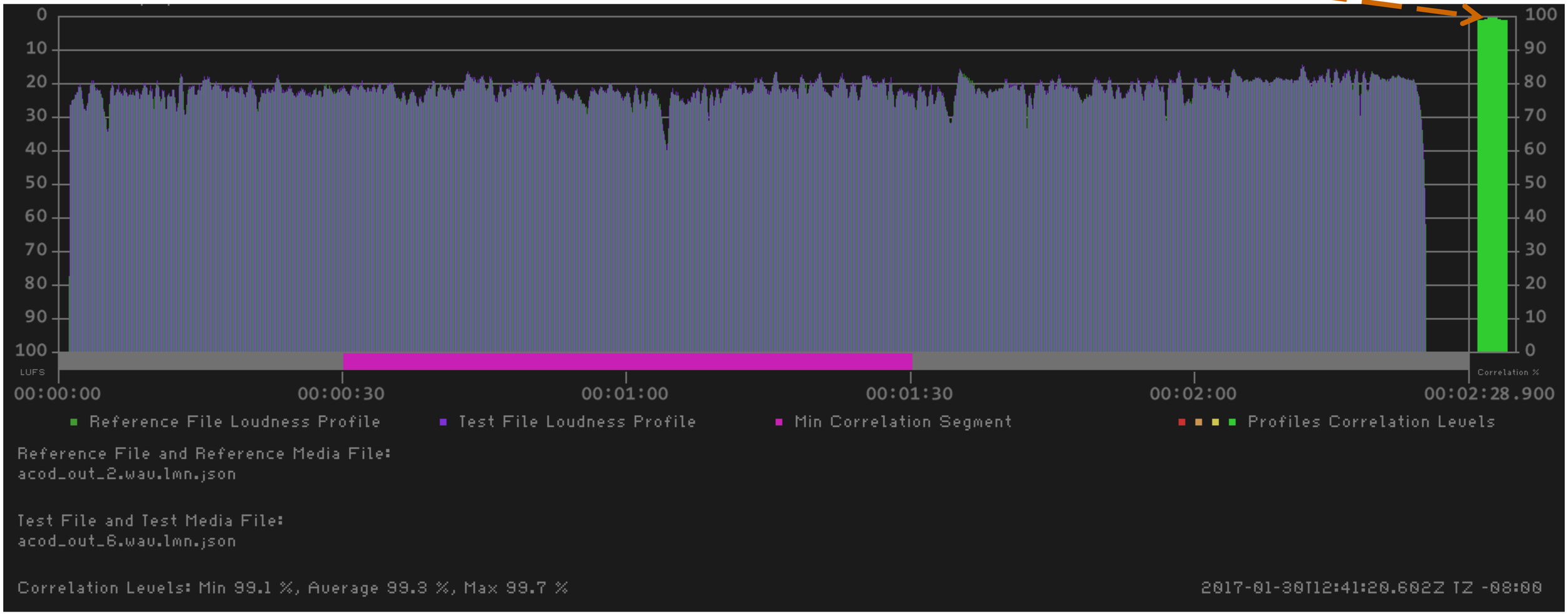
A6. VQLPC Loudness Profiles Correlator 1

Two inputs are two different versions (2.0 and 5.1) of the **same audio track**:
correlation is very high – about 100%



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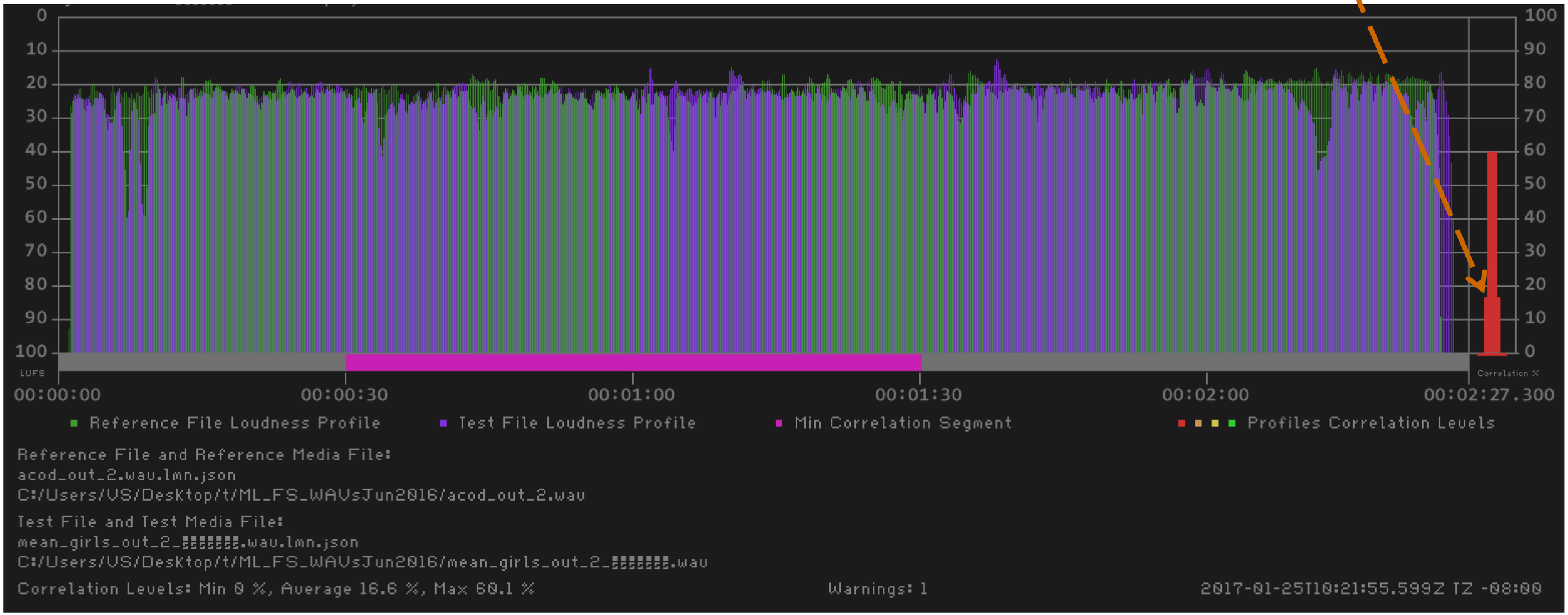
A7. VQLPC Loudness Profiles Correlator 2

Two inputs are in fact **two different audio tracks**
Loudness profiles and durations may look similar, but actual **average correlation value is very low**



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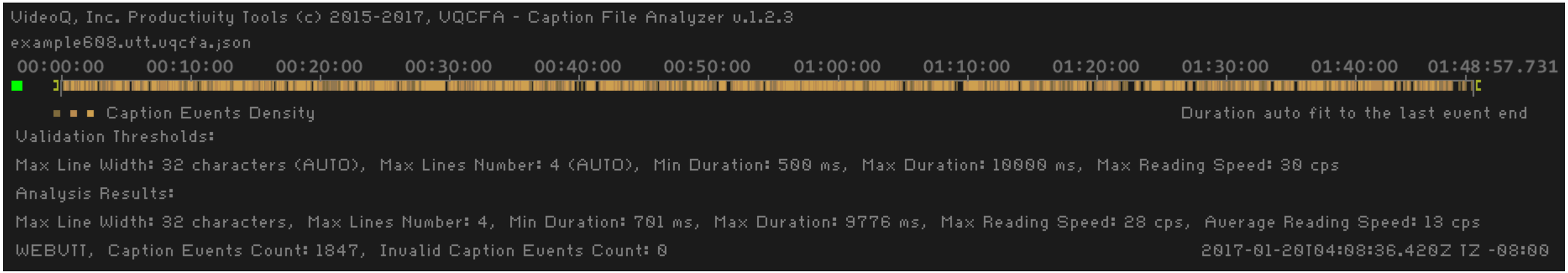
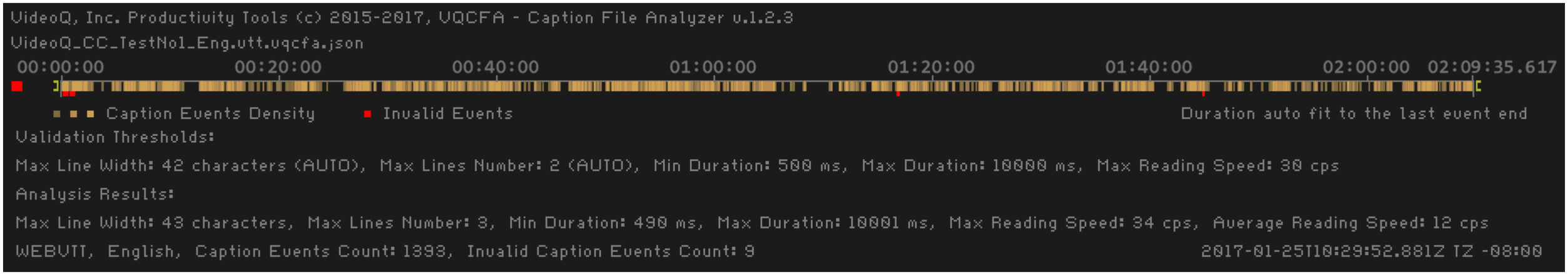
A8. VQCFA Captions Files Analyzer

Normal Caption Events – **No problems found**



Multiple Caption Events are **Out of Specs:**

Reading Speed, Min Duration, Max Duration,
Overlapping Events, Max Lines Number, Max Chars Per Line



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