VideoQ VQMP

QA/QC Media Player

Training Presentation

December 2024

www.videoq.com/vqmp.html   www.videoq.com

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*Click on **VQMP Logo***
in the upper-right corner
of any slide for this global
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1. General Info

1.1 VQMP Concept

- VideoQ **VQMP** is a real-time media player that can be used as a stand-alone QA/QC tool or it can work in close co-operation with VideoQ **VQV** player-analyzer

  http://www.videoq.com/vqmp.html   http://www.videoq.com/vqv.html

  VQMP via built-in server can exchange with VQV short command messages containing:

  - Full path to media file

  - Timeline position in s.ms format

- VQMP is using **MPV** core engine and some of MPV keybindings (shortcuts)

  https://mpv.io

- VQMP supports a large recent files list, internal and external playlists, multiple internal/external audio/subtitles tracks and timeline bookmarks

- It also features Advanced AV Monitor vitally important for QA/QC functionality

1.2 VQMP Features

- Real time media player combining minimalistic GUI (OSC = On-Screen Controller pop-up bar) with intuitive keyboard/mouse/overlay controls

- Powerful ffmpeg-based hardware-accelerated rendering and decoder that supports nearly all media formats, up to 8K UHD HDR/SDR

- Built-in HDR (PQ and HLG) to SDR conversion for easy HDR preview on SDR screen

- Multi-channel audio rendering engine, up to 7.1 surround sound

- Fast intuitive timeline navigation, including switchable messages and GoTo Manager

- Smart speed/scale/zoom/pan controls with info overlays

- Smart file opening, including configurable use of last-used timeline position and track controls

- Playlist Manager with editing controls

- Recent Files Manager with editing controls

- Smart video, audio and subtitle tracks selection

- Advanced AV Monitor overlays, various modes of operation

1.3 VQMP and VQV – Workflow Diagram

VQMP player compatible with VQV

Stream

Playlist

Media File
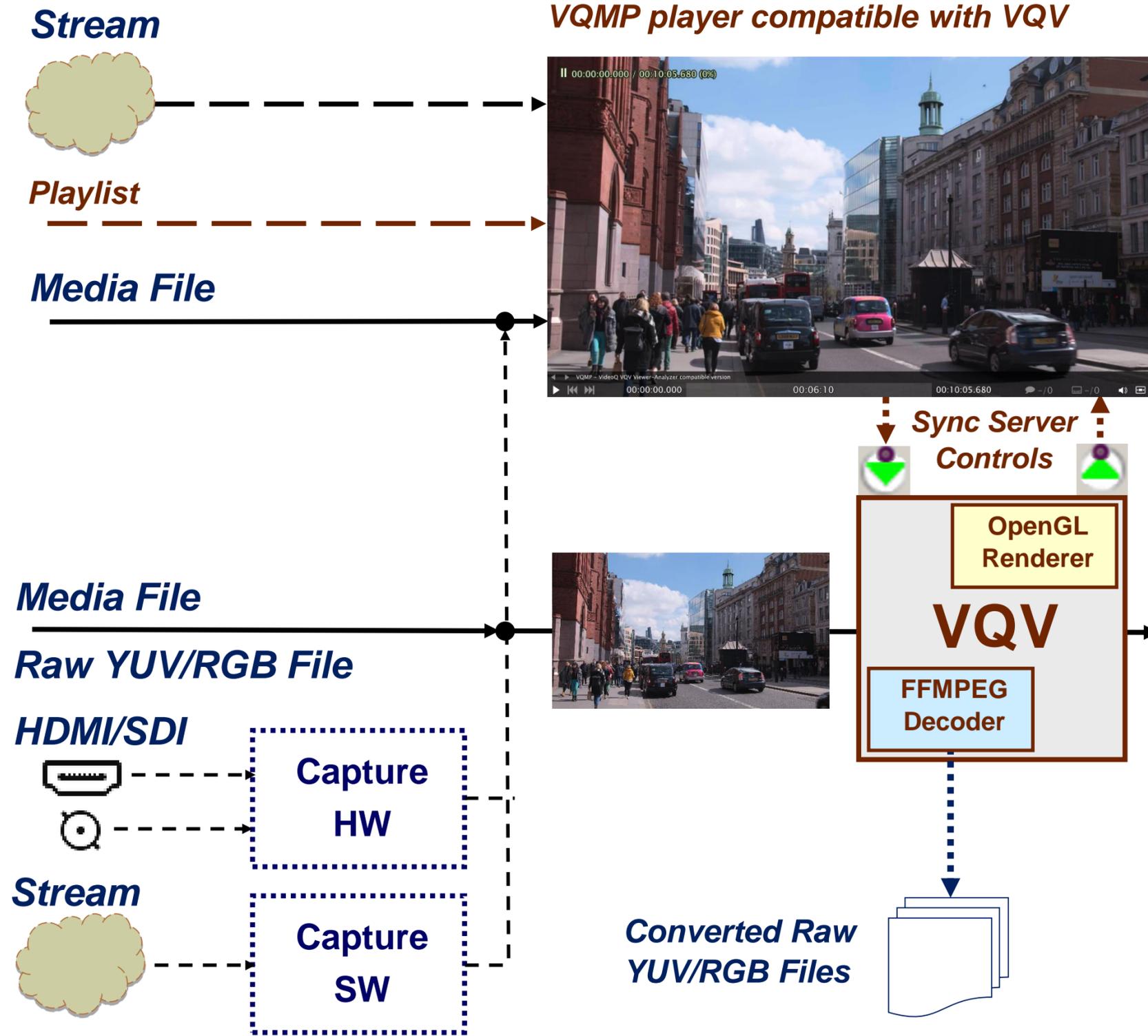
Real time video playout, up to 8K UHD HDR/SDR, multi-channel sound, AV Monitor overlays

A rendered image with the unique VQV readout and VQV filters/meters overlays

Media File

Raw YUV/RGB File

HDMI/SDI

Capture HW

Stream

Capture SW

Sync Server Controls

OpenGL Renderer

VQV

FFMPEG Decoder

Converted Raw YUV/RGB Files

FALL: 101.9 nt, CLL: 10000.0 nt. Press Space Bar to build Light Levels Statistics

File   Frame Size   Color Space   Zoom   Tools & Filters   Help

Metadata

MDMB: 1000 nt

0nt 0.1 1 10 20 50 100 200 500 1k 2k 5k 10knt

MaxFALL: 600 nt

Frame (F) LL nt ►   Average (FALL):   101.9 nt   Max (CLL):   10000 nt

MaxCLL: 1000 nt

nt   R   G   B   Y   U   V   %

+50.0

+37.5

0

-37.5

-50.0

AUTO:BT.2020

PQ_RAW   2160p25 1:4   B   BM#1   Matrix: BT.2020, Primaries: BT.2020   00:00:10.480 / 00:10:15.640   YUV420 10b   ☎ 000262 / 015391 F

UHD HDR10 sample video – courtesy of newsbyte.co.uk

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1.4 VQV and VQMP Synchronization

VQV is a **master control point**, launching **VQMP** player

(*and sync server running in the background*) as needed.

Video files can be opened in VQV and/or in VQMP, so there are

several cases:

- VQV and VQMP render **the same file**, *possibly at different*

  timeline positions.

- VQV and VQMP render **two different files**, *even of two*

  different types, e.g., video file by VQV, audio file by VQMP

In any case, VQV can exchange with VQMP short command

messages containing:

- Full path to media file

- Timeline position in s.ms format

Click on **VQV** button or use **Ctrl+ Up Arrow**

to send message **from VQV to VQMP**

.

Click on **VQV** button or use **Ctrl+ Down Arrow**

to request and receive message **from VQMP to VQV**

Idle VQV **launches** idle VQMP (*server initialization only*)

VQV **sends** to VQMP current file path and timeline position

VQV **requests and receives** from VQMP file path and timeline position
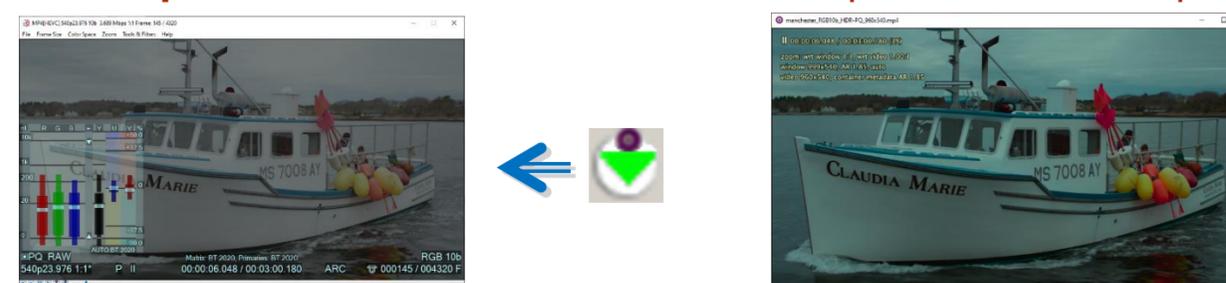
Special case: VQV **can not open audio** file, but VQMP **can**

1.5 CLI Parameters and Usage Info Helper

Click on Windows GUI **VQMP icon** or enter **VQMP** in Windows console without any **CLI parameters** to bring up **Short Guide** image (**Start Page**) showing **Main Shortcuts** (*see next slide*).

Launching VQMP executable with **–h flag**, brings up the following help message:

Usage:

VQMP [-h] [InFileName] [TimePosition_s]

Use VQMP **without optional components** to launch VQMP showing **Short Guide** (static image)

InFileName option: specify Full Path to the **media file** or **URL**

TimePosition_s option: specify timeline position in s.ms. Default: 0.0

VQMP.EXE must be co-sited with **VQMP_.EXE** and other files of **VQMP package**

Use **-h flag** option to display this help message in **Windows console**

---- Opening URL ----

If InFileName = **URL**, e.g. "**https**://z001-stream..." the VQMP **OSD** (On-screen Display) **timeline 0s** starts at the **batch launch**, which corresponds to a **random position** within the incoming **live stream**, thus [TimePosition_s] option *should not be used*.

---- Receiving AV stream over UDP or SRT protocol ----

VQMP can work with **explicit network address**: vqmp "**udp**://**192.168.0.47:32768**"

Alternatively, VQMP may receive AV data from "**localhost**" address: vqmp "**udp**://**localhost:32768**"

1.6 Start Page – Main Shortcuts Short Guide

Start Page

F1: Full list of controls

F1 - Help

Ctrl+o - Open File

Ctrl+u - Open URL

Ctrl+r - Recent Files

Ctrl+p - Playlist

F6 - Full Path

F7 - Title/FileName

F8 - Track List

F9 - Window Size & Zoom

MBTN_RIGHT , t - osd level

g - GoTo Manager

www.videoq.com

Shift+Up/Down, Shift+Mouse_Wheel - Window Size

Alt+Up/Down, Alt+Mouse_Wheel - Zoom

v, a, s - Video, Audio, Subtitles Track

Esc - AV Monitor Off

9/0, Ctrl+Mouse_Wheel - Volume

m, Alt+MBTN_MID - Mute

Alt+1,2,3,4 - AV Monitor Mode

Alt+0 - AV Monitor On

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2. Controls and Control Modules

2.1 Keybindings – Keyboard and Mouse Controls

- The default keybindings are included into the original mpv core engine.

- See https://mpv.io for full list of original built-in mpv keybindings.

- Some built-in **mpv keybindings** are **still in use** by VideoQ VQMP, some of them **disabled**, and some others **replaced** by VQMP keybindings.

- Majority of VQMP shortcuts use lower-case keys

- All upper-case keys mentioned below mean Shift+key.

- Dynamic keybindings are valid only while the related mode is active

- Press **F1** to open the VQMP keybindings list document in WordPad

- See next slides for the detailed description of VQMP controls and shortcuts

2.2 Opening Media File via Drag-And-Drop
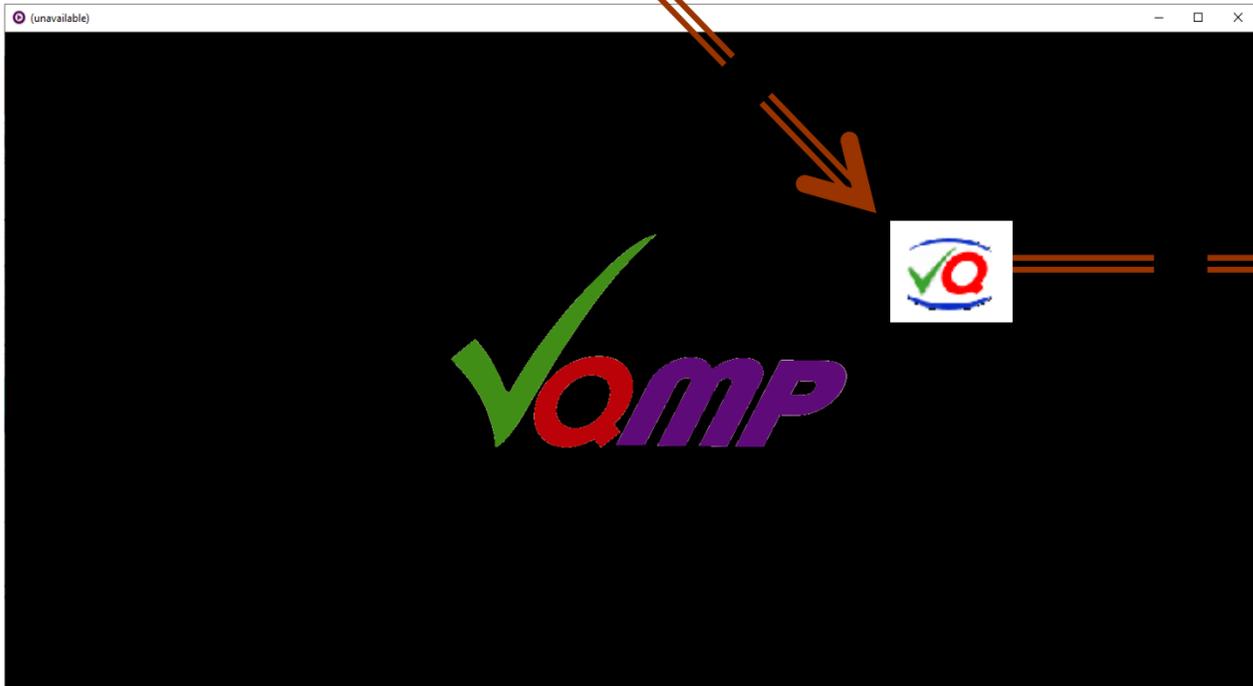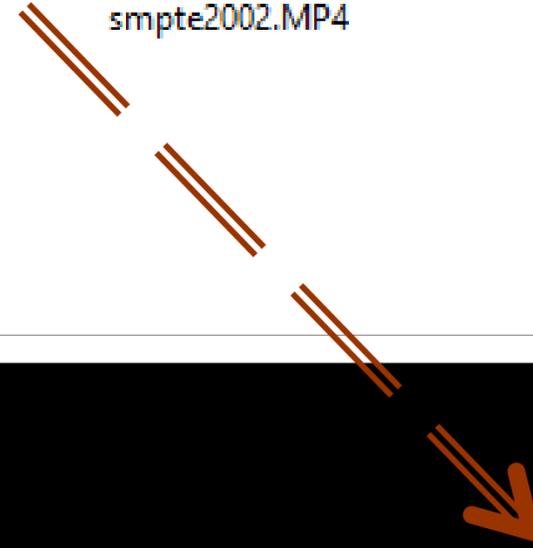
VQMP supports Windows OS **drag-and-drop** (quick & easy) procedure.

Note that if "quit-watch-later" option was not disabled on previous exit, the last-used timeline positions and other controls stored for this file will be auto-applied.

SDR sample video – courtesy of Kate McCartney & Kate McLennan, Australia

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2.3 File Manager Controls 1
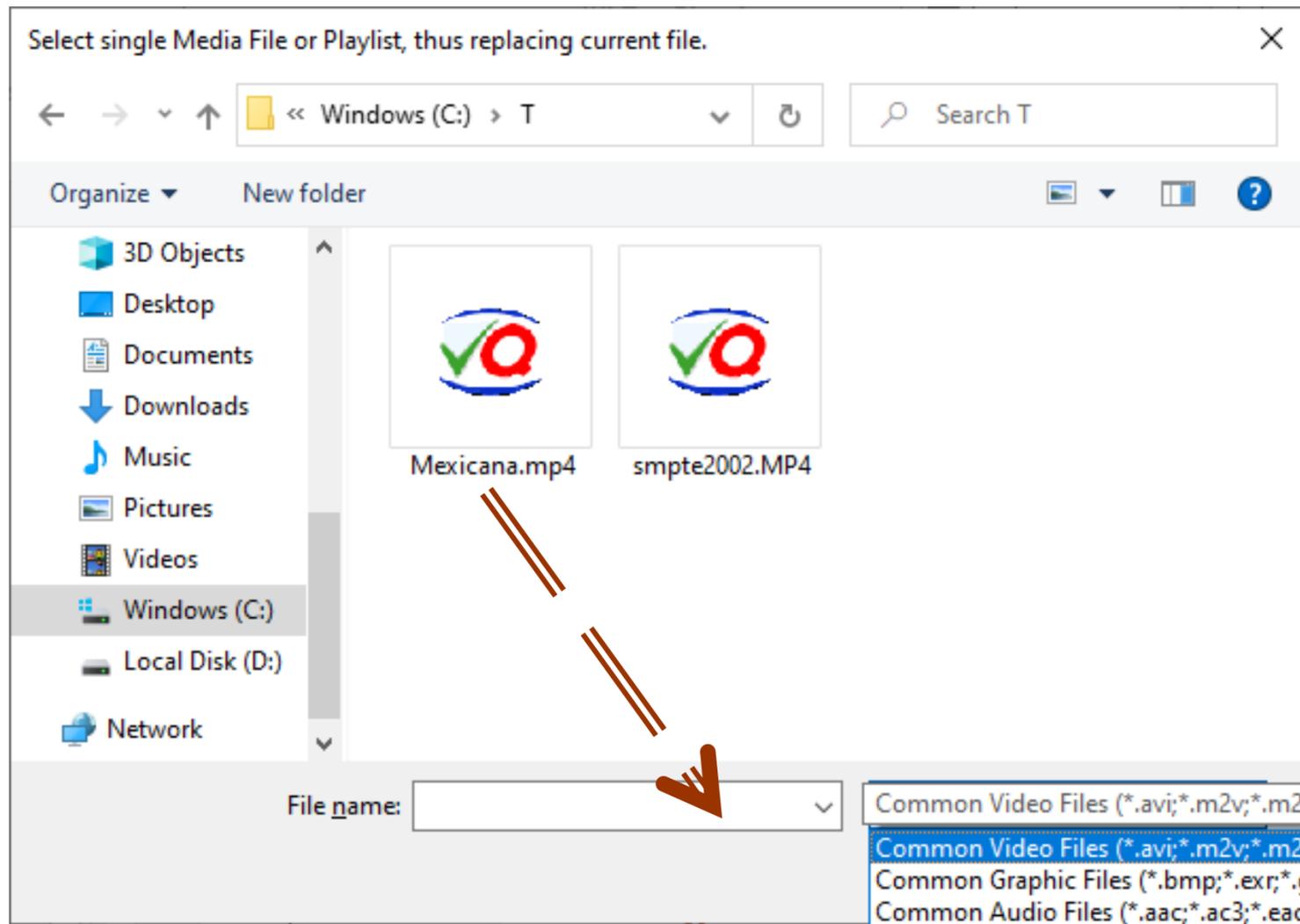
Ctrl+ o brings up standard File Open Dialog, the selected file or playlist will ***replace*** currently playing file or playlist.

New media file will be automatically included in **recent files list**. Also this operation will auto-reduce **internal playlist table** to just one item – new file.

Note that the upper-case "Ctrl+ O" should not be used.

SDR sample video – courtesy of Kate McCartney & Kate McLennan, Australia

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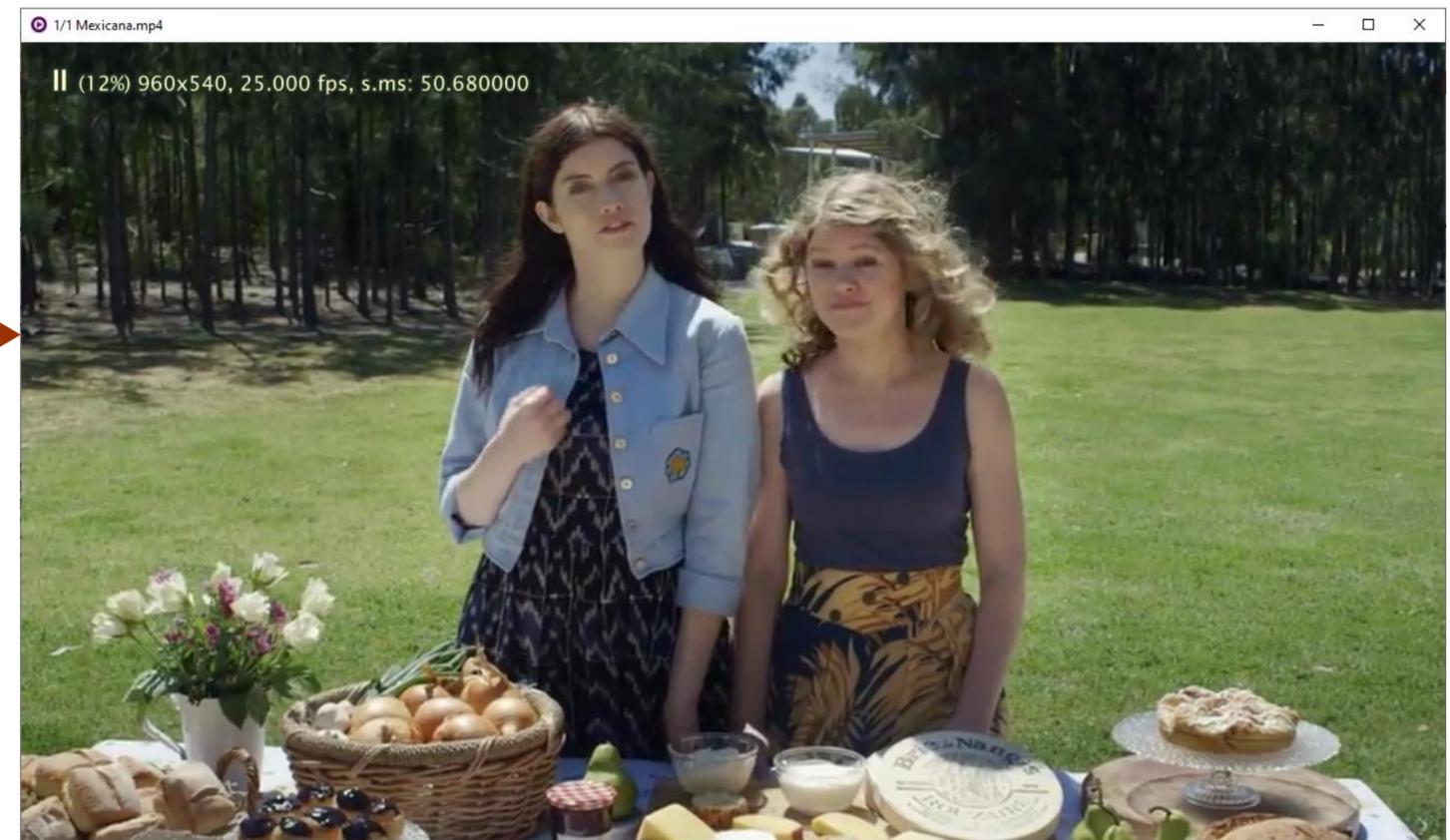
2.4 File Manager Controls 2
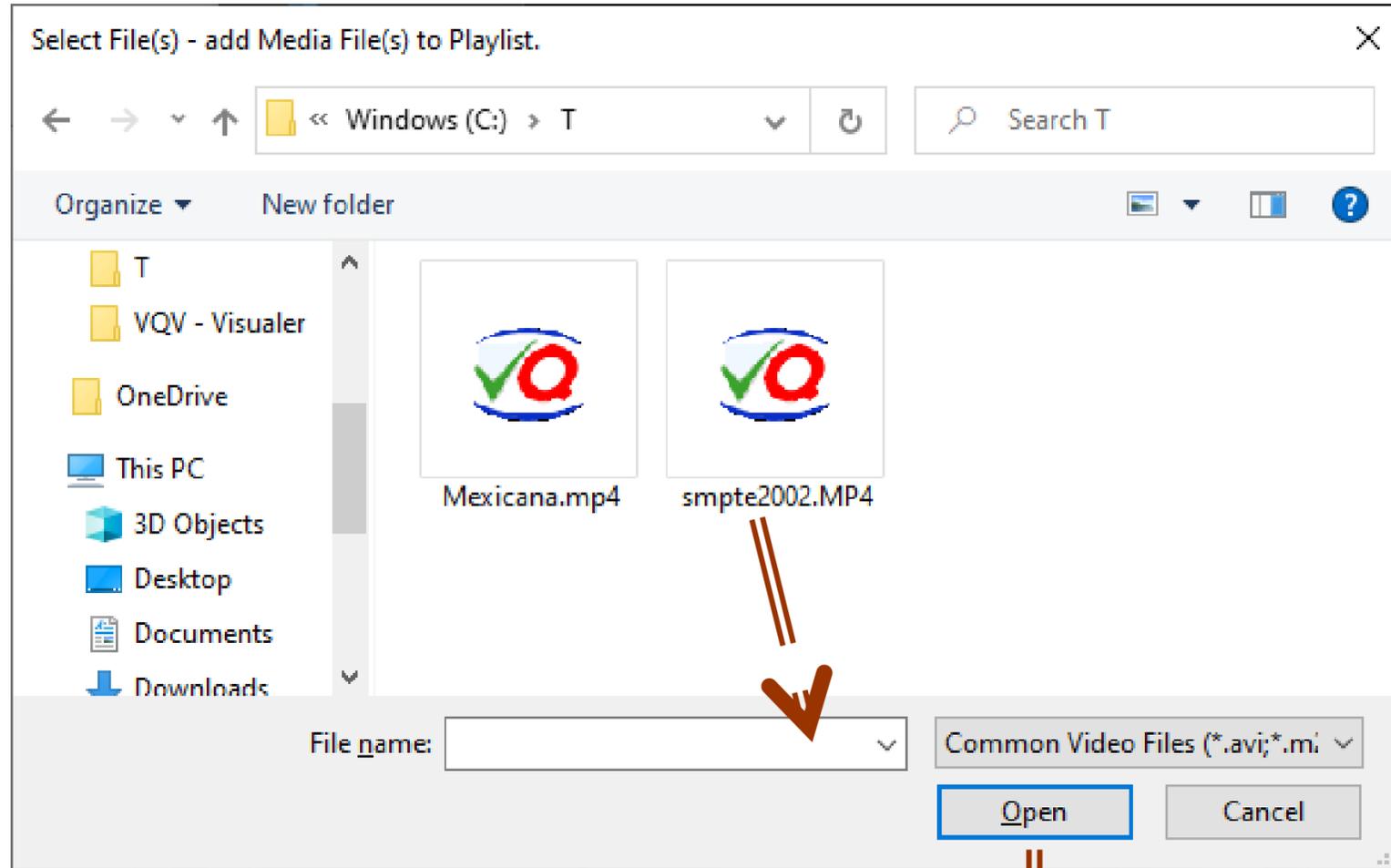
Ctrl+ a brings up Add File Dialog.
The selected "*smpte2002.MP4*" file will be **appended** to the **internal playlist table**.
Currently playing file will **continue to play**.

Note that the upper-case "Ctrl+ A" should not be used.

SDR sample video – courtesy of Kate McCartney & Kate McLennan, Australia
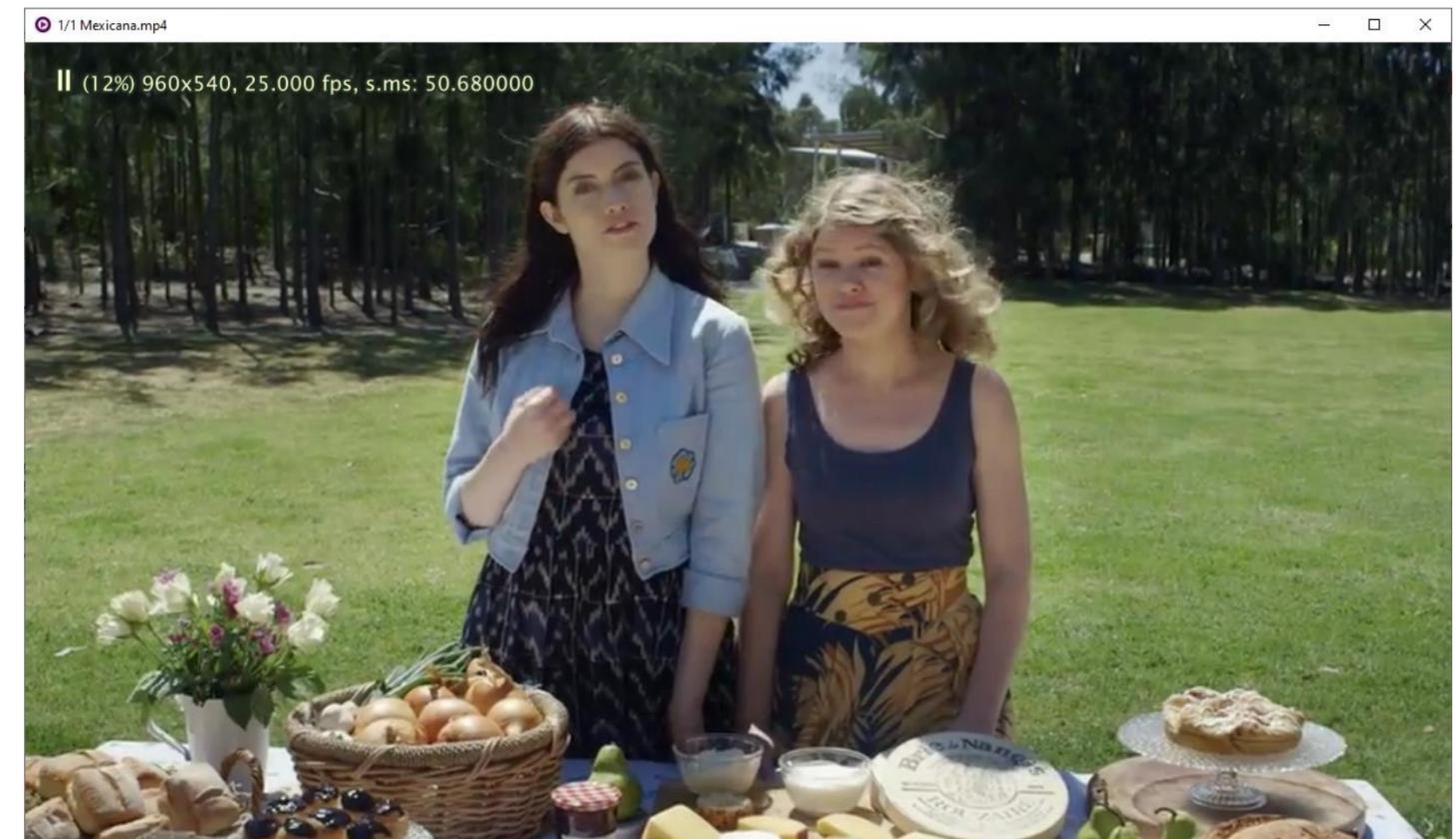
2.5 File Manager Controls 3
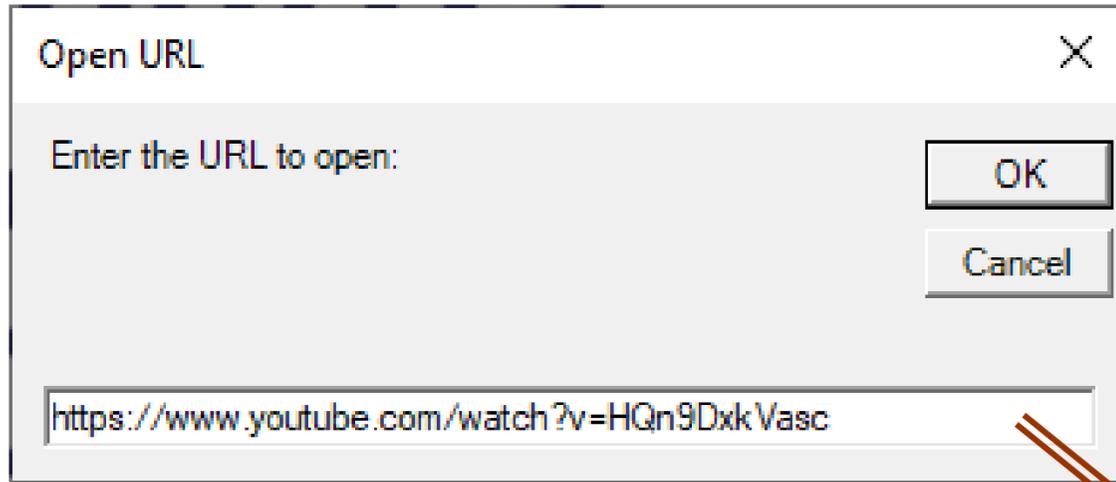
Ctrl+ u opens URL text edit box pop-up. Paste your URL into it.

Note that the upper-case "Ctrl+ U" should not be used.

Open URL

Enter the URL to open:

OK

Cancel

https://www.youtube.com/watch?v=HQn9DxkVasc

1/1 VideoQ VS10 HDR Flavors & Inconvenient Truth

https://www.youtube.com/watch?v=HQn9DxkVasc

Victor Steinberg,
Roderick Snell

Video Standards

Signals, Formats and Interfaces

Part 10

HDR Video Flavors & Inconvenient Truth

www.videoq.com

Alt+ a opens **Add Subtitles File** dialog, the selected file will be **appended** to the **internal subtitles list table**.
Currently playing file will continue to play.

2.6 Classic Playout Controls

Use **Space** or **p** or **Mouse Middle Button** or ▶ symbol of OSC (On-Screen Controller pop-up bar) to toggle pause/play.
Use **q** or **Q** to quit and watch later: save timeline position and quit.

OSD (On-Screen Display) info message showing current **timeline position**, **duration** and **relative position** percentage.

Currently playing file name

Play/pause symbol

Previous/Next Chapter

Previous/Next file of the Playlist

Play/Pause
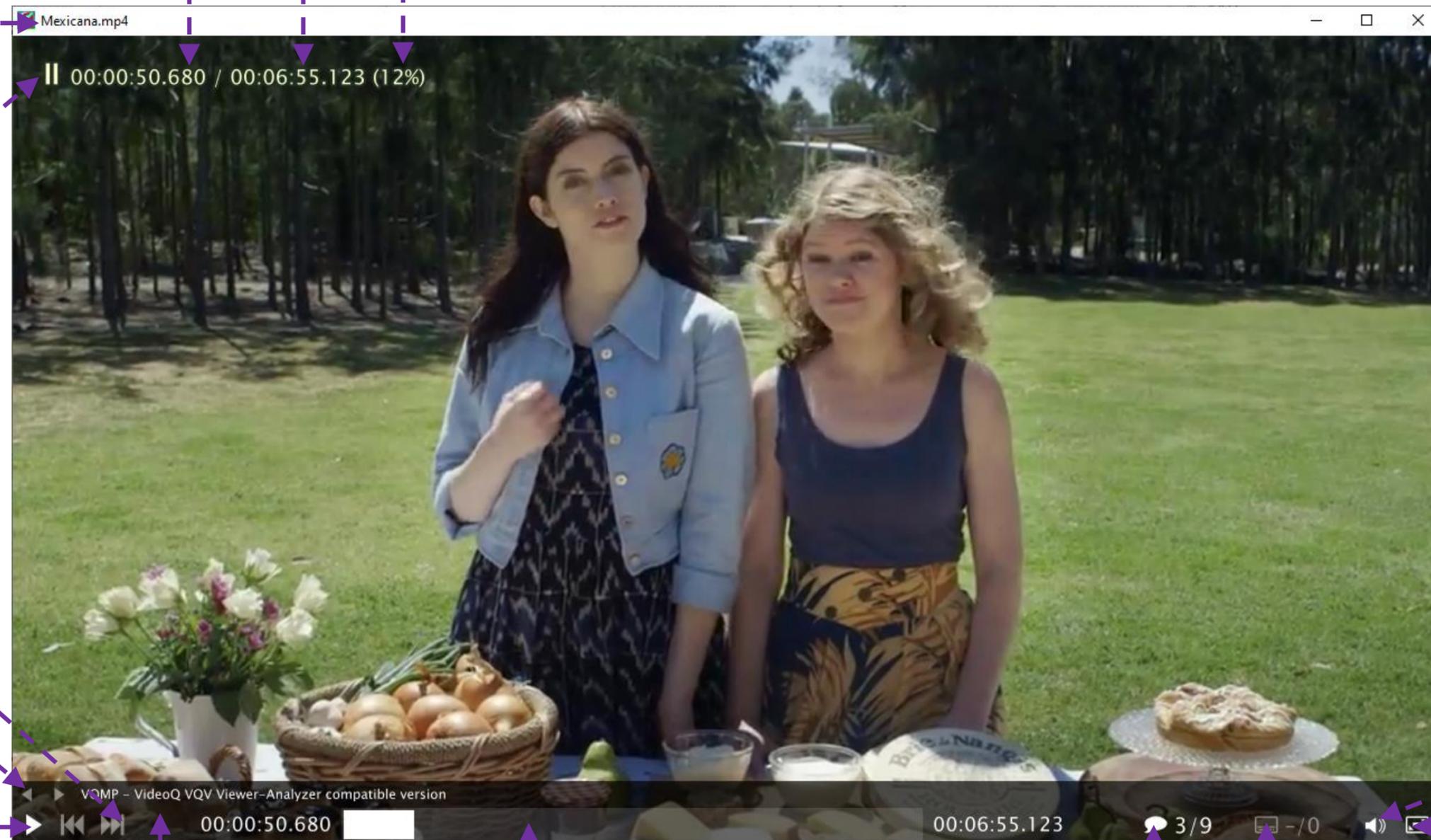
Mute Control

Fullscreen Mode ON/OFF

OSC (On-Screen Controller pop-up bar).

Timeline Slider

Audio Tracks Control

Subtitle Tracks Control

Mexicana.mp4

00:00:50.680 / 00:06:55.123 (12%)

VQMP – VideoQ VQV Viewer–Analyzer compatible version

00:00:50.680

00:06:55.123   3/9   – /0

2.7 Recent Files Manager

Ctrl+ r toggles the **Recent Files List** overlay ON/OFF.

List size is unlimited, but the list is subdivided into pages, showing no more than 10 items at a time.

 Use **Enter, Mouse Left Button** or digits **1** - **9**, or **0** to select the file from the list.

Use **Up/Down Arrows** or **Mouse Wheel** to scroll the list, one item at a time.

Use **PageUp/PageDown** to scroll the list, one page (10 items) at a time.

Del deletes item from the list, **Esc** switches list display OFF.
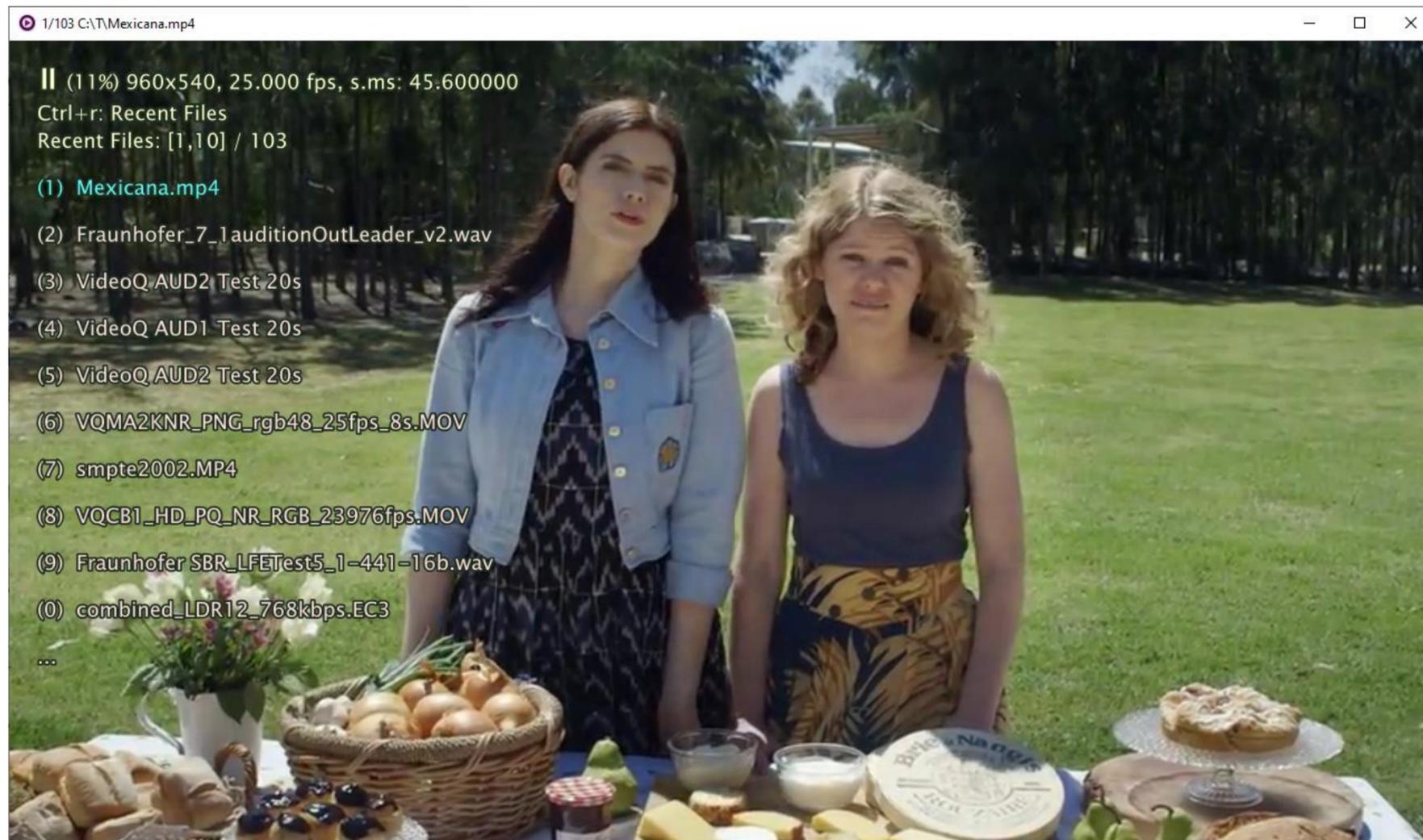
Note that Recent Files Manager and Playlist Manager are mutually exclusive.

*Thus, if **Playlist Files Manager** was used, then launch of **Recent Files Manager** will auto-reduce playlist to just one item - currently playing file.*

Ctrl+ p brings up the **Playlist** overlay. List size is unlimited, but the displayed section is limited by VQMP window size.

See next two slides for item selection types, playlist navigation, modification and saving options.
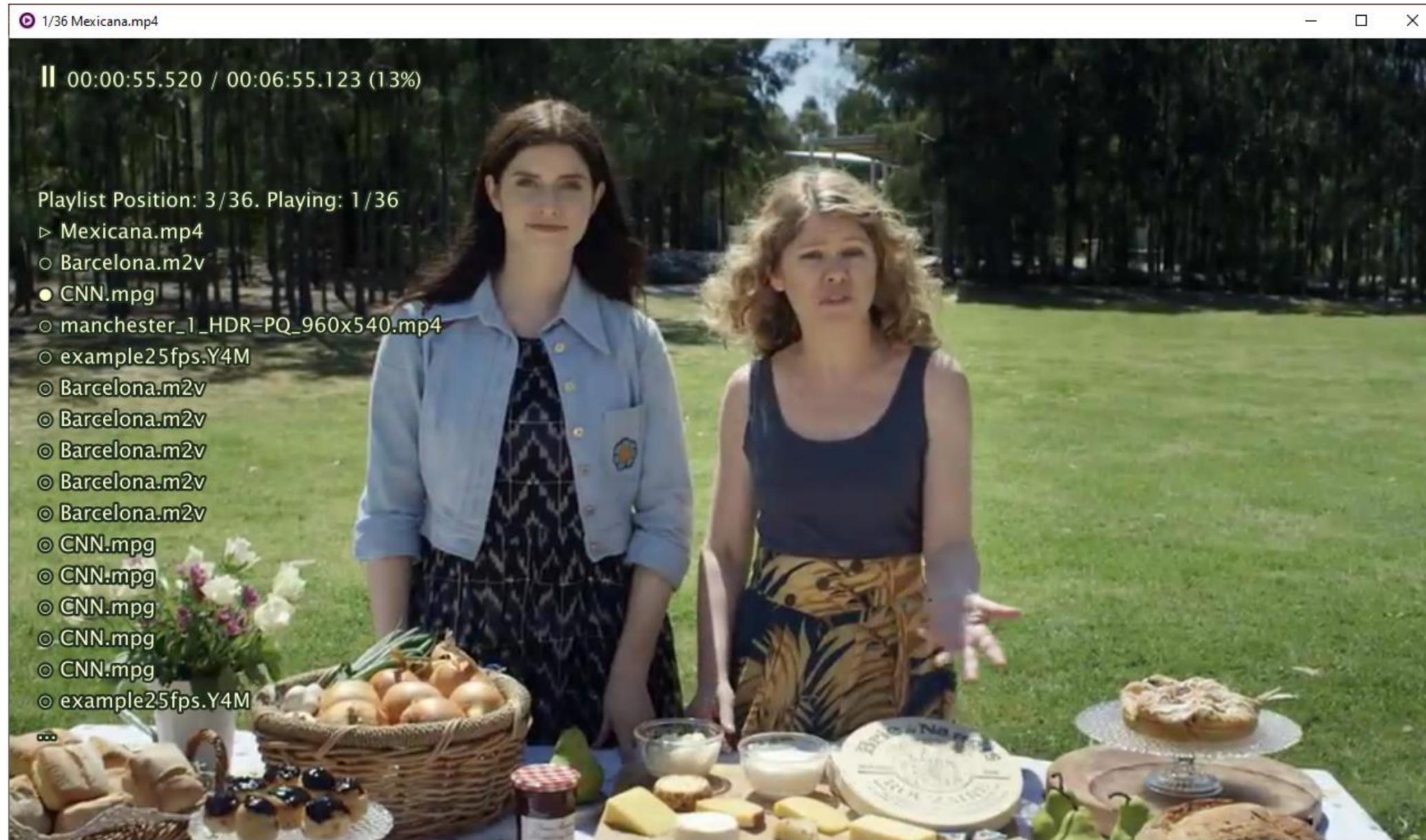
Note that Recent Files Manager and Playlist Manager are mutually exclusive.

*Thus, if **Playlist Files Manager** was used, then launch of **Recent Files Manager** will auto-reduce playlist to just one item - currently playing file.*

You can select multiple media files in the Explorer and drag-and-drop them. In such case new playlist will be created, thus replacing the current list.

In absence of user actions, playlist display will auto-hide after the preconfigured OSD delay, e.g. 4000ms.

2.9 Playlist Manager 2

If **URL media titles** are available, they are shown as **playlist items**, otherwise **file names** or **URLs** are displayed.

While the playlist is **displayed**, the following **selection** and **modification** controls are active:

Up/Down Arrows or **Mouse Wheel**:

  - <u>if no item selected</u>: scroll the list -- move the cursor up/down with wrap-around at the list end

  - <u>for the selected item</u>: move its position in the list with wrap-around at the list end

Left/Right Arrows or **Mouse Right Button** modify the **selection type** and list's bullet point **shape**:

○ – default (any item, except the selected or playing item)

● – hovered item (the item that can be played or selected)

➜ – the selected item

▷ – item is currently playing, but not hovered, nor selected

▶ – the hovered item is currently playing

➤ – the selected file is currently playing

Enter or click **Mouse Left Button**: auto-select and play the item at the current cursor position

Del – deletes the **hovered** item from the list (selected or not selected).

2.10 Playlist Manager 3

If playlist count > 1, then the following dynamic keybindings are active:

*High-lighted top row arrow symbols within the OSC Bar indicate the **playlist count > 1**, i.e. **Playlist Mode ON**.*

Enter   plays next item in the playlist

Playlist mode **ON**

< or **Ctrl+ ,**   plays previous item in the playlist

> or **Ctrl+ .**   plays next item in the playlist

Playlist mode **OFF**

Ctrl+ P saves playlist in **.m3u** UTF-8 format.

Saved **playlist file name** is created **automatically** (*no file name edit dialog*);

saving **location** is **fixed** (pre-defined folder): " **.\playlists** "; saved file can be renamed, copied or moved for further use.

Ctrl+ Backspace clears the playlist, except the currently playing file, i.e. playlist is **reduced** to the **currently playing item**.

Ctrl+ Del deletes playlist table **completely** and forces VQMP engine to display **start page**:

2.11 Playlist Manager 4

Ctrl+ l *(lower-case "L" key)* auto-updates or creates the **internal playlist table**, which can be saved later.

*VQMP will search the folder containing the **currently playing file** and append **all files** of **all supported formats** to the **playlist**.*

Besides regular playlist mode there is a special "**Playlist Scan Mode**".
By default it is ON.
In this mode each file is opened for just **12 seconds**, **AV Monitor** and **text messages** show its video and audio parameters.
This mode is handy for fast preview of large number of media files.

For example, to preview **all files in the folder** press **Ctrl+ l** (to create temporary volatile playlist), playout starts automatically.
At any moment press **Ctrl+ Backspace** to delete the temporary playlist and start detailed analysis of currently playing file.

Alt+ v   switch Playlist Scan Mode ON
Ctrl+ v   switch Playlist Scan Mode OFF

PlayList Mode Fast Scan Preview ON

PlayList Mode Fast Scan Preview OFF

PlayList Mode ON
Fast Scan Preview OFF

PlayList Mode ON
Fast Scan Preview ON

> (2%) 1920x1080, 25.000 fps, s.ms: 7.800000
13/25 C:\VQMA Demo Files\VQV_DEMO\MexicanaFestiana_S1_E1.mov

.mov Video 1/1: 1920x1080, 25.000 fps, prores, SDR, NR, yuv422p10, bt.709
.mov, Audio 1/1: pcm_s16le, stereo, s16, 48.00 kHz

Playlist Scan – 12s File Preview
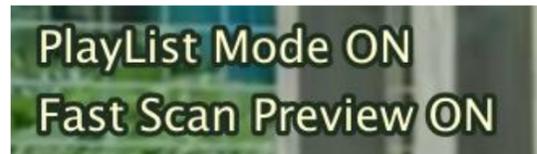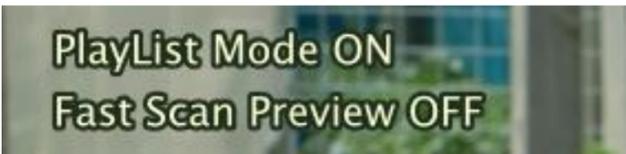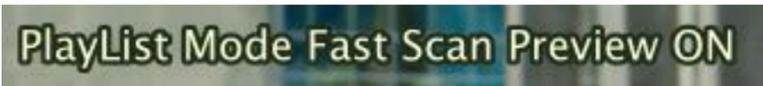
2.12 Timeline Navigation Controls 1

There are several ways to control the timeline position.

General Timeline Navigation Controls:

To pause and seek the desired **relative** position use the following shortcuts:

- **.** (*dot*) or **,** *(comma)* or **Mouse Wheel**   +/-   1 frame

- **TAB**   +/-   1s

- **Ctrl+ TAB**   +/-   10s

- **PageUp/PageDown**   +/-   60s (1m)

- **Shift+ PageUp/PageDown**   +/- 600s (10m)

Alternatively, use the **slider strip** within the **OSC Bar** (*Note that clicking/dragging this slider does not force pause*).

In pause mode dragging the slider bar provides for fast preview of the visual content with on-the-fly timecode display.

*Note that the OSC Bar slider **precision** is limited to a few seconds; it is not enough for long duration file QA/QC purposes.*

Press **O** to cycle OSC Bar **visibility**: "auto" (default), "always", "never".

In auto-visibility mode OSC appears when mouse is in the bottom 25% of the video image.

| ◄ ► | VQMP – VideoQ VQV Viewer–Analyzer compatible version |
| ▶ ◄◄ ►►| 00:24:39.603 | 01:26:39 | 01:58:17.674 |
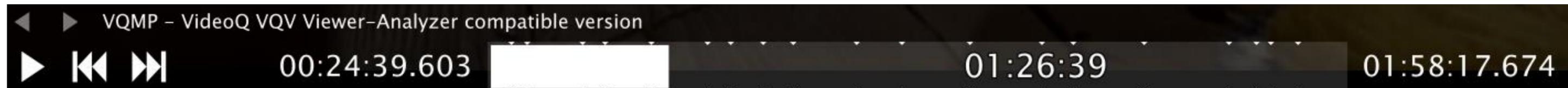
2.13 Timeline Navigation Controls 2

Loop Controls:

l *(lower-case "L" key)* Set/clear **A-B Loop** points: 'Set A', 'Set B (AB Loop Mode active)', 'Clear A&B'

L Toggle **File Loop** playout mode: "**inf**" (default, except the playlist mode) or "**no**"

Note that in regular playlist mode selecting "inf" prevents jumping to next playlist file after previous file ends.

Chapter Navigation Controls:

Ctrl+ PageUp/PageDown Next / previous chapter
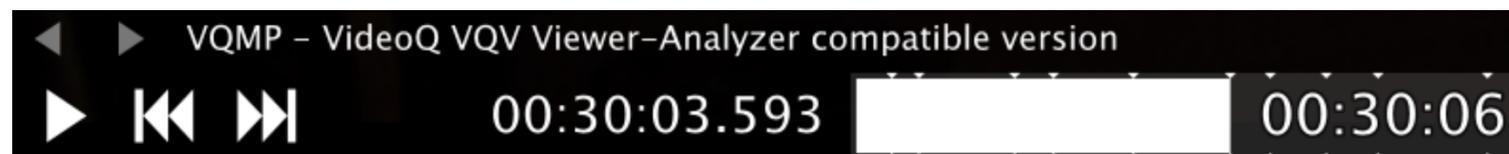
*Click on double-arrow symbol within the OSC Bar to see chapter list overlay. If currently playing file **metadata** include **chapter list**, then these symbols are **activated** (highlighted) and chapter markers (small white triangles) added to the slider bar.*

Bookmark Manager Controls:

User can store and recall up to 4 **permanent bookmarks** (store, see and recall **file path** and **timeline position**).

Ctrl+ 1,2,3,4   Set (store) bookmark #1,#2,#3,#4

Ctrl+Alt+ 1,2,3,4   Recall (load) bookmark #1,#2,#3,#4

Ctrl+Alt+0   Peek (preview) all 4 bookmarks: #1,#2,#3,#4

Peek here means display the media title/filename/URL and seek position saved in the bookmark slot.

Ctrl+Shift+ Backspace Set one **"revert-seek" mark**

*This is the **single volatile bookmark**, i.e. the timeline position for revert-seek, valid only for the currently playing file.*

Shift+ Backspace Toggle between the "revert-seek" marked position and last used timeline position.

2.14 GoTo Manager Controls

g Toggle editable 'GoTo' **timecode string** overlay
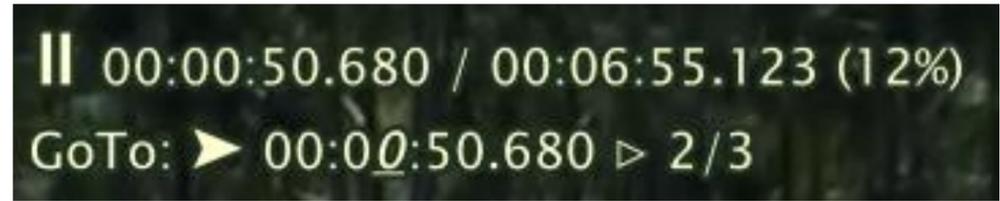
b Store **current timeline position** as GoTo record (volatile bookmark)
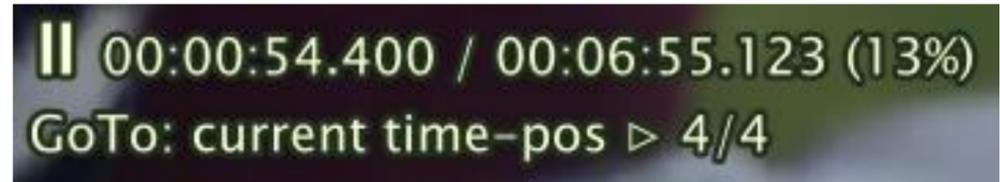
GoTo Manager dynamic keybindings:

Left/Right Arrows   Move to previous/next digit position (<u>*underline*</u> <u>*italic*</u>)

0 - 9   Enter current digit and move right to next digit

Backspace   Clear current digit (set 0), then go left to previous digit

Up/Down Arrows   Scroll through the **GoTo history**, numbers after ▶ symbol show **current record / record count**

Esc   Cancel current timecode string editing and remove the overlay

Enter   Seek to the displayed **absolute** timeline position ▶

*GoTo Manager **history list** size is practically unlimited, and it can be used for setting up very handy **editable volatile***

***bookmarks,** valid across multiple media files, e.g. Recent Files, but they are valid only whilst the VQMP instance is running.*

2.15 Window Controls

General Window Controls:

f or **Mouse Double Click**	Toggle full screen mode ON/OFF
Esc	Switch full screen mode OFF
T	Toggle VQMP window staying on top of other windows, default value is "no"
Ctrl+ N	Create new VQMP instance with empty playlist (start page)
Ctrl+ R	Re-open (close and open the same file)
Ctrl+ A	Cycle the rendered video **aspect ratios**: "16:9", "1.85", "2.0", "2.2", "2.35", "2.39", "4:3", "-1", "no"

"-1" means the container/stream metadata aspect ratio, i.e. "auto mode",
"no" means that aspect ratio defaults to unscaled video width/height, i.e. "square pixels mode".

Ctrl+Alt+ a   Toggle the aspect ratio **metadata source**: **container/stream**

Window Size Controls:

*Except full screen mode, **active video image always fits the VQMP window boundaries**, thus window size controls indirectly change **window scaling** and **zoom factor** with reference to the **original video frame size**.*

Shift+ Up/Down Arrows   Enlarge/shrink VQMP window (you can also use **Shift+ Mouse Wheel**)
F9   Brings up text message overlay showing window size, video size, and zoom values
Max window size is limited by screen size, min window height = 480 pixels.

```
zoom: wrt window 1:1, wrt video 1.85:1
window 1779x1001, AR 1.78, auto
video 960x540, container metadata AR 1.78
```

*You can use **mouse dragging** for classic OS window size/position change **without any restrictions**, but scaling and zoom values will be hard to control and monitor.*

w, W, Ctrl+ w   Reset all window size & zoom related parameters

2.16 Zoom and Pan Controls

*The controls listed below affect only **active video image**, window size remains **unchanged**.*
*Note that the "**smart limits**" of the Zoom and Pan controls depend on **video frame size** and **current window size**.*

Alt+ Up/Down Arrows   Increase/decrease zoom factor: 1:1, 2:1, 4:1, 8:1, 16:1 (you can also use **Alt+ Mouse Wheel**)

z, Z, Ctrl+ z   Reset video zoom & pan controls

Ctrl+ Left/Right Arrows   Move (H pan) visible image within the window

Ctrl+ Up/Down Arrows   Move (V pan) visible image within the window

F9   Show window size, video size, and zoom values.

pan %: x +50.0 y −29.3
zoom 4:1

II 00:00:50.680 / 00:06:55.123 (12%)

zoom: wrt window 8:1, wrt video 10.67:1
window 1280x720, AR 1.78, auto
video 960x540, container metadata AR 1.78

Mexicana.mp4
II 00:00:50.680 / 00:06:55.123 (12%)
zoom: wrt window 1:1, wrt video 1.33:1
window 1280x720, AR 1.78, auto
video 960x540, container metadata AR 1.78
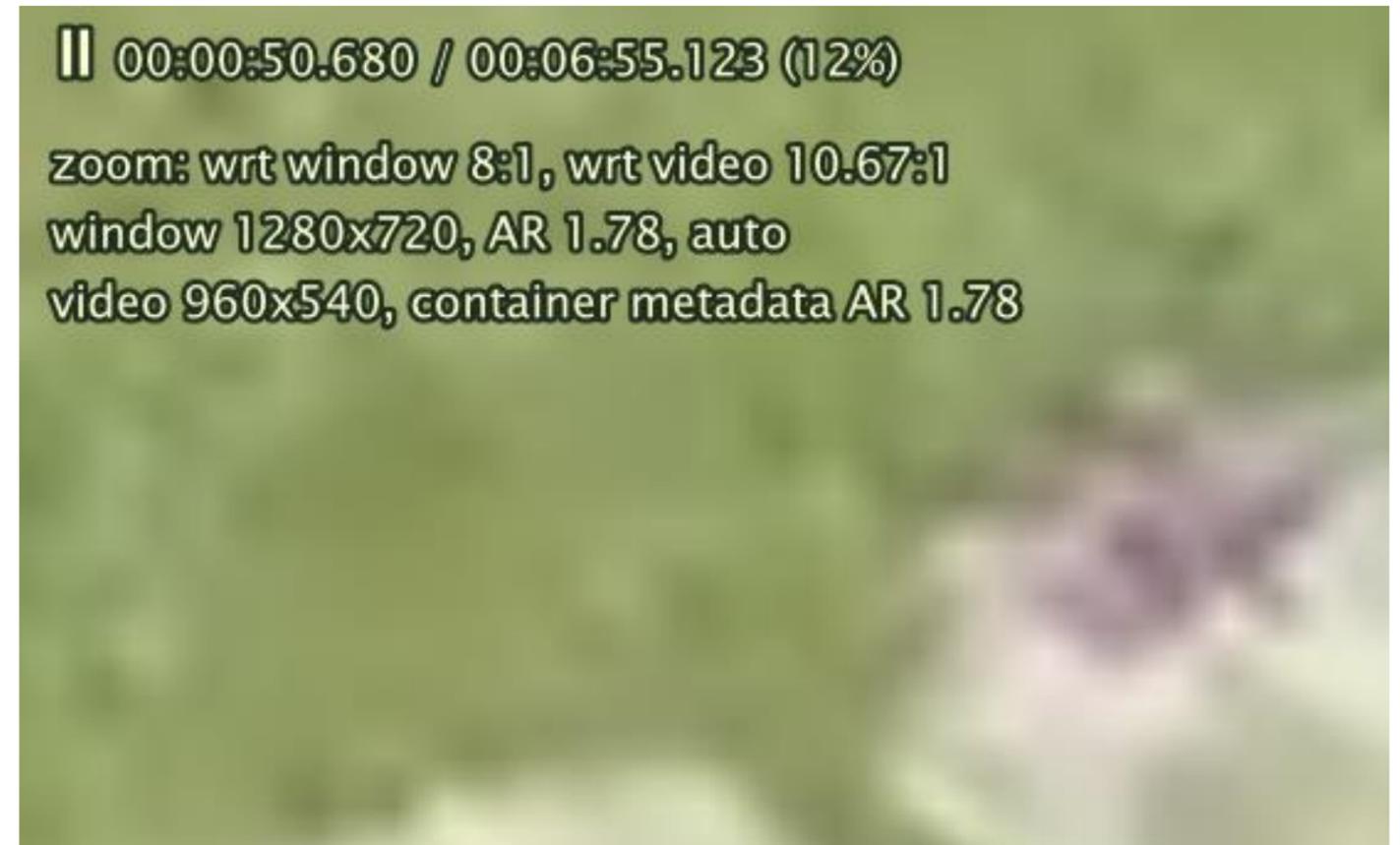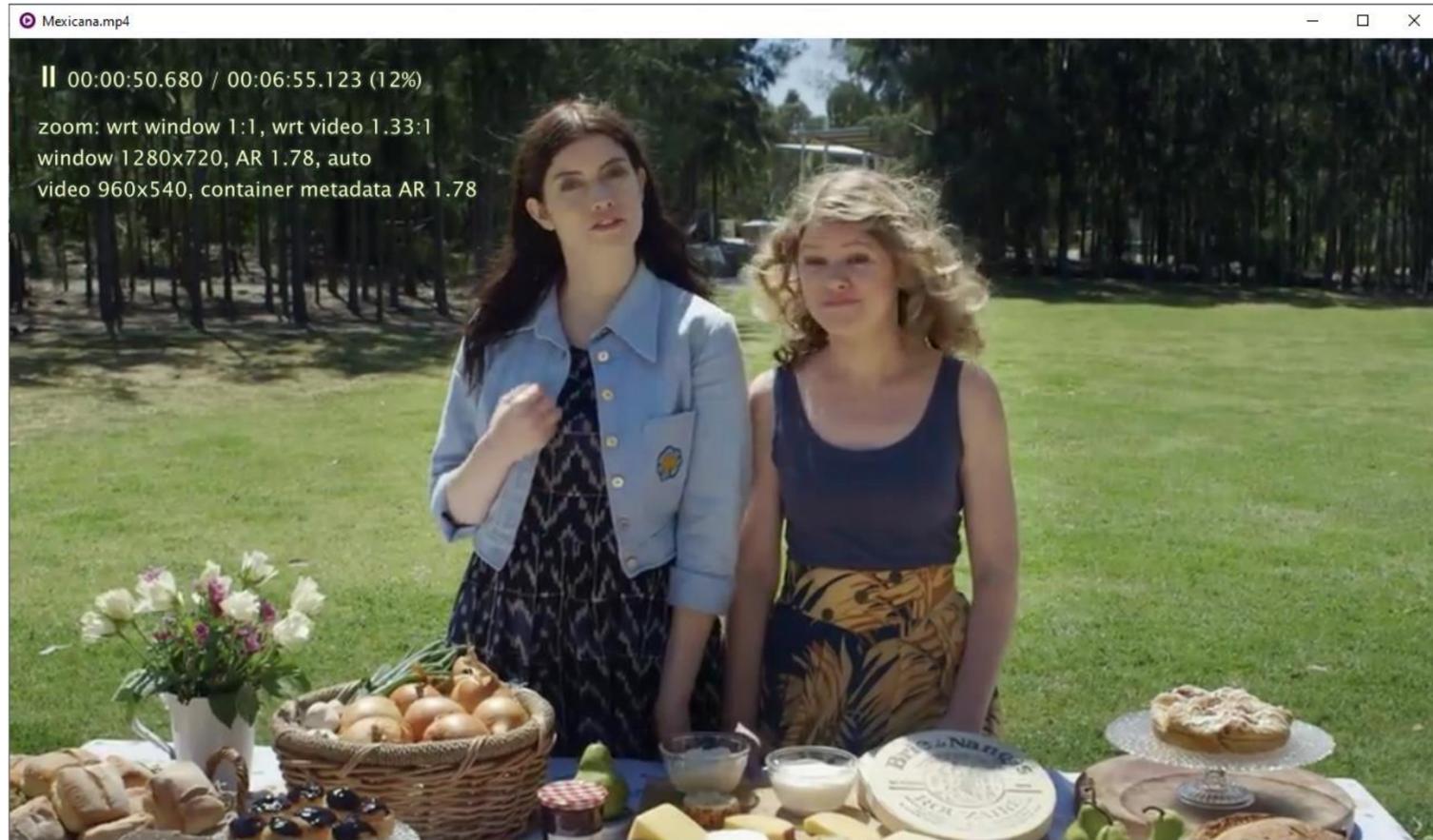
2.17 On-screen Display (OSD) Controls

t or **Mouse Right Button**   Cycle osd-level 3, 2, 1, 0 (*modify the content of the topmost message line*)

osd-level **3** (default):   current timecode / duration timecode

`|| 00:06:04.440 / 00:06:55.123 (88%)`
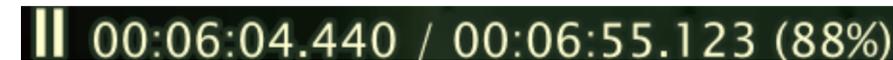
osd-level **2**:   current frame number / frame count, speed

`|| (88%) frame 9111 / 10378 speed 1.00`

osd-level **1**:   frame size, frame rate, time position in s.ms

`|| (88%) 960x540, 25.000 fps, s.ms: 364.440000`

All 3 variants also include play/pause/seek/wait symbol and time position in %.
*For **audio files** and **AV Monitor overlays** the osd-level selection is fixed: **osd-level 3**.*

Selection of **osd-level 0** means that not only the topmost line, but nearly all osd messages will be hidden: `timeline messages OFF`
Important note: VQMP scripts may override this control by forcing the pre-defined osd-level: 1, 2 or 3.

o, **P**   Short time display of **progress bar** (absolute time position) overlay

i   **Short time display** of **status info** page (aka "stats") overlay
I   Toggle **permanent display** of **status info** page (aka "stats")
        While in "stats" mode 1, 2, 3, 4 keys can be used to browse 4 info pages
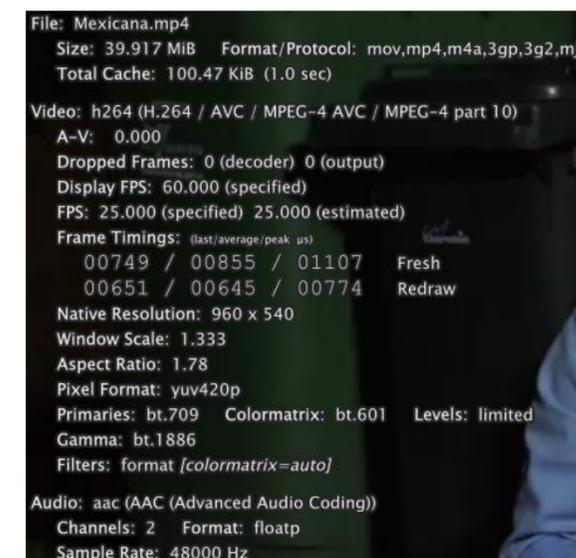
F6   Short time display of **path + filename** or **URL**
F7   Short time display of **media-title** (e.g., of URL) or **filename**
F8   Short time display of video/audio/sub **tracks list**
        with language and short description tags – if available
F9   Short time display of **window/zoom parameters**
F10   Cycle the **osd duration** values: 2s, 4s (default), 8s

File: Mexicana.mp4
Size: 39.917 MiB   Format/Protocol: mov,mp4,m4a,3gp,3g2,mj2
Total Cache: 100.47 KiB (1.0 sec)
Video: h264 (H.264 / AVC / MPEG-4 AVC / MPEG-4 part 10)
A–V: 0.000
Dropped Frames: 0 (decoder) 0 (output)
Display FPS: 60.000 (specified)
FPS: 25.000 (specified) 25.000 (estimated)
Frame Timings: (last/average/peak μs)
     00749 / 00855 / 01107   Fresh
     00651 / 00645 / 00774   Redraw
Native Resolution: 960 x 540
Window Scale: 1.333
Aspect Ratio: 1.78
Pixel Format: yuv420p
Primaries: bt.709   Colormatrix: bt.601   Levels: limited
Gamma: bt.1886
Filters: format [colormatrix=auto]
Audio: aac (AAC (Advanced Audio Coding))
Channels: 2   Format: floatp
Sample Rate: 48000 Hz

2.18 Other Controls 1

Sound Volume Controls:

m or **Alt+ Mouse Middle Button**   Toggle **mute** ON/OFF
Default value of Mute control is OFF (reset for each new file opened)

0 / **9** or **Ctrl+ Mouse Wheel**   Increase/decrease **volume**
Default volume value is 50% (reset for each new file opened)

Playout Speed Controls:

] or **Ctrl+Alt+ f**   Increase **speed**: .05, .15, .3, .5, 1, 2, 3, 4, 10, 20   *Note that **audio** rendering is possible only*
[or **Ctrl+Alt+ s**   Decrease **speed**: 20, 10, 4, 3, 2, 1, .5, .3, .15, .05   *for speed values from **0.3** to **4***
{ / }   Set play direction **backward / forward**
Backspace   Reset speed controls to default values: speed = 1, play direction = forward

Video Image Controls:

2 / **1**   Increase/decrease **contrast**
4 / **3**   Increase/decrease **brightness**
6 / **5**   Increase/decrease **gamma**
8 / **7**   Increase/decrease **color saturation**

Alt+ s   Select **BT.601** (SD) color matrix   **Alt+ n** Select video data **Narrow Range** (YUV input data default)
Alt+ h   Select **BT.709** (HD) color matrix   **Alt+ f** Select video data **Full Range** (RGB input data default)
Alt+ u   Select **BT.2020** (UHD) color matrix

*By default, color matrix, video data range and dynamic range mode (SDR, HDR-PQ, HDR-HLG) selection is **automatic**.*

2.19 Other Controls 2

Video/Audio/Subtitles Track Selection Controls:

a	Cycle through **audio tracks**
v	Cycle through **video tracks**
s, **j**	Cycle through **subtitles tracks**
J	Cycle through **subtitles tracks** backwards

Subtitle Controls:

Ctrl+Alt+ Left/Right Arrow   pause and go to previous/next **subtitle position**
Note that going to previous/next pre-fetched subtitle position also changes video and audio timeline positions.

S   Cycle subtitles **scale** (size): 1. (default) 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, .5, .6, .7, .8, .9
r / **R**   Move subtitles **up/down**

Misc. Controls:

= or **Shift+ Mouse Middle Button**   **Reset** all AV control values: (video, audio, subtitles, speed)

F1   Open the **VQMP keybindings** (help) document in WordPad

        You can save JPG screenshots in the pre-defined " **.\screenshots** " directory:
Ctrl+ s   Save **scaled video screenshot** with subtitles and OSD
Ctrl+ S   Save **unscaled video screenshot** without subtitles and majority of OSD messages

3. Audio-Video Monitor

3.1 AV Monitor Modes

Press **Alt+ 1 | 2 | 3 | 4** to **pre-select** or **select** the corresponding **AV Monitor Mode**.

| **Mode 1** | **Mode 2** | **Mode 3** | **Mode 4** |

SDR Content
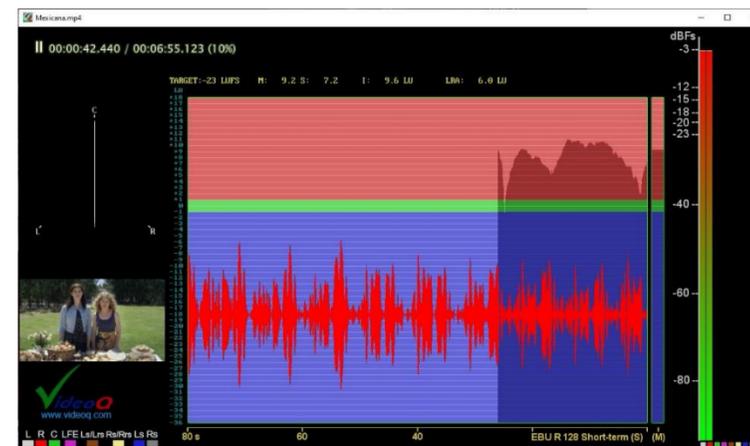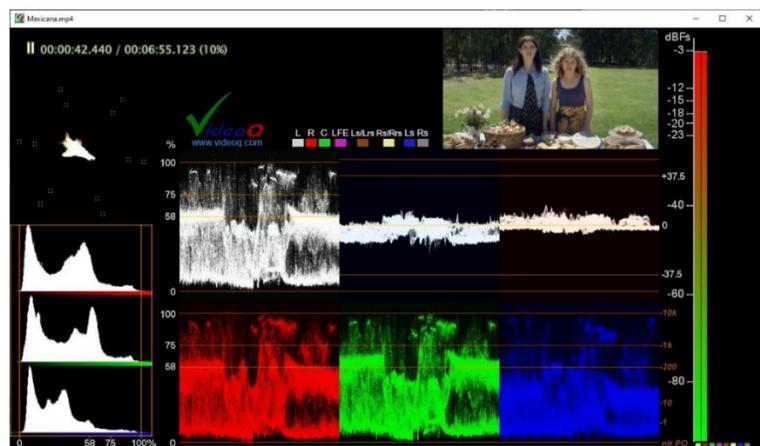
HDR-PQ Content
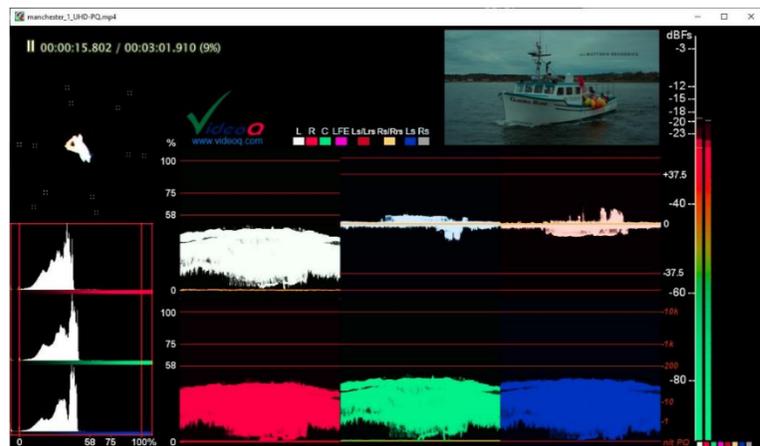
<u>Video tools</u>: *UV VectorScope, RGB Histograms, YUV Waveforms, RGB Waveforms*

<u>Audio tools</u>: *Level Meter, VectorScope, Frequency Spectrum, EBU R128 Monitor*

See next slides for more details about AV Monitor features and modes.

3.2 AV Monitor Mode 1

Press **Alt+ 0** to switch **AV Monitor** ON, **Esc** to switch it OFF, or **Ctrl+ Mouse Middle Button** to toggle **AV Monitor** ON/OFF
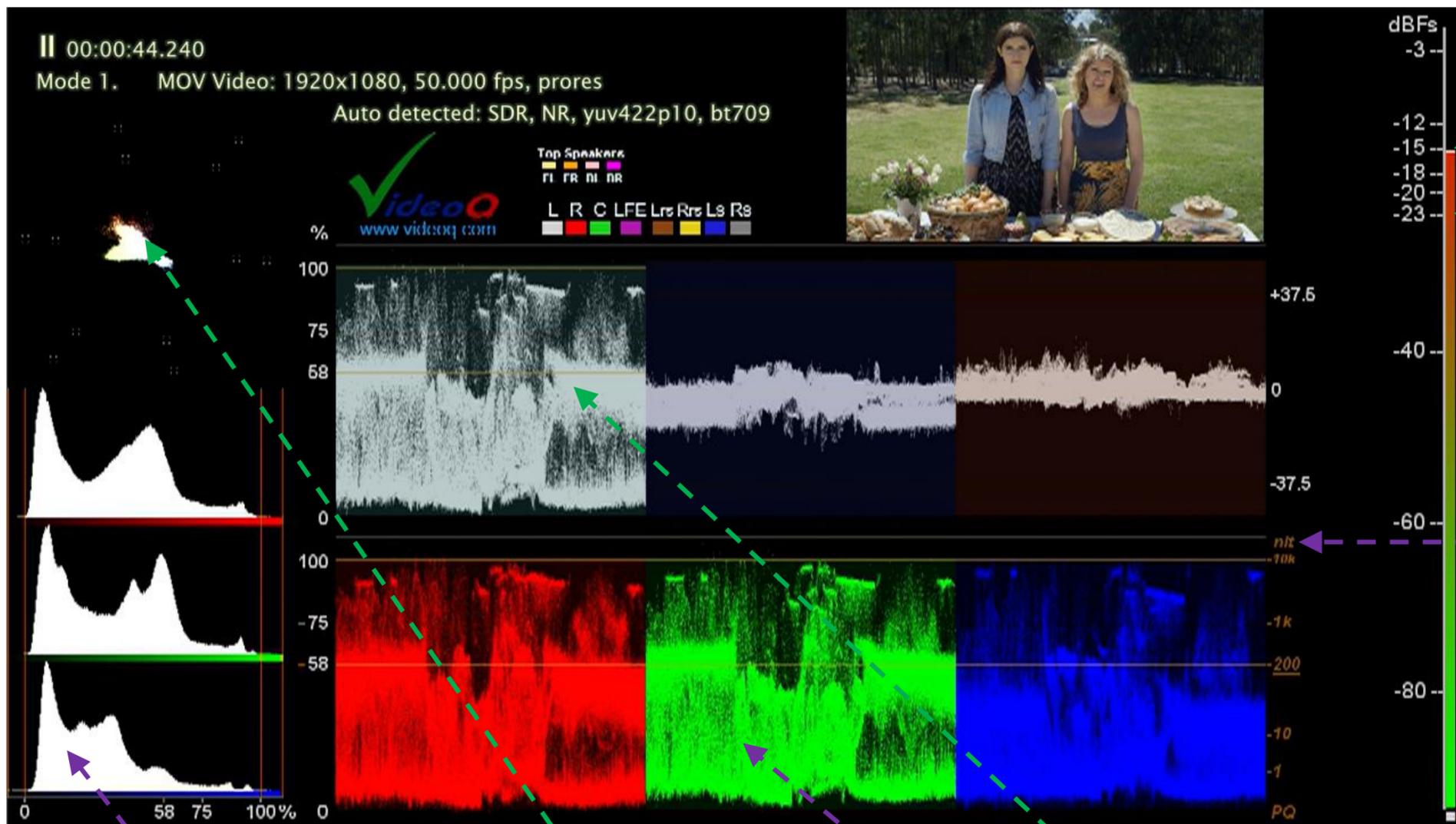
Press **Alt+ 1** to select the **AV Monitor Mode 1**

Audio Peak Markers

Log scale (dBFs) **Audio Level Meter**.

*Note that the meter area **width** auto-expands depending on the **number of audio channels**.*

HDR-PQ Light Levels Scale values in **nits** *(cd/sq.m)*

The scheme below shows short codenames and color tags of audio channels.

*This color scheme is also used for audio waveforms – **Z order** of channel **overlays**.*

YUV NR/FR **Waveforms**

RGB NR/FR **Histograms**   UV **VectorScope**

RGB NR/FR **Waveforms**

Extra color tags used for **5.1.4** and **7.1.4** formats

Alt+ n | Alt+ f switches between video data **Narrow | Full Range**

2.0, **5.1**, **7.1 Audio Formats**: **Channels Order** and **Color Scheme**

3.3 AV Monitor Mode 2

Press **Alt+ 0** to switch **AV Monitor** ON, **Esc** to switch it OFF, or **Ctrl+ Mouse Middle Button** to toggle **AV Monitor** ON/OFF

Large slightly down-scaled video image

Press **Alt+ 2** to select the **AV Monitor Mode 2**

Audio Level Meter

Audio VectorScope

Audio Frequency Spectrum

EBU R 128 Meter loudness values:
M – momentary
S – short-term
I – integrated
LRA – range

Audio Waveform Monitor

3.4 AV Monitor Mode 3

Press **Alt+ 0** to switch **AV Monitor** ON, **Esc** to switch it OFF, or **Ctrl+ Mouse Middle Button** to toggle **AV Monitor** ON/OFF

EBU R 128 Meter loudness values (**M**, **S**, **I** and **LRA**)   Press **Alt+ 3** to select the **AV Monitor Mode 3**
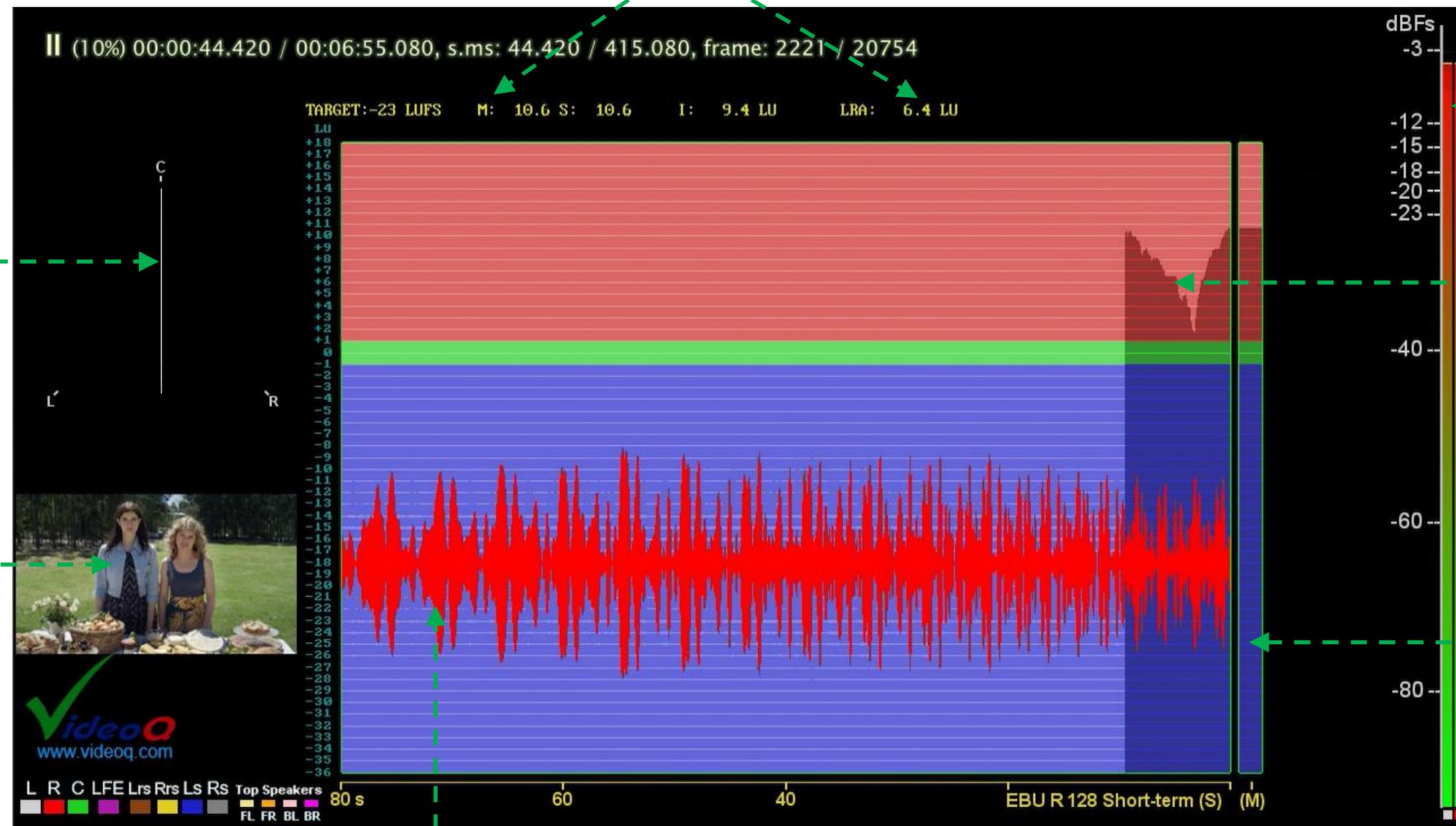
Audio Level Meter

Audio VectorScope

Small Video Image

Audio Waveform Monitor

EBU R 128 Short-term (S) Loudness Profile: *80s history log since the last-used seek position*

EBU R 128 Momentary (M) Loudness Bargraph

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3.5 AV Monitor Mode 4

Press **Alt+ 0** to switch **AV Monitor** ON, **Esc** to switch it OFF, or **Ctrl+ Mouse Middle Button** to toggle **AV Monitor** ON/OFF

For **video files with internal or external audio streams**
AV Monitor Mode 4 is the **default mode** for each new file opened.

In **any** AV Monitor Mode (*including OFF*):
Press **Alt+ 4** to select the **AV Monitor Mode 4**
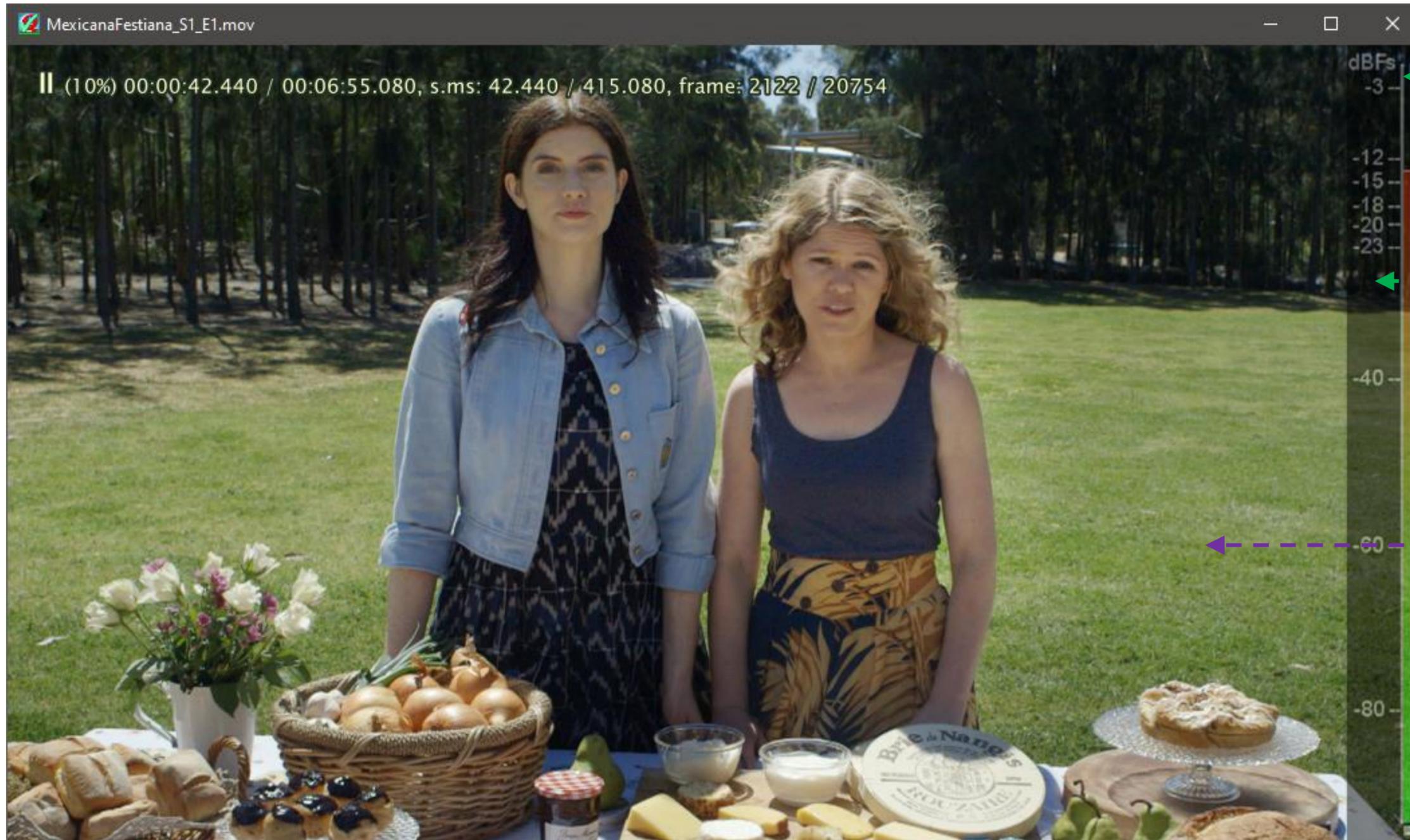
Audio Level Meter

Semi-transparent dark background band

Full size video image

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3.6 AV Monitor Controls 1

<u>For video files with internal or external audio streams</u>:

Alt+ 0   Switch AV Monitor ON

Ctrl+ Mouse Middle Button   Toggle AV Monitor ON/OFF

Alt+ 1 | 2 | 3 | 4   Pre-select or select one of 4 Modes

M   Cycle thru AV Monitor Modes 1,2,3,4:

ESC (dynamic keybinding)   Switch AV Monitor OFF

<u>For video only files without internal or external audio streams:</u>

*Note that in this case, you can only switch the AV Monitor **Mode 1** ON/OFF,*

using the keys shown above. Audio Levels Meter is not shown (hidden).

3.7 AV Monitor Controls 2

For audio files

*Note that for **audio files** AV Monitor is **always enabled**,*

*you can only **switch** between **2 special modes**.*

M or **Ctrl+ Mouse Middle Button** toggles between 2 modes:

- **AV Monitor Mode 3a**

  This mode is **auto-ON** for each new audio file opened.

- **Large Audio Waveform Monitor**

  (special mode available only for audio files)
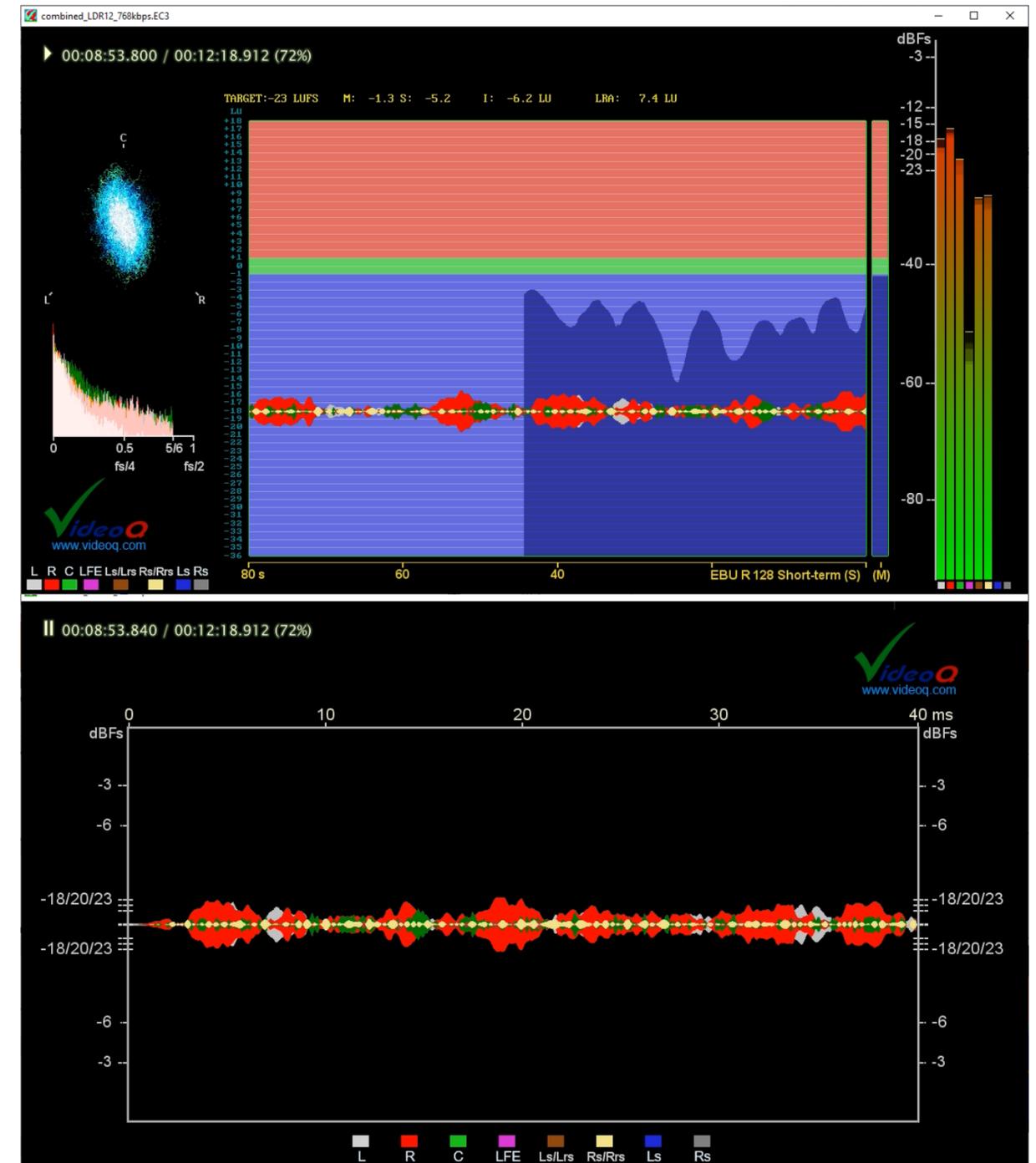
3.8 Audio Waveform Monitor Example

If input is an **audio file**, press **M** to toggle between Advanced Audio Monitor and Audio Waveform Monitor modes.

In this example **Waveform Monitor** shows that all 5.1 audio channel colors **are different**. *Looks like good professional job.*
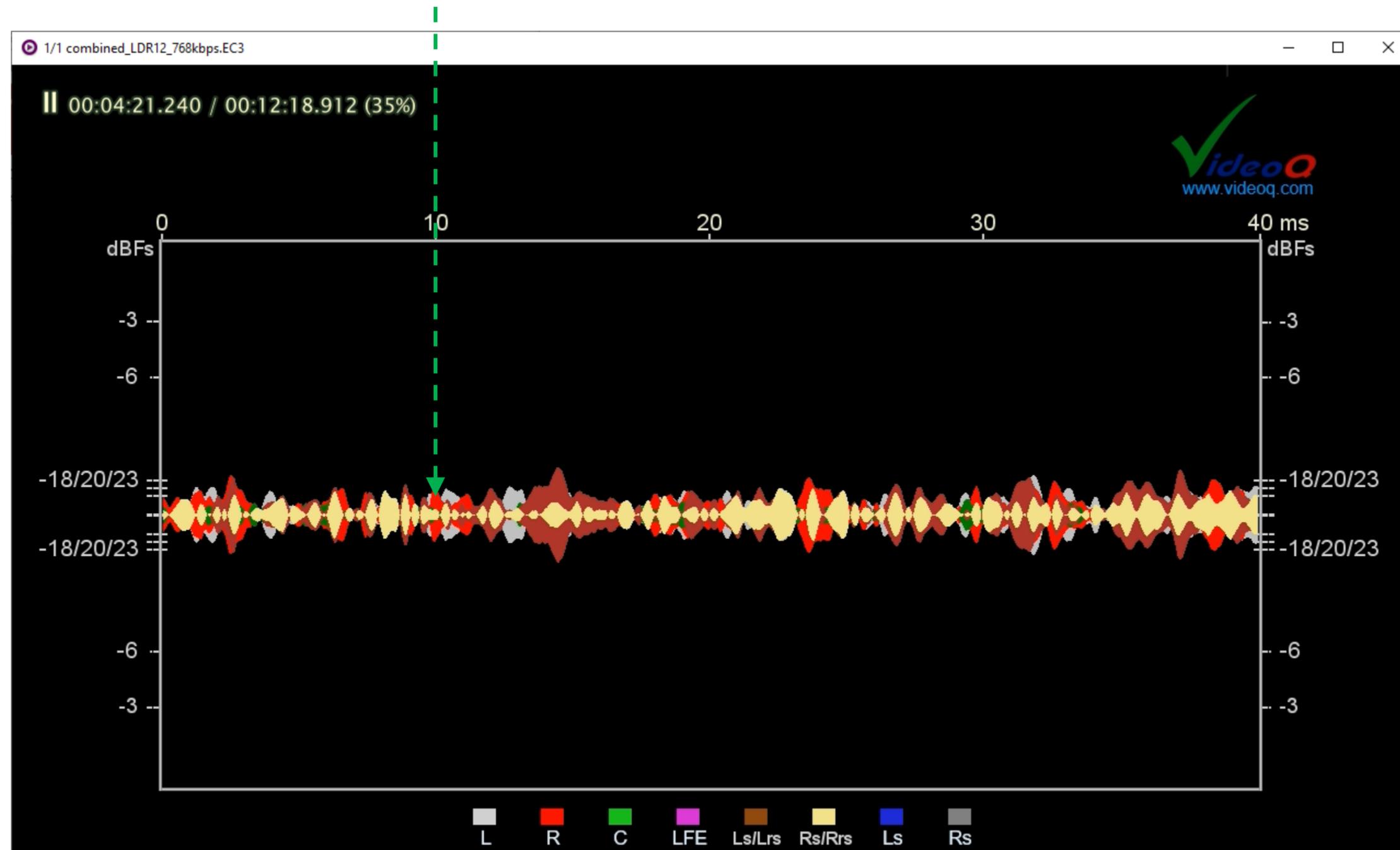
3.9 Audio VectorScope Usage Examples

VideoQ Audio Test #2: 1kHz tone, various levels and phases combinations: **L**, **L & R** (same phase), **R**, **L & -R** (anti-phase)

VectorScope Lissajous figures clearly show relative (L vs R) phases.
Level Meter and **Spectrum** color provides visual hints of active channels.
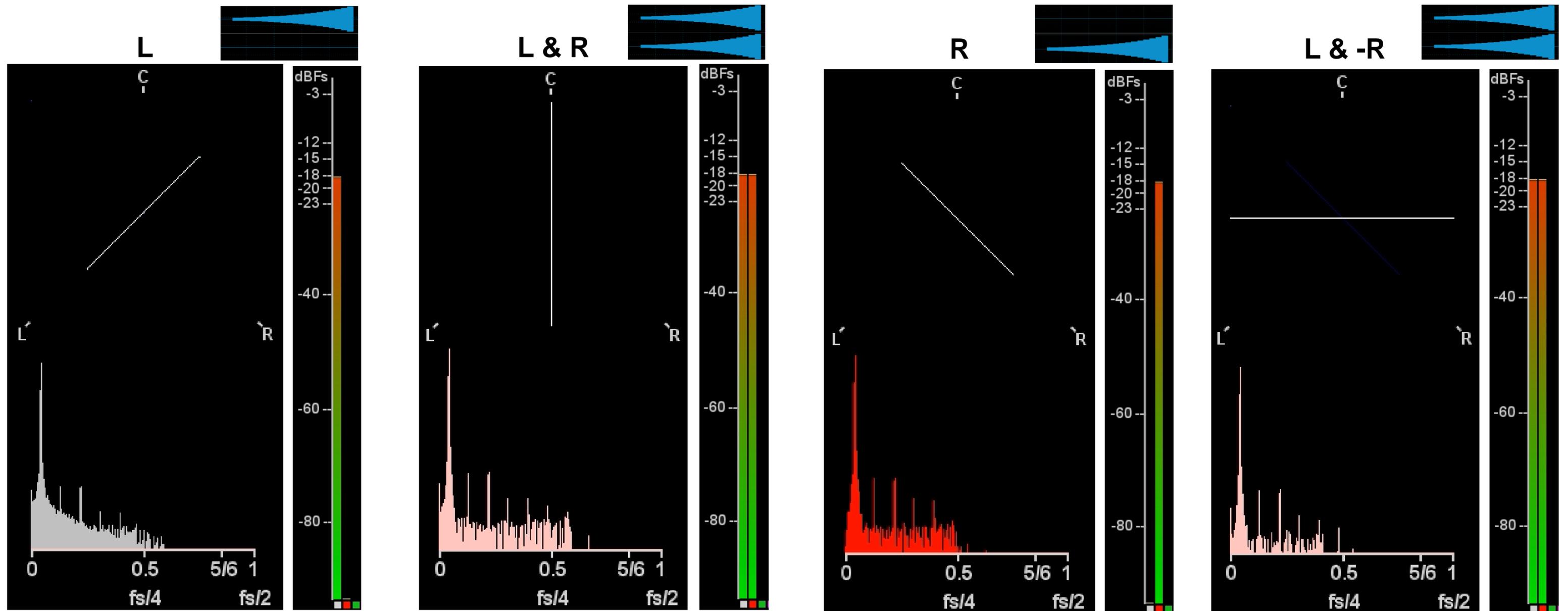
3.10 Advanced Audio Monitor Usage Example 1

Audio codec test: 5.1 channels, 2 tone frequencies, 2 levels

Frequency Spectrum and **Waveform Monitor** both show that the first tone has a lower frequency and level.

VectorScope

Lissajous figure

shows tone frequencies
relationship:
'*non-integer ratio*'

**Frequency
Spectrum**

shows 2 tones:

- 1st tone (LFE)

- 2nd tone (Center)
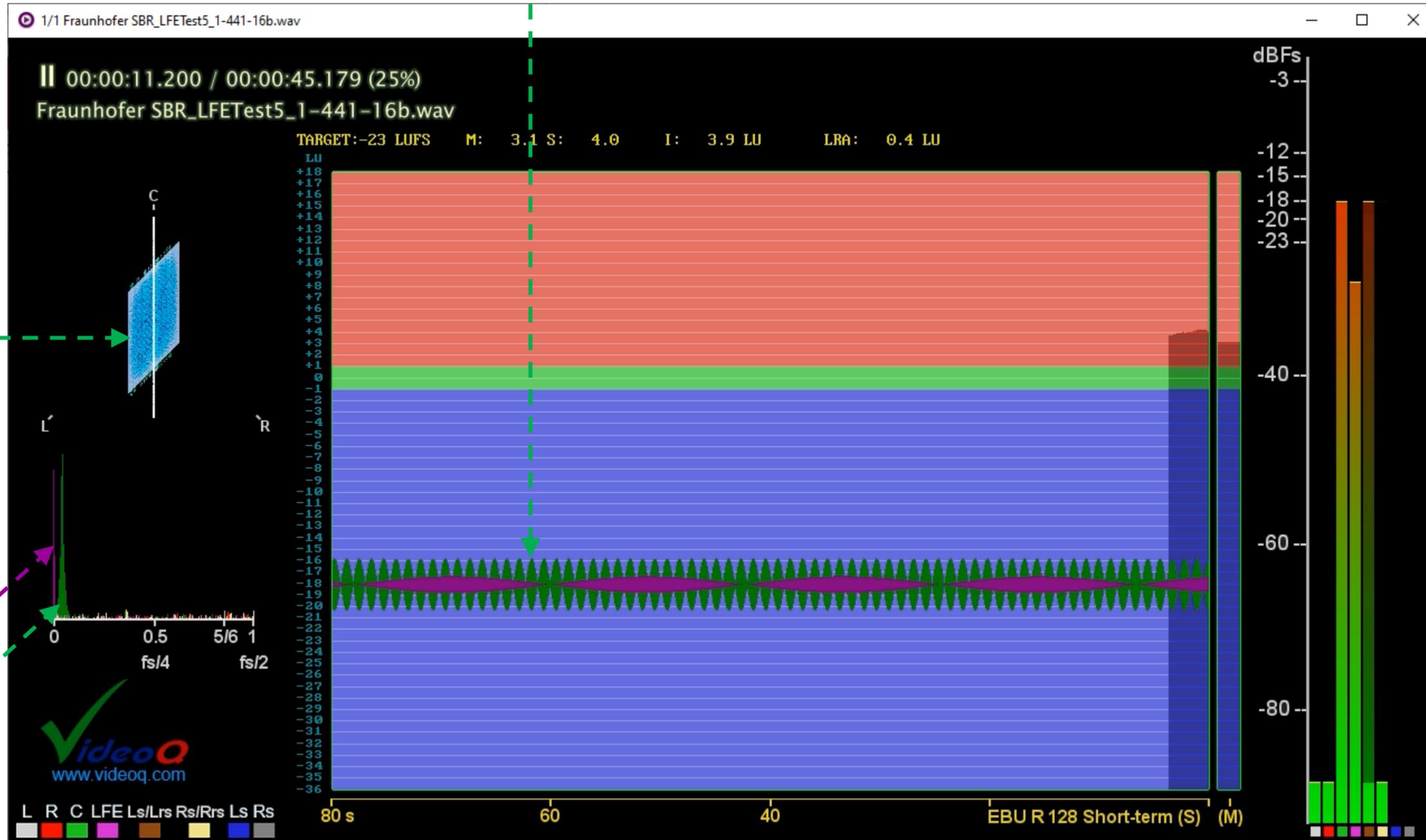
3.11 Advanced Audio Monitor Usage Example 2

VQMP

Professional audio track: 5.1 ATMOS

Waveform Monitor shows that all **6 channels** are in use (*6 different colors*)

EBU R 128 Integrated Loudness is **within +/- 1 LU** limits

VectorScope shows **wide** and **balanced** surround sound image

Frequency Spectrum shows **full 20kHz** audio bandwidth

Audio file metadata:
fs = 48kHz.
(fs/2) x 5/6 = 20kHz.

Level Meter shows that all **6 channels** are in use.
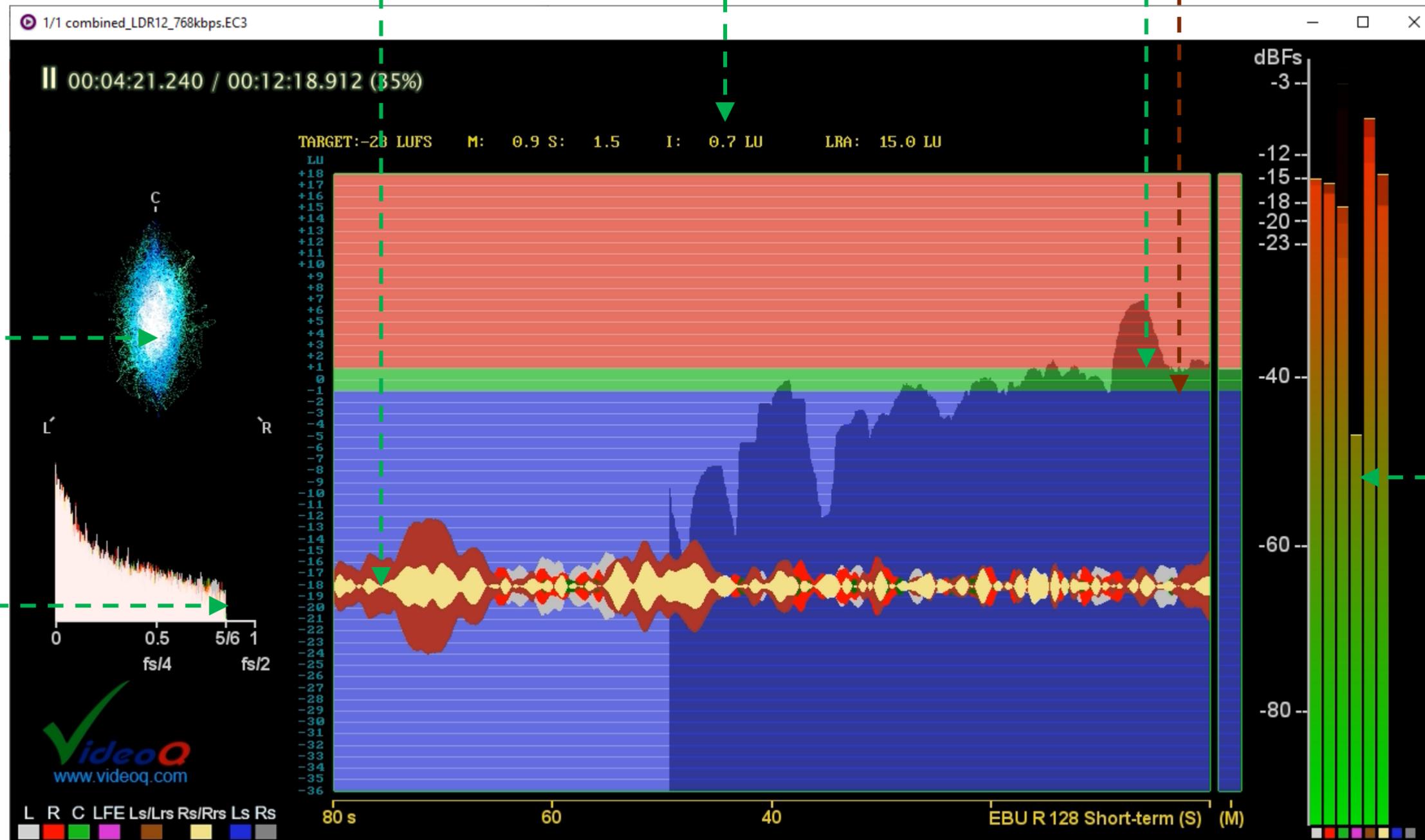
3.12 Advanced Audio Monitor Usage Example 3

<u>Relatively low quality audio track</u>: dual-mono (not real stereo sound), reduced bandwidth, levels are far too high.

8.5 LU Integrated Loudness is **much higher** than + 1 LU limit

Level Meter shows dangerously **high peaks**.

VectorScope shows **center only**
dual-mono image:

Frequency Spectrum

shows **reduced** audio
bandwidth (~ **15kHz**)
(48/2) x 5/6 = 20kHz,
(48/2) x 0.5 = 12kHz

***Spectrum color* is *pink* because**
L & R channels are identical
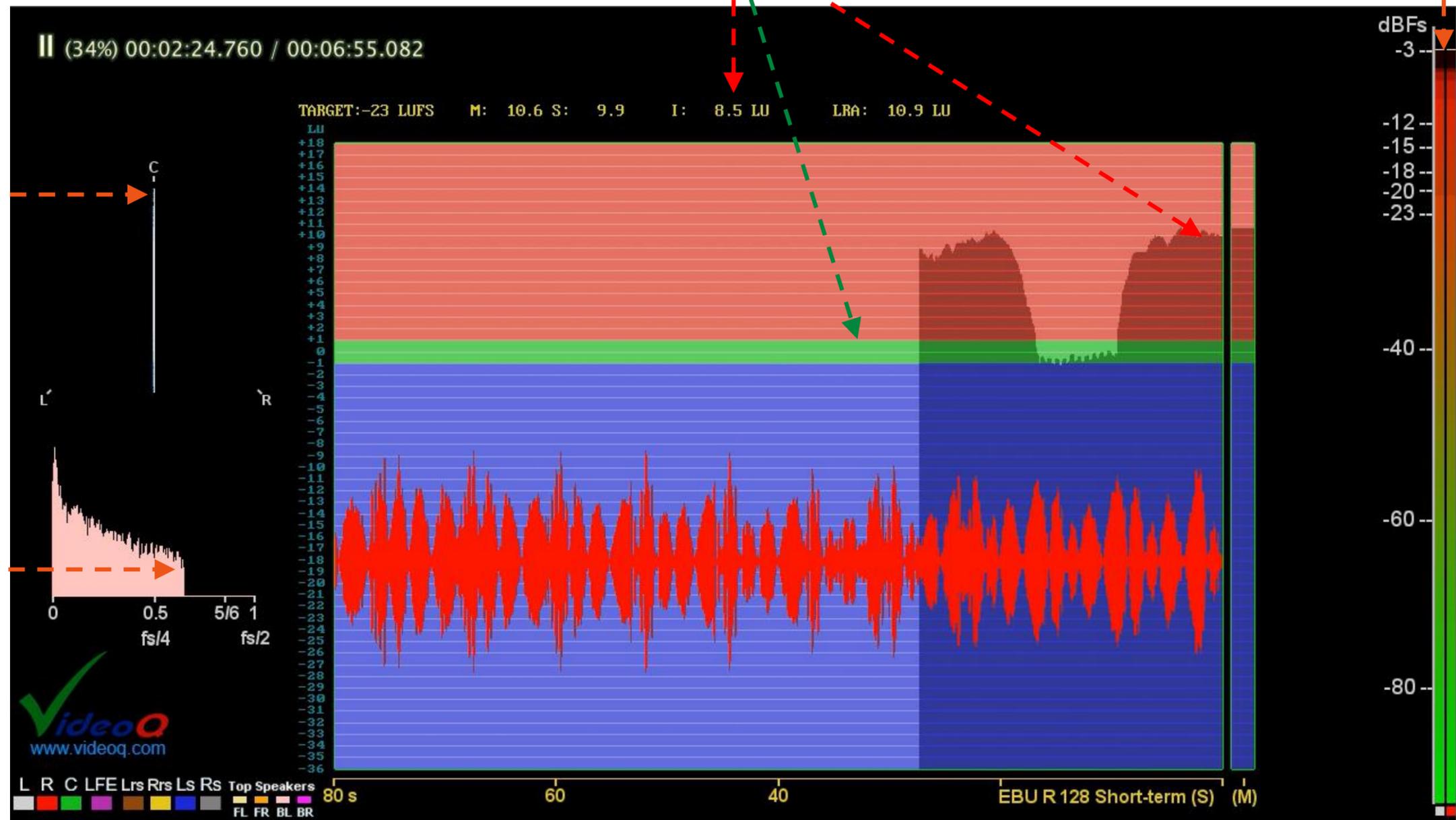
4. About VideoQ

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