VideoQ VQV

Media Files Viewer-Analyzer

Training Presentation

September 2025

VQV

videoq.com

Table Of Content

This presentation

A1. Tools Control Details and Examples

A2. Reports and Log Files

See separate VQV-A presentation: Appendix A, for advanced users

*Click on **VQV Logo** in the upper-right corner of any slide for this global **Table Of Content***

TOC1 ⇐ Click on **TOC1** for the **Section 1 TOC**

1. General Info

TOC1

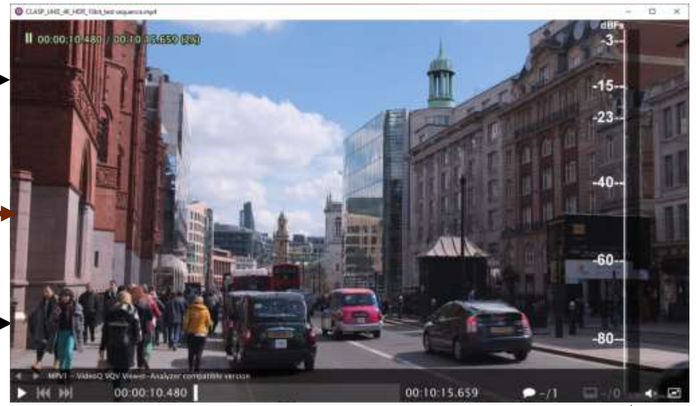
1.1 Top-level Workflow Diagram

Stream

Playlist

Media File

VQMP player compatible with VQV *(option)*



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

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

Sync Server Controls

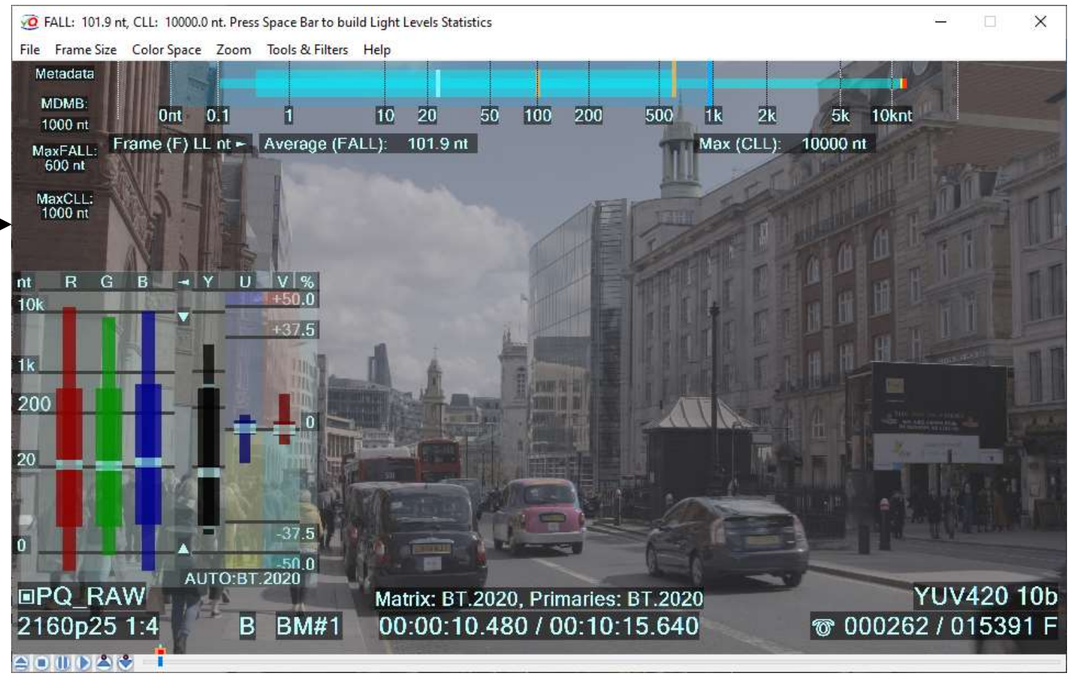
Media File

Raw YUV/RGB File

OpenGL Renderer

VQV

FFMPEG Decoder



Capture HW

Capture SW

Stream

HDMI/SDI

Converted Raw YUV/RGB Files

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

1.2. VQV Application Fields

- VQV is an Augmented Intelligence software tool, instantly revealing your video camera, codec, scaler, converter or other video HW and/or SW device/workflow performance
- Unique video data analysis and fidelity verification tool for the file-based environment
- The 4th generation smart tool for production and post-production facilities, CDN and IPTV systems, development labs, software developers and high-volume manufacturers
- An essential QA/QC tool for broadcast, prosumer and consumer video systems with LAN/WAN connectivity
- VQV displays images and analyze parameters of all compressed video files in a variety of formats, including MOV, MXF, MP4, AVI, TS, M2TS, etc.
- In addition, VQV reads, plays, converts and outputs uncompressed video material data in YUV/RGB/BMP formats, *bit by bit, pixel by pixel, frame by frame*

1.3 VQV Features 1

- An offline video player with sophisticated viewer-analyzer functionality
- Covers a wide range of frame sizes and formats, up to **8K**, including variety of **HDR** formats (**PQ**, **HLG**, and **LOG**, several user-selectable rendering modes)
- VQV displays frame by frame:
  - XY positions, YUV & RGB Levels and expected (as by selected model) Light Levels of every pixel, line, frame or segment
  - GOP structure, frame type, bitrate statistics for the selected frame or selected timeline segment
  - Light Levels (LL) values in **perceived nits** (= *cd/m^2 only on shades of Gray*) or **%** of the selected LL range limit
- Uses fast intuitive controls for timeline position, zoom, signal gain, filter mask size and position
- Contains built-in high-gain spatial and temporal high-pass filters r*evealing even hardly visible artefacts*
- The user can choose:
  RGB, Y, UV, R, G, B or LL view channel, color space, level scheme and SDR/HDR Rendering Mode
- A right-click submenu allows fast creation of snapshots or thumbnail .BMP images
- VQV also contains a powerful “Export as" file and data format converter
- Provides for quick frames/profiles comparison and benchmarking by running multiple VQV instances

1.4 VQV Features 2 (continued)

- For R&D and product verification work, VQV can be launched in a **Windows GUI Mode**
- For semi-automatic QA/QC operation VQV provides multiple GUI instances via **Command Line Mode**
- VQV opens and decodes any wrapped/compressed video file (*all formats supported by ffmpeg*)
- VQV opens static image files in a variety of formats – JPG, PNG, TIF, etc.
- VQV opens single frame file, folder with numbered frame files, or large multi-frame RAW video files
- Video data export processing provide for:
  - Frame cadence change: N:1 decimation, 3:2 repeat, 1:N frame repeat, and/or A-B fragment repeat
  - Color space and pixel format conversion: **SDR ⇔ HDR**, **YUV ⇔ BMP/RGB**, **UYVY ⇔ Planar YUV**
- Resolutions supported:
  from **192x108** to **7680x4320 (8K)**, **8**, **10, 12** or **16** bits per component
- Repeat full duration (loop) or selected fragment (**A-B loop**) playout
- Shuttle/Jog playout modes, variable forward and backward playout speed (VideoQ ‘Videola’):
  Actual frames-per-second speed depends on CPU/GPU power and video frame size

1.5 VQV Features 3 (continued)

- **SDR / HDR** (Standard Dynamic Range / High Dynamic Range) Modes supported:
  - **SDR** – Conventional YUV/RGB data format, selectable rendering modes
  - **HDR-PQ** (Perceptual Quantizer), selectable rendering modes, including RAW video data image
  - **HDR-HLG** (Hybrid Log Gamma), selectable rendering modes, including RAW video data image
  - **HDR LOG** (Camera LOG and DPX LOG), selectable rendering modes, including RAW video data image
- Auto and manual selection of YUV ⇔ RGB and XYZ ⇒ RGB **matrices** and color space **primaries**:
  - **UHD** and **8K** (BT.2020/BT.2100, DCI-P3)
  - **HD** (BT.709, BT.2020, DCI-P3)
  - **SD** (BT.601)
- Switchable YUV ⇔ RGB levels mapping:
  - **Full Range (FR)**, e.g. 8bit **RGB 0-255** format, which **requires down-scaling** to make **YUV 16-235**
  - **Narrow Range (NR)**, e.g. 8bit **RGB 16-235** format, which **does not require down-scaling** to make **YUV 16-235**
- Variety of Input and output RAW YUV / RGB formats:
  - Interleaved, 422 UYVY 8bpc and RGB48YUV48 – interleaved 16pcb YUV/RGB
  - Planar 444 RGB and YUV, 422, 411 and 420 YUV, bit depth: 8, 10, 12, 14 or 16bpc

TOC2 ⇐ Click on **TOC2** for the **Section 2 TOC**

2. VQV GUI: Menus and Controls

2.1 Menus and Controls

Top level menus: **File**, **Frame Size, Color Space**, **Zoom**, **Tools & Filters**, **Help**

Title Bar Band

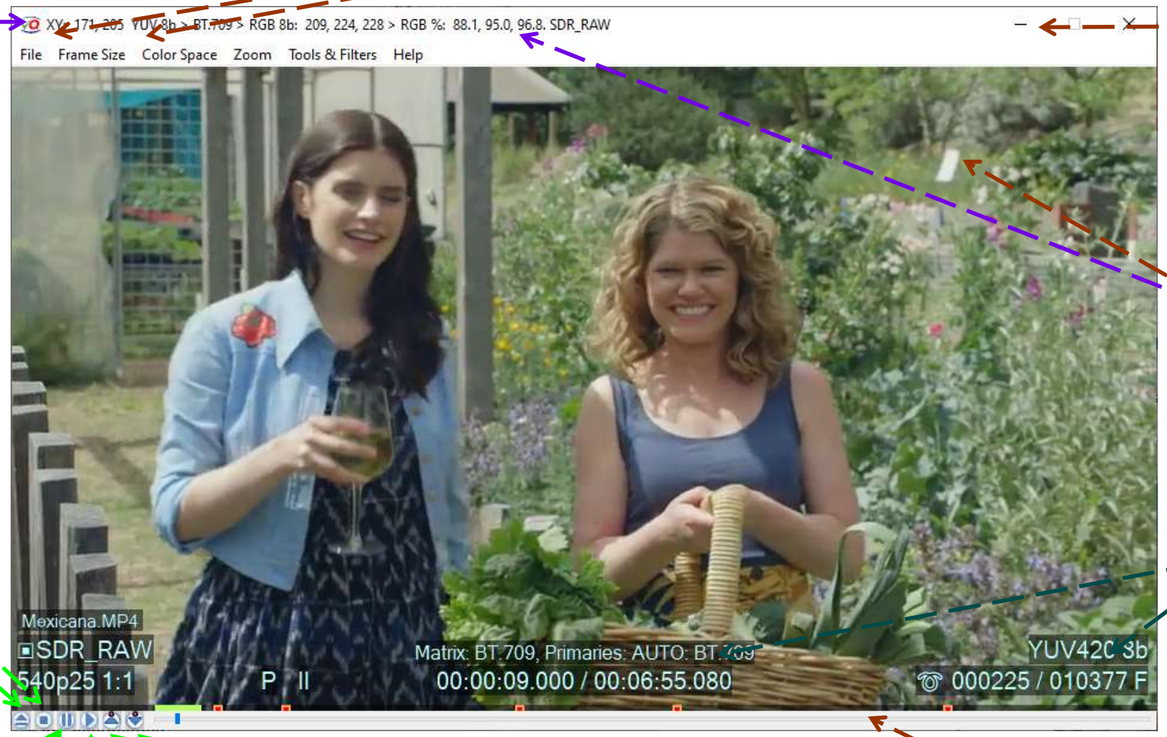
shows messages about:

- media file format,
- selected modes of operation,
- current timeline position,
- measured parameters values

Stop Button forces **Jog Mode**, current frame number resets to **0**. All filters and overlays reset to **Off**.

Eject Button

Close (release) media file,
2nd click will **re-open** closed file



When **Mouse Cursor** is within the **Title Bar**, **Title Bar Message** shows the file name/format:

VQMA_1280x720_8frms_UYVY_8b.YUV

MP4[AVC] 540p25 8b 0.535 Mbps Frame: 9924 / 15142

When **Mouse Cursor** is within the **Active Image Area**
S key toggles the **Title Bar Message**
e.g. between **current pixel** parameters and **current frame** levels statistics

Text Info Overlay Messages
Press **T** key to toggle it On/Off
Ctrl+T toggles auto-hide mode On/OFF

VQMP Server Control Buttons:
Send/receive **file path** and **timeline position** between **VQV** and **VQMP** windows

Pause Button **Play Button** toggles Play/Pause.

Navigation Slider Band:
When **Mouse Cursor** is in this band the **Title Bar Message** shows media format info, current timeline position and playout speed.
Press **S** key to cycle thru the message modes, e.g.:

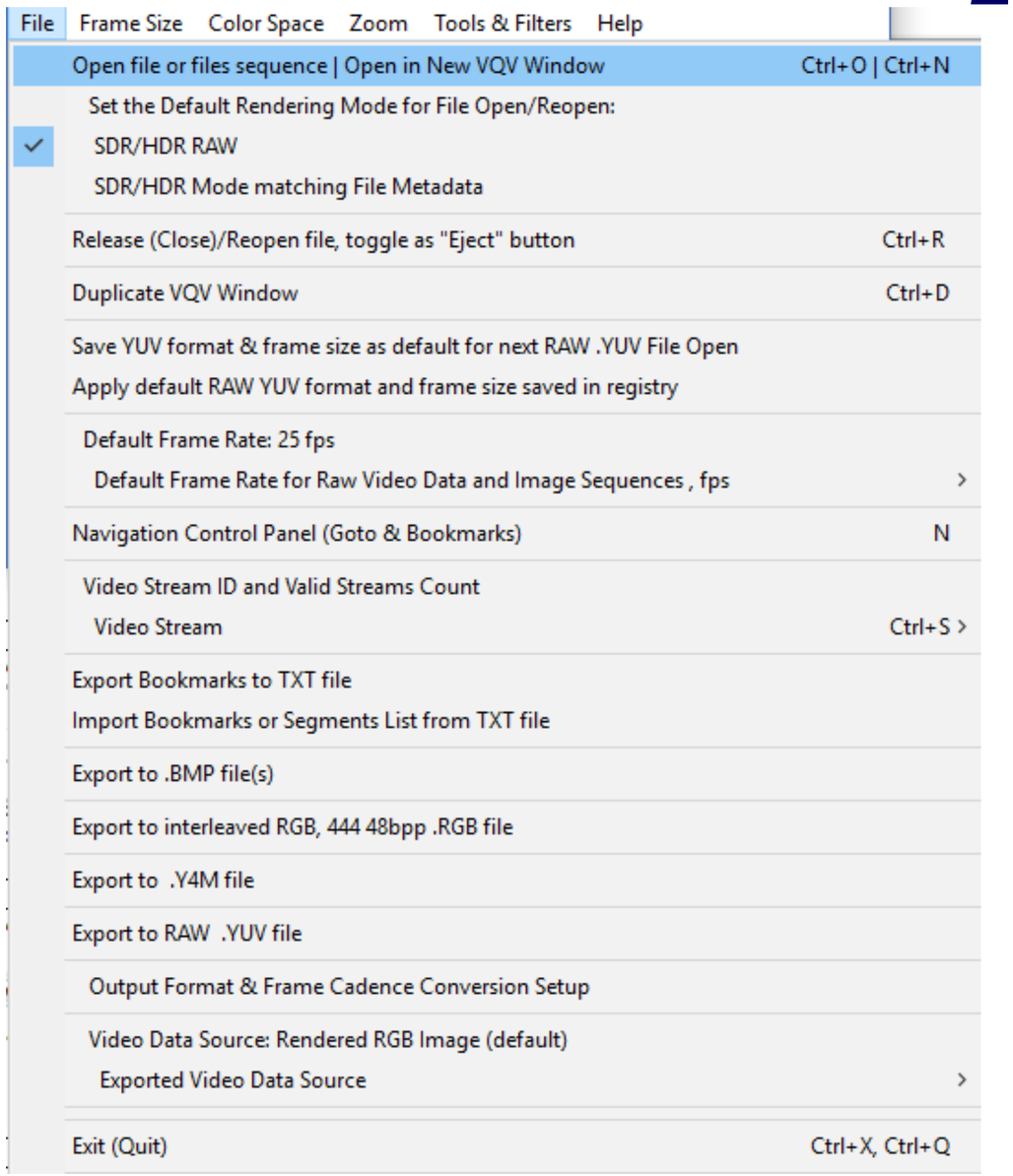
540p59.94 8b "B" 0.010 bpp 0.317 Mbps 235 / 3634 00:00:03.921 / 00:01:00.627

540p59.94 8b "B" 662 bytes 235 / 3634 00;00;03;55 / 00;01;00;36

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

TOC2

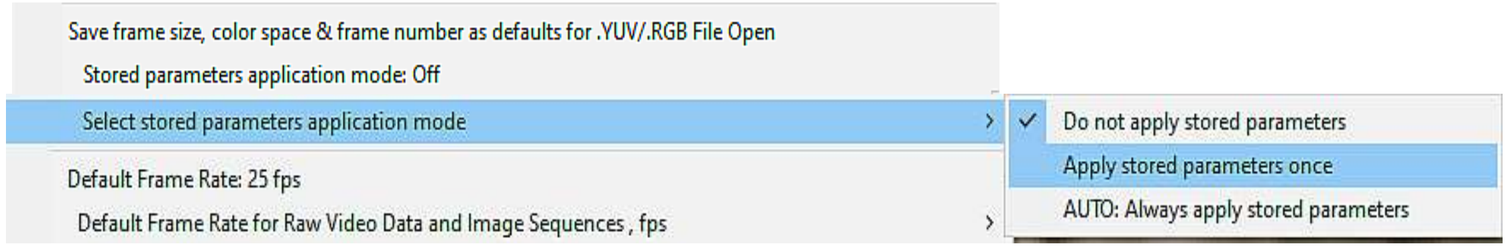
2.2 File Menu



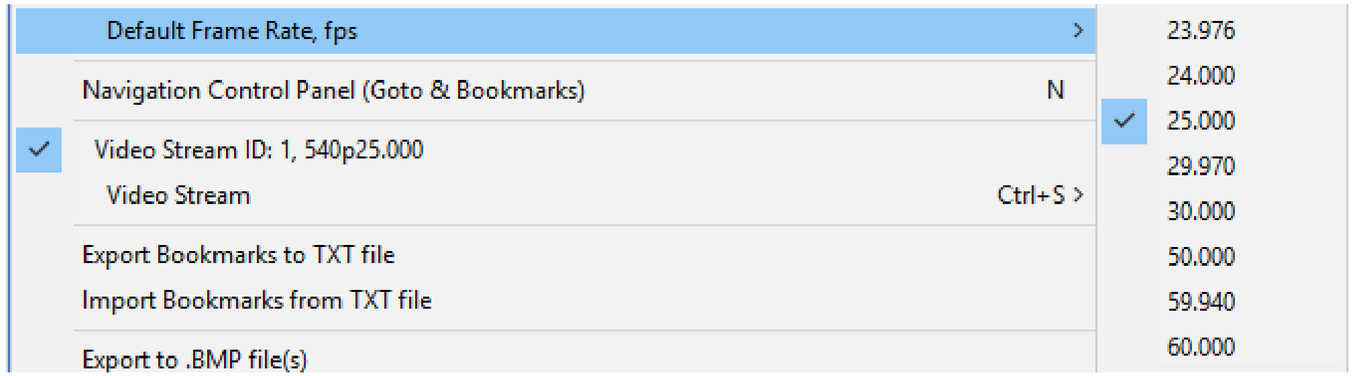
This menu controls the following operations:

- Media File Open /Close / Quit Operations:
  - **Ctrl + O** brings up standard File Open Dialog,
    Ctrl + N does the same, but the selected file opens in new window.
    Ctrl + D duplicates current VQV window.
    Ctrl + S cycles thru video streams (if media file streams count > 1)
    Ctrl + X, Ctrl + Q serve to exit (quit) VQV program
  - Released (closed) file can be reopened, e.g. for iterative video codec settings optimization. **Ctrl + R** shortcut is a toggle control for this process. **Eject Button** also toggles between File Close / File Reopen.
    Reopen operation restores previous timeline position preserving main controls, but some tools, overlays and controls could be reset to defaults.
    Ctrl + Eject brings up standard File Open Dialog (same as **Ctrl + O**).
  - File open menu options set defaults for: Rendering Mode, RAW YUV pixel format and Frame Rate,
- Files Export / Import:
  - Export / Import **Bookmarks** to / from ***.vqvbm.txt** file, or import **Segments List** from ***.vqtsf.txt**. *If present, **InFilesPath.vqtsf.txt** file and/or **InFilePath.vqvbm.txt** file are auto-loaded immediately after opening InFilePath media file.*
  - Export of source or rendered RGB data to BMP / RGB file.
    Multi-frame content can be saved as a folder with numbered BMP frames or as a single multi-frame RGB file (16b per component, 48b per pixel).
  - Export to Y4M / RAW YUV file with optional conversion of pixel format.

2.3 File Menu Options



It is possible to save in Windows Registry current (user-selected) pixel format and frame size of RAW file, e.g. UYVY 1920x1080, thus providing for easier opening of similar files. This function has a pop-up configuration sub-menu: OFF, Apply Once, AUTO: Always Apply

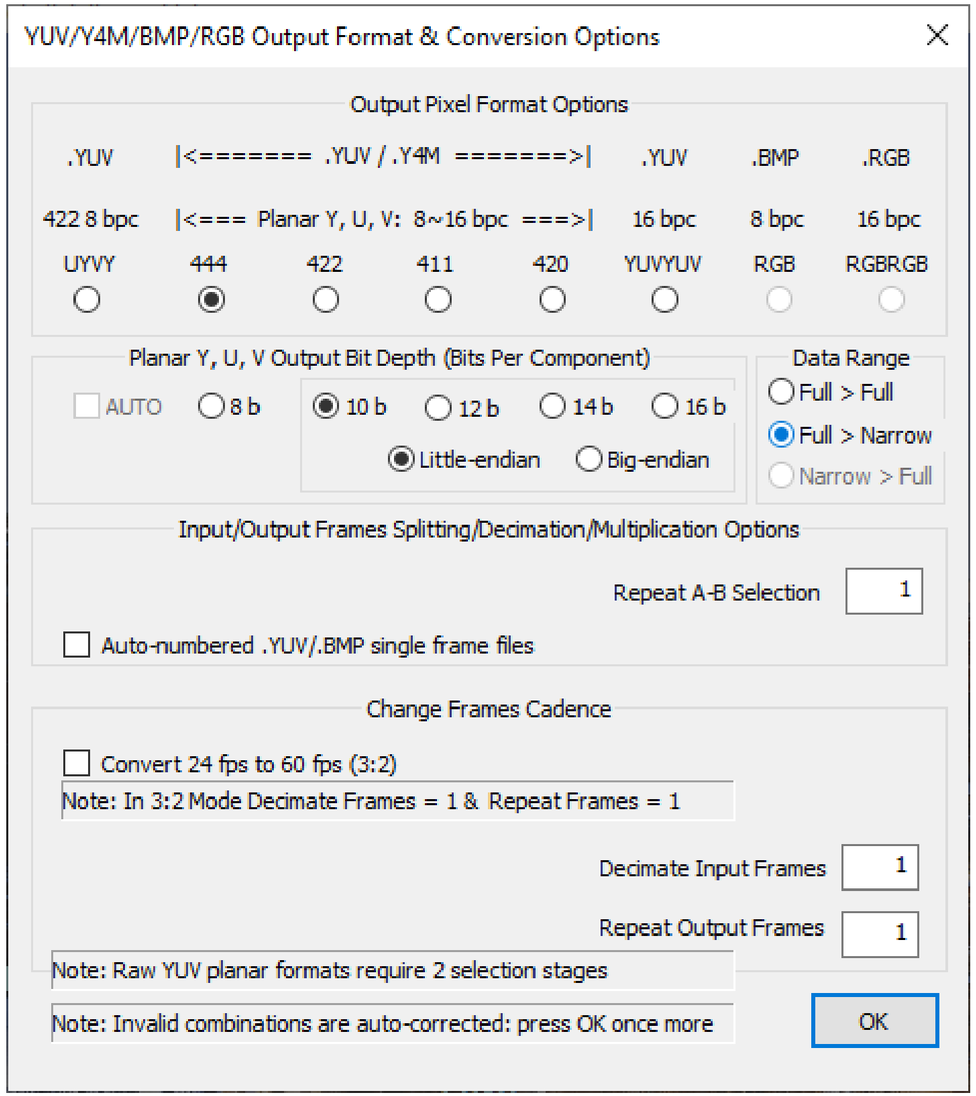


Default Frame Rate can be selected at any time, thus providing for advanced opening of RAW data files or media files with missing, wrong or corrupted Frame Rate metadata.

Shortcut **N** brings up Navigation Control Panel pop-up window, *see next slides for more details*

If the analyzed file contains several video streams, it is possible to select any one for analysis.
Select with mouse click or shortcut; **Ctrl +S**

2.4 YUV/RGB Output Format and Conversion Options



This pop-up dialog windows can be launched from File menu. It provides for YUV/RGB formatting and data range conversion options:

- YUV output pixel format selection:
  - UYVY (aka “interleaved 422”), compatible with widespread SDI stream format
  - Widespread planar 444, 422, 411, and 420 YUV formats, 8bpc … 16bpc, LE or BE
  - VideoQ proprietary 444 interleaved 48b (16b per component) format
- Frame sequence splitting/multiplication options (BMP & YUV):
  - Repeat pre-selected A-B segment of media file several times. It is useful, e.g. for creation of dynamic video by repetition of a single static frame
  - Split selected A-B segment into a set of numbered frames (UYVY format only)
- Frame cadence conversion controls (BMP & YUV):
  - It is possible to simulate 24 fps to 60 fps frame rate conversion (3:2 cadence) by checking the corresponding box. In such case all even-numbered source frames will be repeated 3 times and all odd-numbered frames will be repeated 2 times, thus two input frames will be converted to 5 output frames.
  - Combining “Decimate” and “Repeat” numbers provides for the creation of custom frame cadences, e.g. Decimate = 2 and Repeat = 1 will simulate 50 fps to 25 fps (or 60 fps to 30 fps) frame rate reduction.

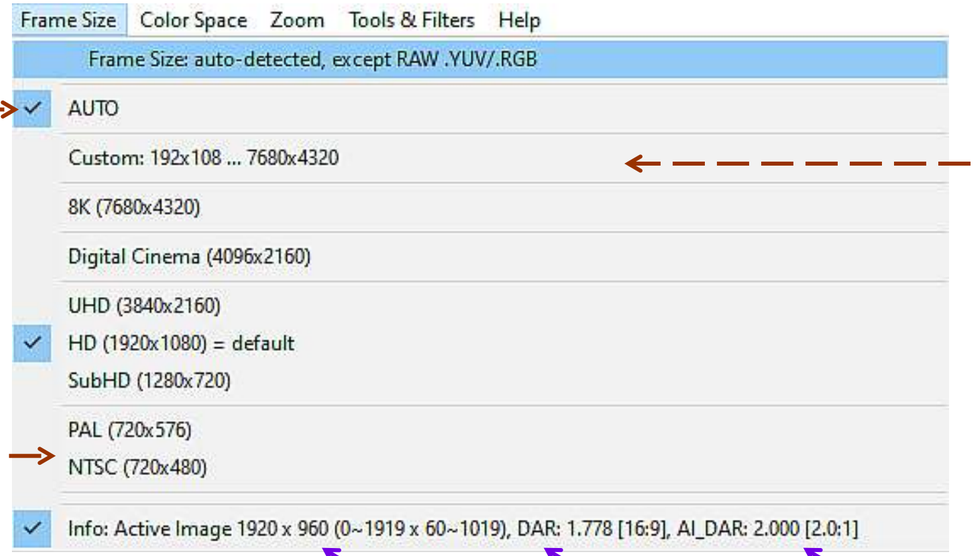
2.5 Frame Size Menu

Manual selection of **Frame Size** is required only for **RAW YUV/RGB** input format.

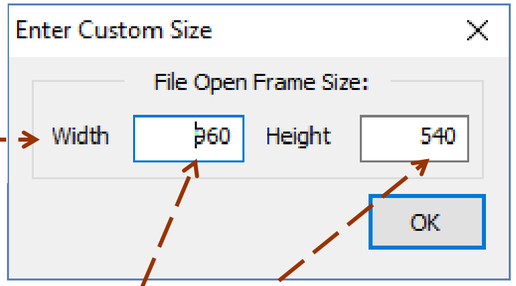
*For all other input formats Frame Size is set **automatically** and the Frame Size menu used only as **info message***

*Only for **UYVY** format:*
*if the actual Raw YUV frame size is **unknown**, then it makes sense to enable the AUTO detection (smart guess) mode*

It is recommended to select correct frame size before opening **RAW YUV/RGB** files.



Click on **Custom Size** will bring up the pop-up dialog window



Manual selection of **Custom Frame Size**, the values set are used only for **RAW YUV/RGB** input format.

Info Message showing currently selected **Frame Mode, Active Frame Size** & **Display Aspect Ratio** resulting from Black Bands (**Letterbox** / **Pillarbox**) detection and media file metadata (**PAR/DAR**) processing.

*The control switching Full Frame Mode / Active Frame Analysis Modes is in Tool & Filters menu: shortcut: **Ctrl + Shift +A**.*
*Black Bands Meter: Shortcut: **Ctrl +A***

2.6 Color Space Menu

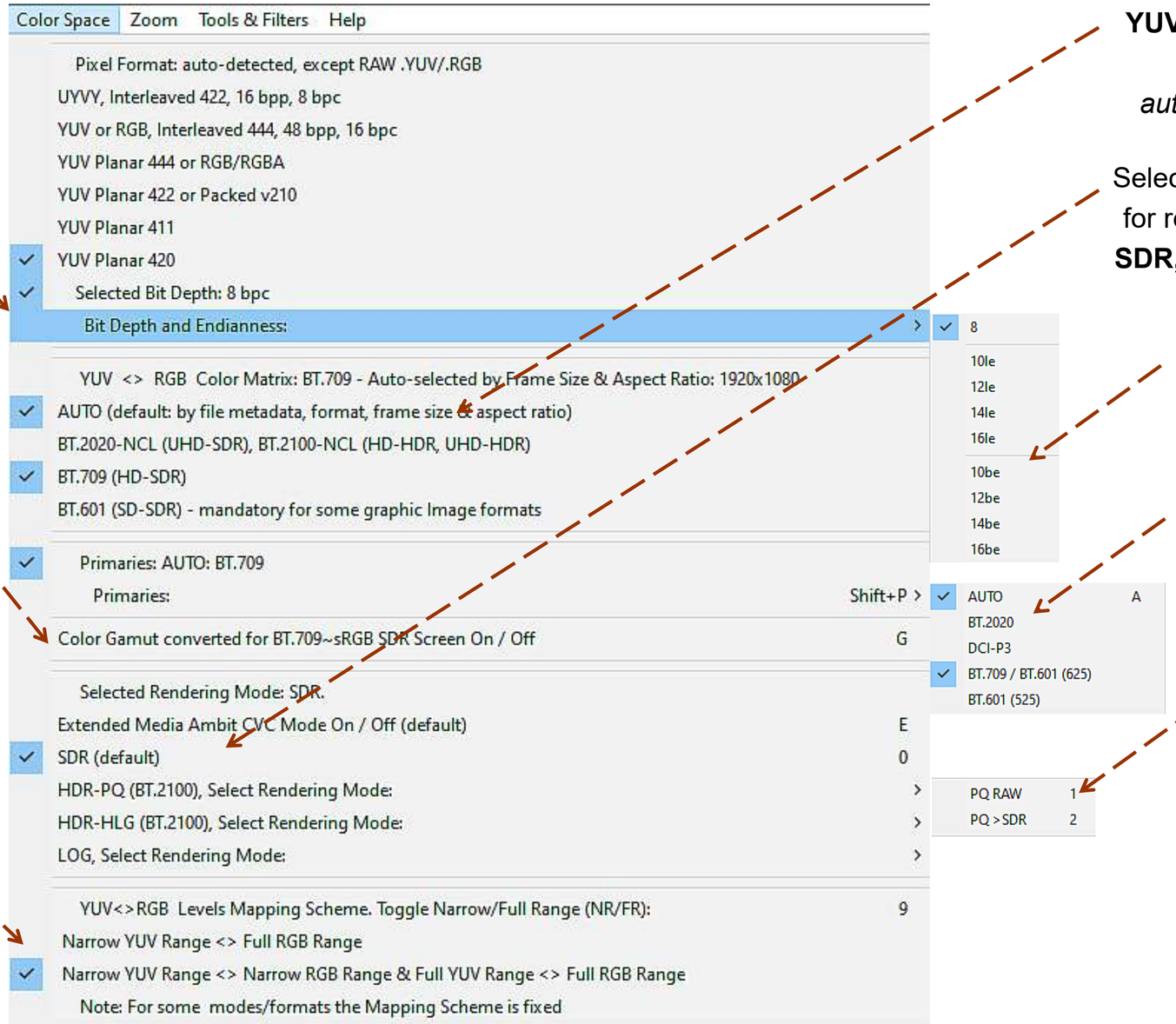
YUV/RGB **Pixel Format**:
Except Raw YUV/RGB files the format is set automatically, so these menu lines are used mainly for information

Color Gamut Conversion Mode
On/Off

Select
YUV ⇔ RGB Conversion Type

For **SDR** & **HDR** Modes user can choose between "**Narrow**" and "**Full**" Data Range

*For some **HDR** Modes the selection is fixed (AUTO), so it can not be changed by user*



YUV ⇔ RGB Color Matrix:
Matrix can be set automatically or manually

Select **Dynamic Range Type** used for rendering and measurements:
SDR, HDR-PQ, HDR-HLG or **LOG**

Select **Bit Depth** and **endianness**
Only for RAW YUV inputs

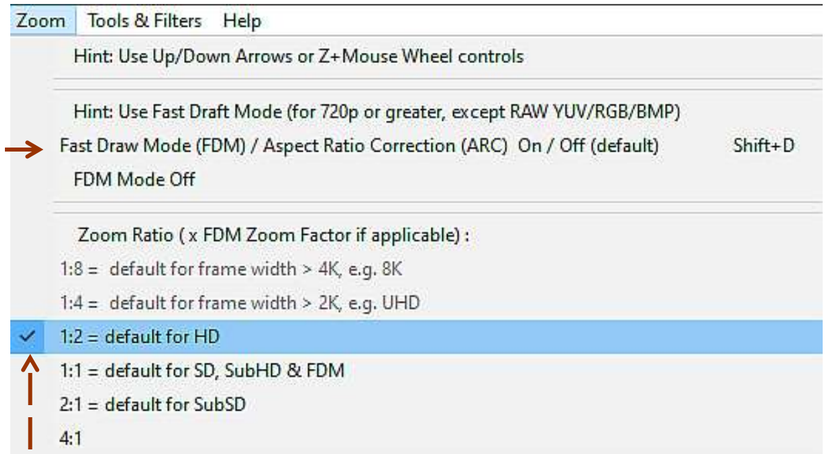
Select **Primaries**

Select a sub-variant of the selected rendering mode:

e.g. for **HDR-PQ** select
HDR-PQ RAW
or
HDR-PQ > SDR
converted RGB

2.7 Zoom and Pan Controls

Fast Draw Mode **provides for faster analysis and playout due to built-in frame size converter** so any input size greater than 1280x720 is converted to *960x540 frame size*



Zoom Ratio can be changed in three ways:

- Click on the desired line in **Zoom menu**
- Press **Up/Down Arrows** (*image centered zoom*)
- Point the cursor to an area of interest, press and hold **Z** key, then rotate **Mouse Wheel** (*cursor centered zoom*)

Select Rendered Image **Zoom Ratio**

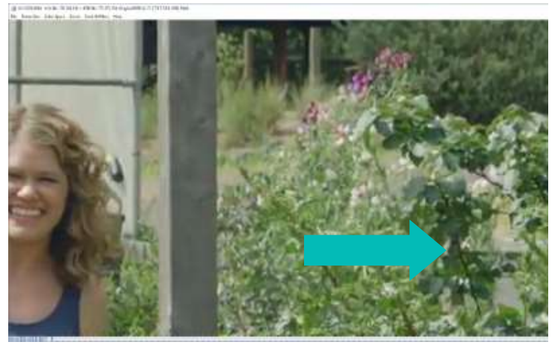
D*epending on Frame Size some ratios (too small or too big) could be excluded, and the corresponding menu line grayed out, e.g. for 960x540 size 1:4 zoom is not available and for UHD frame size 4:1 zoom ratio is not available.*

For ratios greater than 1:1, image is magnified ***by simple pixel repetition without any smoothening filter***, thus making analyzed ***artifacts more visible***

Zoom Ratio 4:1

If zoomed image is larger than VQV active window dimensions (which depends on PC monitor resolution), then press and hold **Left Mouse Button** and move the mouse cursor in the desired direction to move the whole image (Pan Control).

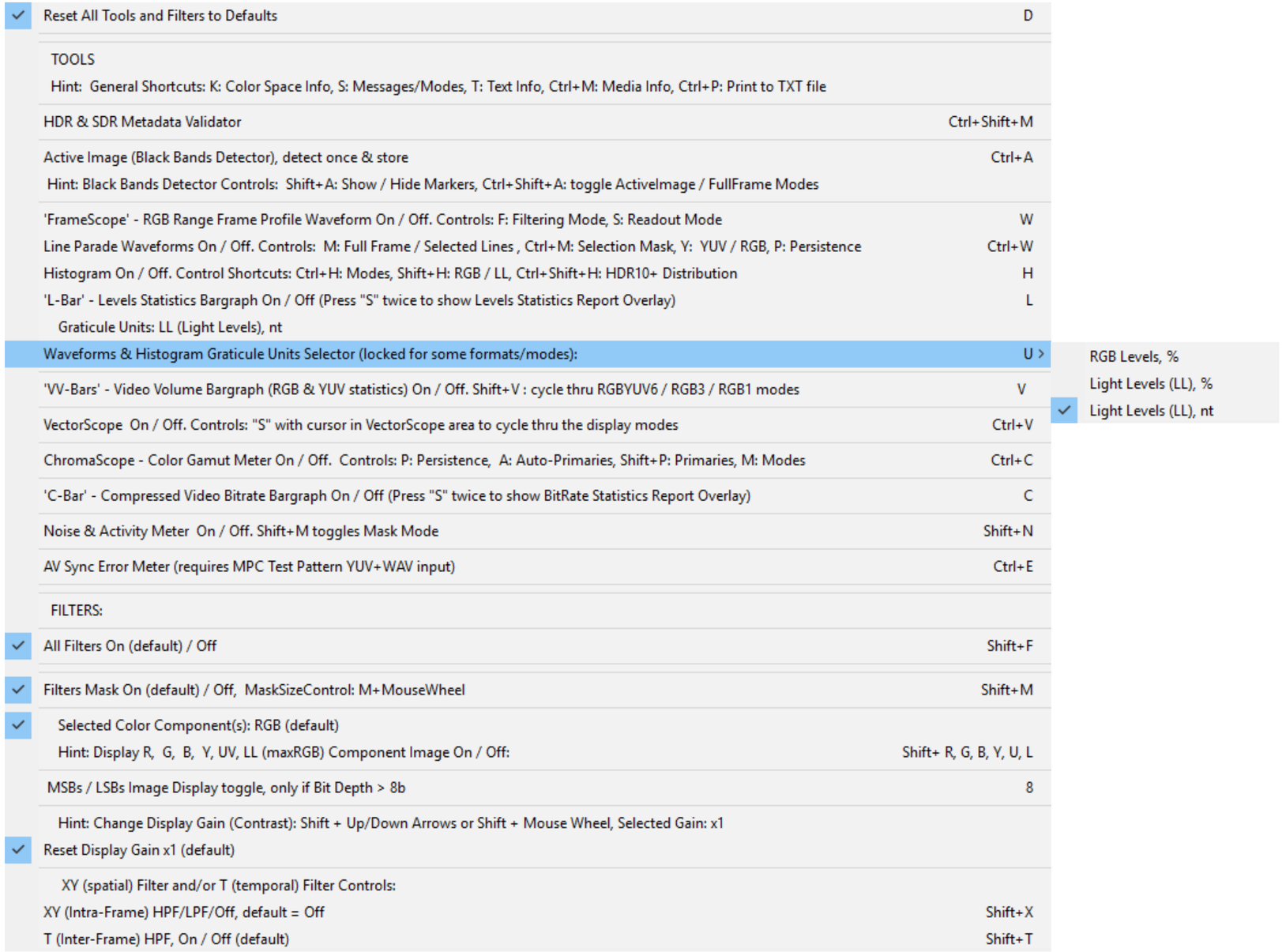
Mouse Pan Control, Zoom Ratio 2:1



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

TOC2

2.8 Tools & Filters Menu



Tools Section:

Controls built-in **meters & analyzers** and the corresponding **overlays** showing the analysis results.

See next slides for more details

Filters Section:

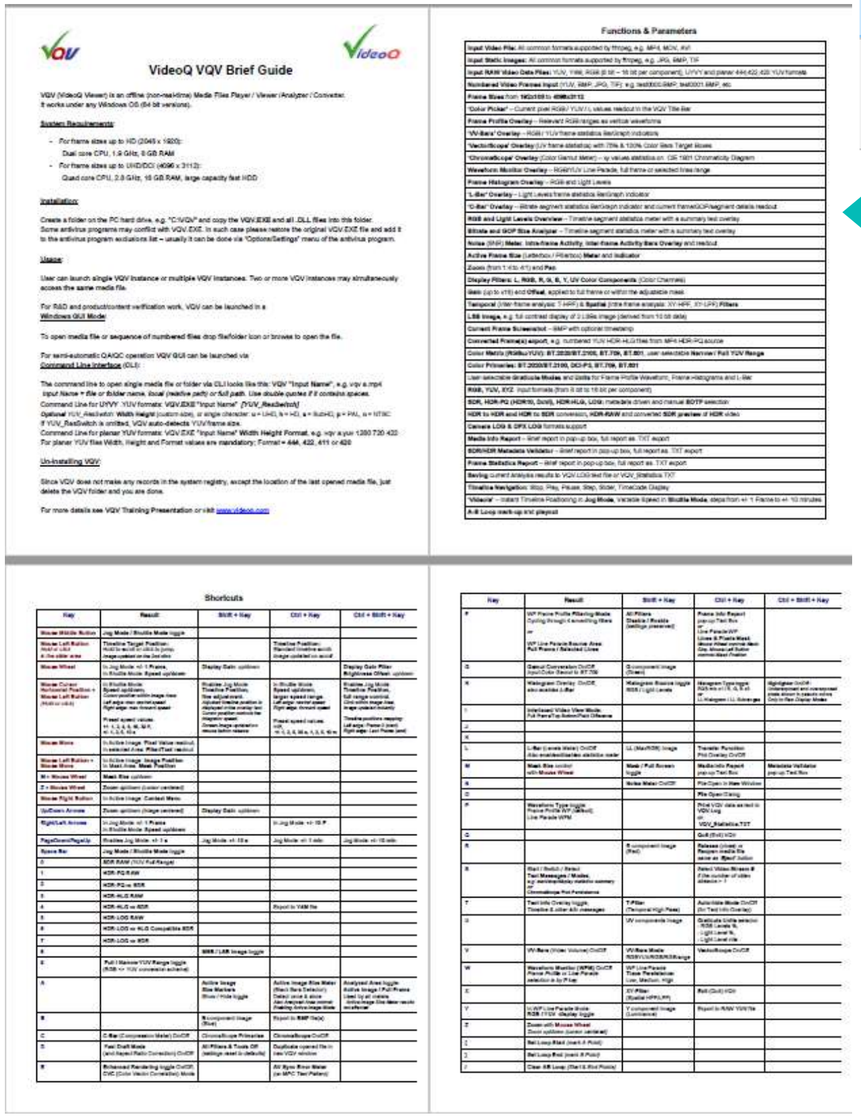
- **Filter Mask** (adjustable square or full screen)
- **R, G, B, Y, UV, LL** color channels selection
- **MSB/LSB** image selection (if input > 8b)
- **Display Gain** (contrast): x1, x2, x4, x8, x16
- **XY (spatial) Filter**: HPF (details) or LPF (blur)
- **T (temporal) Filter** shows frames differences

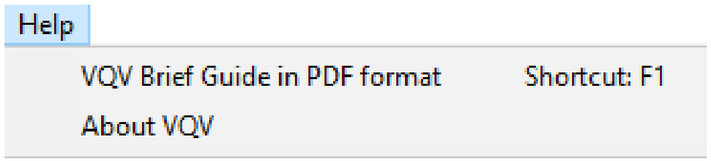
XY Filter can be combined with T Filter, e.g. T HPF cascaded with XY LPF.

See next slides for more details.

TOC2

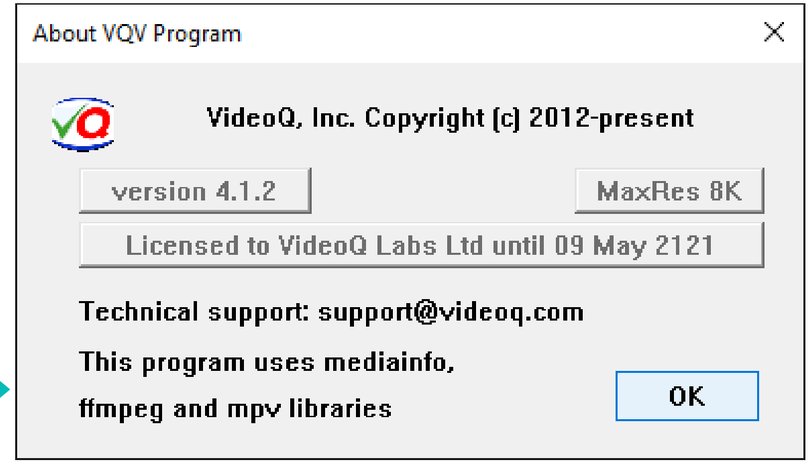
2.9 Help Menu





Press keyboard **F1** button to open "**VideoQ VQV Brief Guide**" PDF document, containing list of available functions and Table of Shortcuts
See also Table of VQV Shortcuts slides at the end of this presentation

Help menu 2nd line brings up compact '**About VQV**' pop-up window.
It contains version and copyright details.



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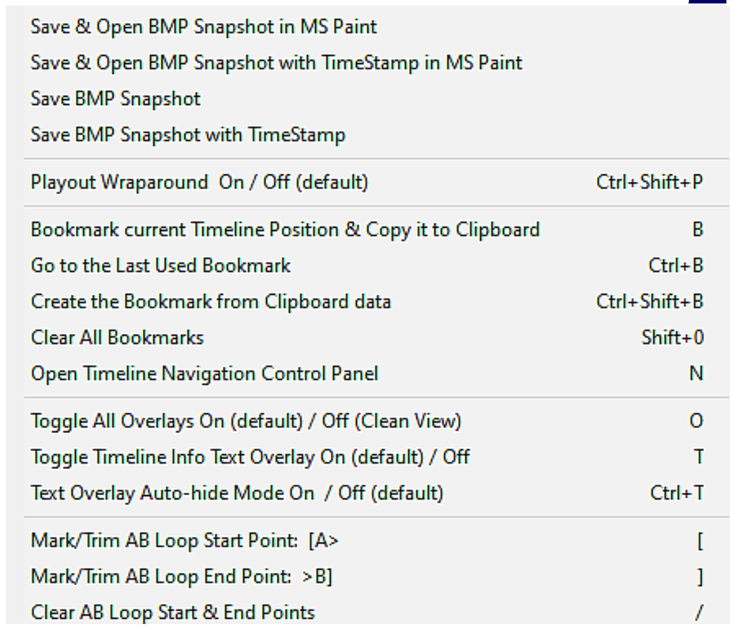
*Note that the VQV companion **VQMP** player is controlled by a separate group of shortcuts aka "keybindings". To see the full list and details of VQMP controls press keyboard **F1** button within the active VQMP window to open Windows OS standard "**vqmpv.chm**" help file.*
*VideoQ **VQMP shortcuts** are significantly different from the original MPV shortcuts, but some original MPV shortcuts are still active.*

TOC2

2.10 Right-click Context Menu



This pop-up window can be invoked by pressing **Mouse Right Button** whilst cursor is in the **Active Image Area**.

The menu contains 4 sections allowing to:

- Save current frame **Snapshot** as **BMP** file and optionally open it with **Microsoft Paint**
- Control **Playout Wraparound Mode** and **Bookmarks** creation and usage
- Control **Timeline & Info Text Overlays**
- Mark **A-B loop** timeline segment boundaries (Start and End points)

Snapshot file name is automatically appended by current frame number and frames count, e.g. "TestSDR_frame_225_of_10377.BMP".

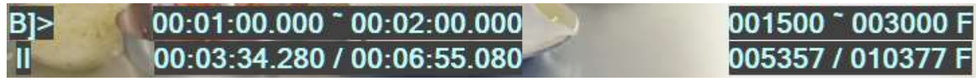
Snapshot file name can be optionally appended by PC local date and time, e.g. "TestSDR_frame_225_of_10377_20170308_205801.BMP"

Loop start set: displayed symbol = **[A>**

Loop end set: displayed symbol = **>B]**

Time position within the loop limits: displayed symbol = **[AB]**

Time position outside the loop limits: displayed symbol = **B]>**



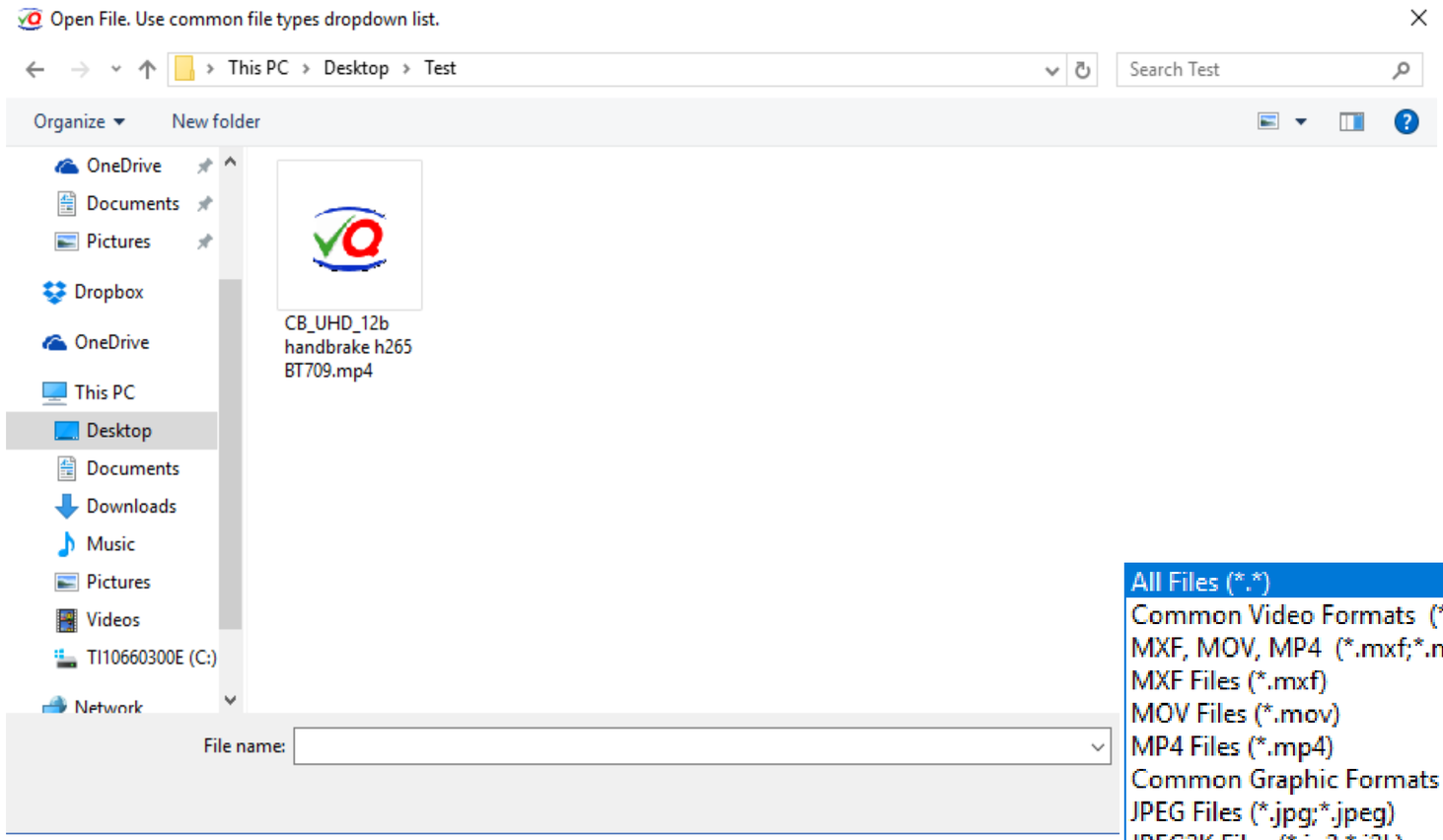
There are 3 modes of Text Overlay presentation: **On**, **Off**, and **Auto-hide**.
In Auto-hide Mode two lines of Text Overlay are displayed only when mouse cursor is below the active image, i.e. in the timeline slider area.

Default AB Loop limits (frame numbers) are: A (Start) = 0, B (End) = frames_count -1
If Start > 0 or End < frames_count -1, AB limits are shown in the **top row** of Text Overlay
For example if frames_count = 100, and user marked only A point = 20, then loop playout will start at frame 20, continue until frame 100 and restart at frame 20 if Wraparound Mode is ON.

TOC3 ⇐ Click on **TOC3** for the **Section 3 TOC**

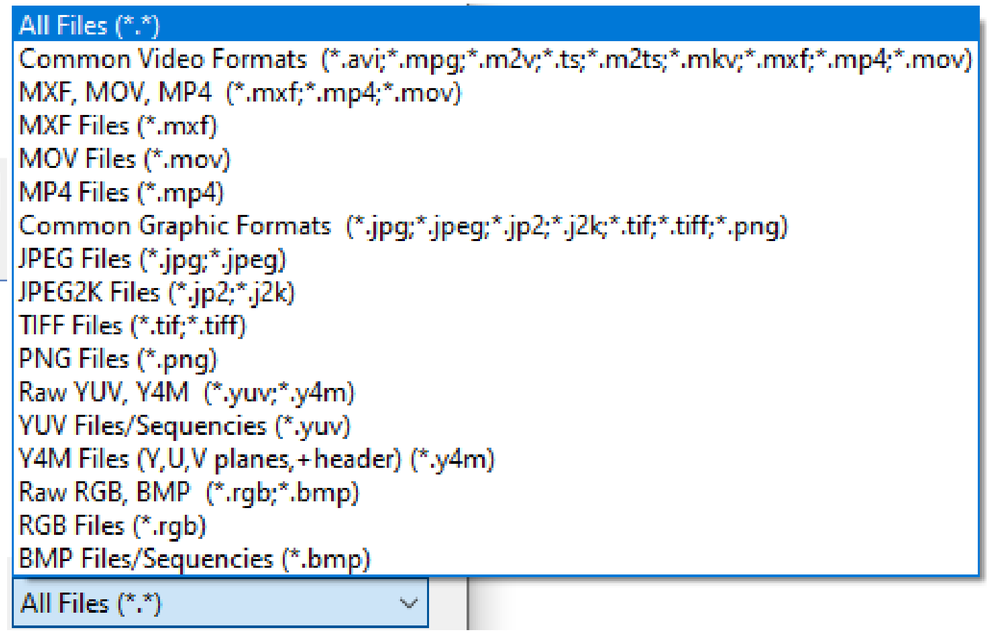
3. Opening Media File

3.1 Opening Media File via Windows GUI Dialog

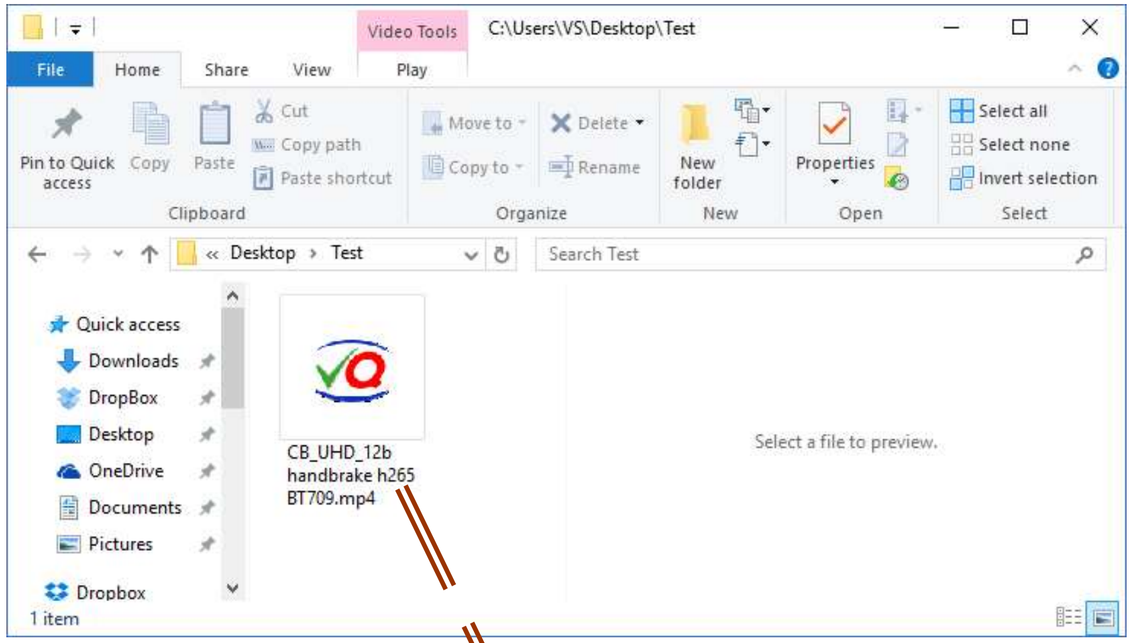


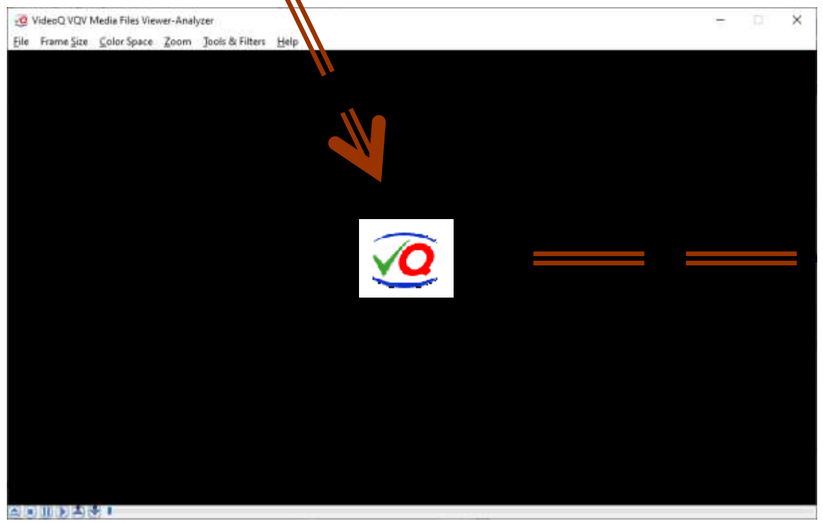
VQV GUI Menu File/Open (Shortcut Ctrl+O) brings up standard Windows dialog.

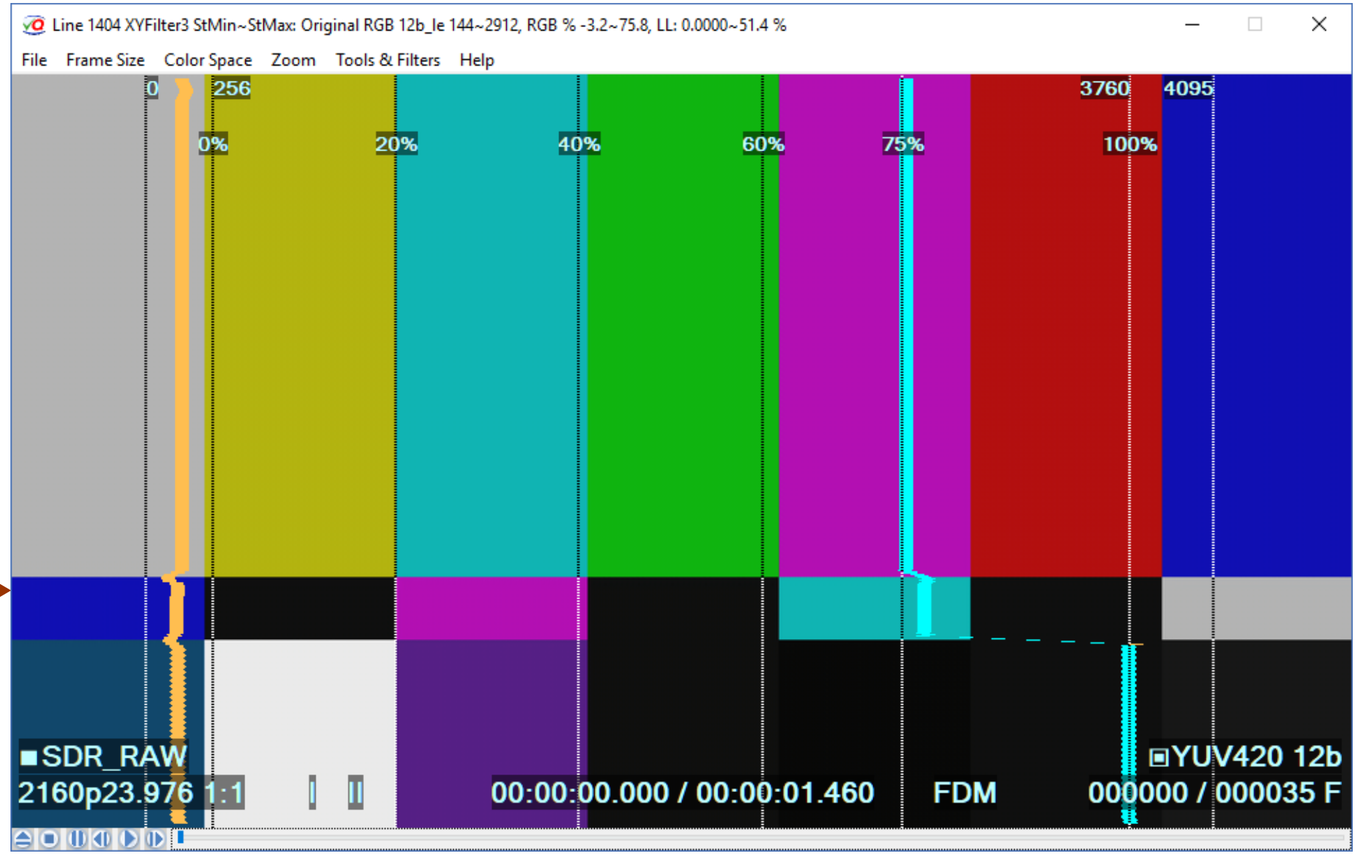
User can use wildcards, type specific file type, e.g. *.mp4, or select the appropriate line from **drop-down list**.



3.2 Opening Media File via Drag-And-Drop







VQV supports Windows standard file extension association procedure, as well as **drag-and-drop** (quick & easy) opening procedure.

3.3 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:

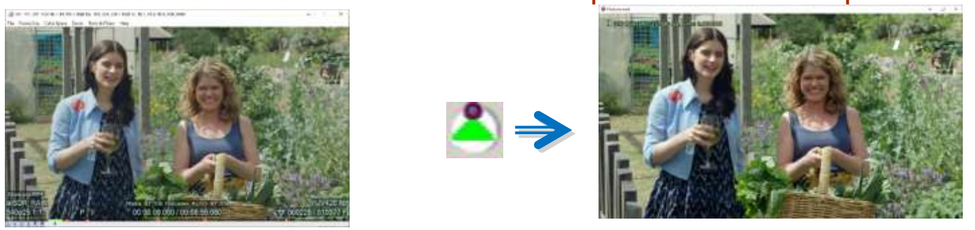
- Full path to media file
- Timeline position in s.ms format

Click on VQV  button or use **Ctrl+ Up Arrow**
to send message **from VQV to VQMP**

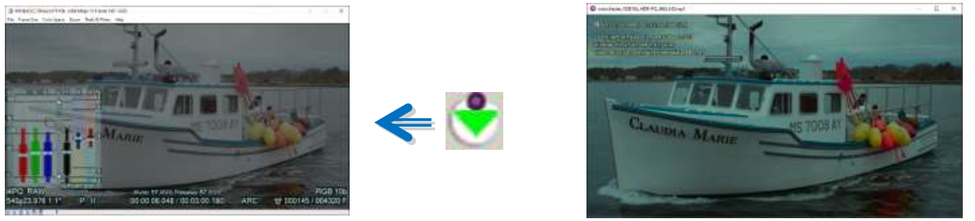
Click on VQV  button or use **Ctrl+ Down Arrow**
to request and receive message **from VQMP to VQV**

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

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



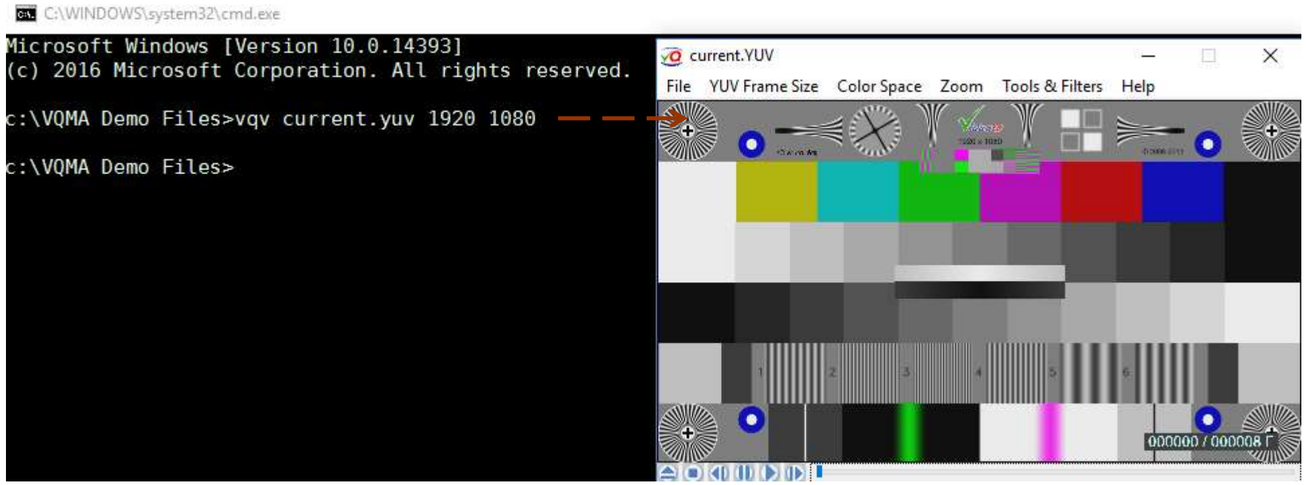
VQV **requests and receives** from VQMP HDR file path and timeline position



Special case: VQV **can not open audio** file/stream, but VQMP **can**

3.4 Opening Media File via CLI 1

Simple Example: Single raw UYVY data .YUV file opened via command line interface



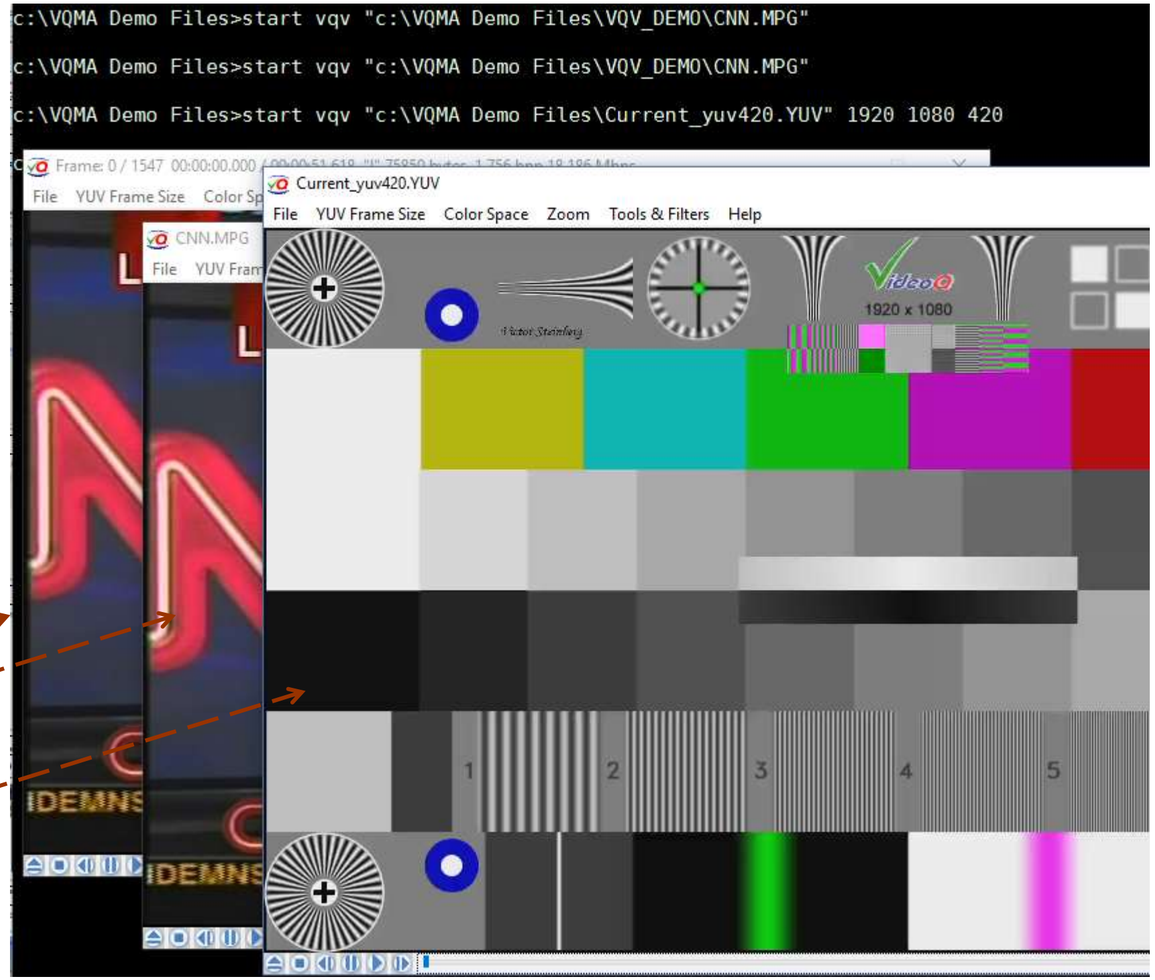
Advanced Example: Launch multiple VQV instances, using 'start' prefix:

Open several files or open the same file in several separate windows

start vqv "c:\VQMA Demo Files\VQV_DEMO\CNN.MPG"

start vqv "c:\VQMA Demo Files\VQV_DEMO\CNN.MPG"

start vqv "c:\VQMA Demo Files\VQV_DEMO\CNN.MPG" 1920 1080 420



Such batch opening is very useful for benchmarking and iterative tests – because it allows side-by-side comparison of "before and after" variants.

3.5 Opening Media File via CLI 2 (continued)

If Input Name is a FOLDER, containing **numbered YUV or BMP files**, then the file with the **lowest number** belonging to the **numbered frame sequence** found **within the folder** will be opened first, and the whole sequence can be played, e.g.

vqv "c:\VQMA Demo Files\Vadaro Raptor"

If Input Name designates **any numbered file** within a folder, then the file with the **lowest number** belonging to the **numbered frame sequence** will be found, and the whole sequence can be played, e.g. the command line

vqv "c:\VQMA Demo Files\Vadaro Raptor\RV_25Apr13_3.bmp"

produces the same result as the command line above

```
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

c:\VQMA Demo Files>vqv "c:\VQMA Demo Files\Vadaro Raptor\RV_25Apr13_3.bmp"
```

TOC4 ⇐ Click on **TOC4** for the **Section 4 TOC**

4. Timeline Navigation and Playout

4.1 Timeline Navigation and Playout Controls

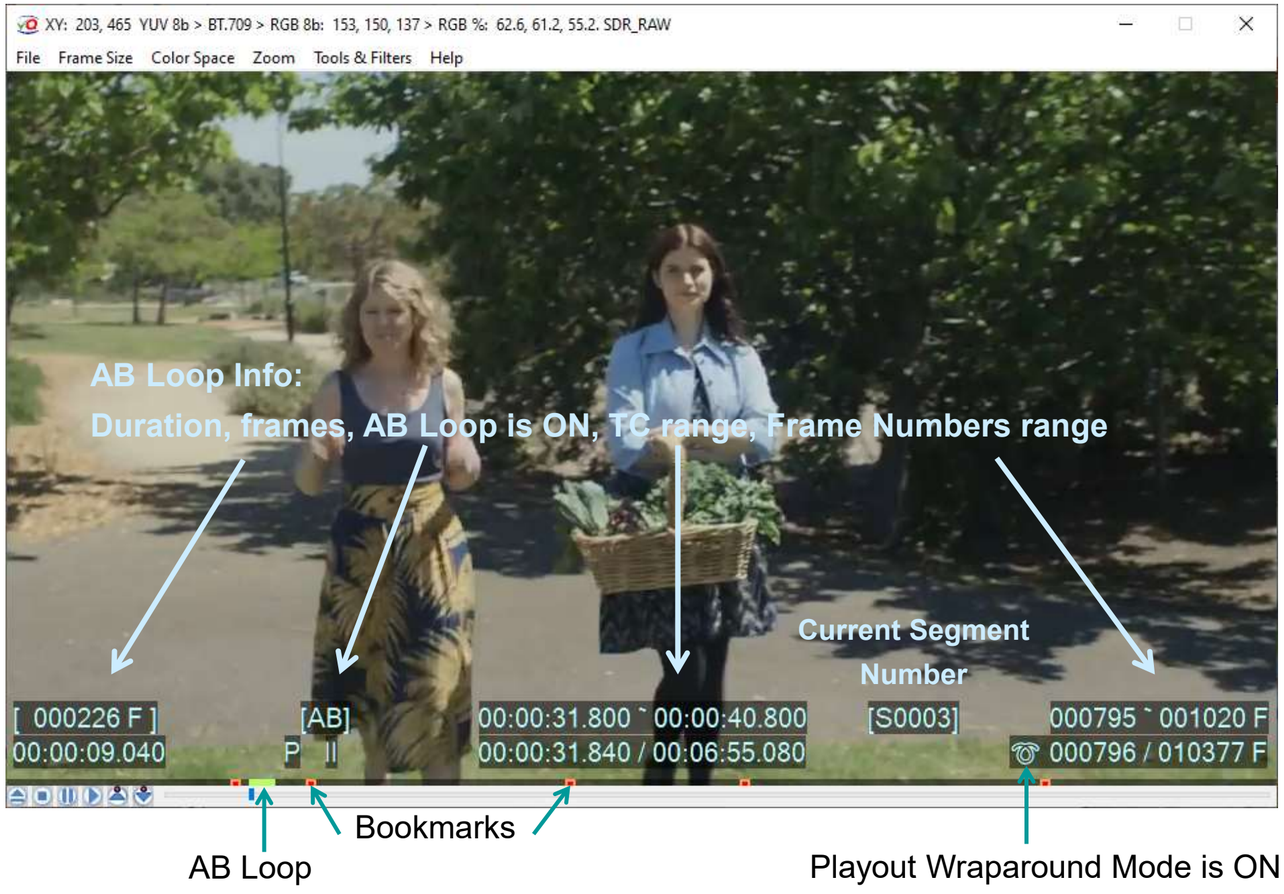
Shuttle Mode – Speed Controls
VideoQ Videola™

Mouse Wheel
or **Right/Left Arrows:**
Preset speed values:
+/- 0, 1, 2, 5, 10 frames,
1, 2, 5, 10, 20 s, 1 m (60 s)

Also available are fractional playout speeds (slow motion):
+/- 0.1, 0.2 and **0.5**
of the media file frame rate.

Ctrl + Mouse Left Button
and cursor position
within Image Area

On release of Mouse Left Button or Ctrl key playout continues at the last selected speed.



Play Button, Space Bar
and **Mouse Middle Button** toggle between:
- **Play** (aka **Shuttle Mode**)
- **Pause** (aka **Jog Mode**)

Pause button always enables **Jog Mode**

Shift + Mouse Left Button click within Image Area also toggle between:
- **Play**
- **Pause**

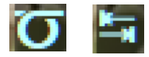
and reset playout speed to +1.0

Jog Mode – Timeline Position Controls

• **Mouse Wheel**	**+/- 1 frame**
• **Right/Left Arrows**	**+/- 1 frame**
• **Ctrl + Right/Left Arrows**	**+/- 10 frames**
• **PgDn/PgUp**	**+/- 1 s**
• **Shift + PgDn/PgUp**	**+/- 10 s**
• **Ctrl + PgDn/PgUp**	**+/- 1 m**
• **Ctrl + Shift + PgDn/PgUp**	**+/- 10 m**

- **Ctrl + Mouse Left Button**
and cursor position within Image Area
Seek with variable speed.

On release of Mouse Left Button or Ctrl key playout will **pause** at **last shown frame**

Ctrl + Shift + P toggles  **Playout Wraparound Mode** On/Off.

*In Shuttle Mode every video frame is decoded and displayed only at speed values **-1**, **0** and **+1**. Any other speed means decimation, e.g. speed +5.0 means that every 5th frame is shown.*

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

4.2 Segments Info Overlay Options

Press **Shift + S**
to cycle thru 3 Text Info Display Modes:
Segments, **AB Loop**, **Regular Video**
(only if Segment List Data available)

Press **< *or* >** to browse Bookmarks / Segments by Number

or

Ctrl + < *or* > to browse Bookmarks by Position *or* Segments +/- 10 (50)

Press **Ctrl + 0**
to toggle Segments Info Text Overlay:
On/Off
(Segments List data are preserved)

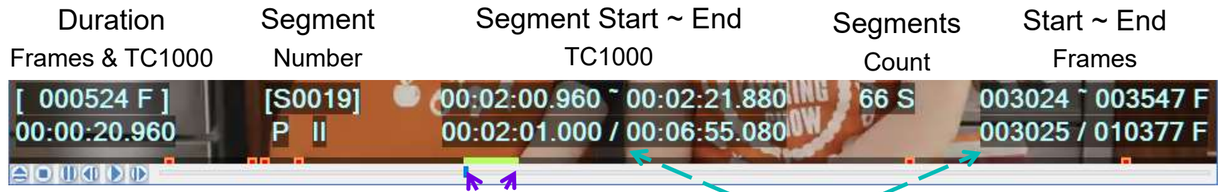
Regular Video Mode with optional Segments Info

Current Segment Number & Duration

Current Bookmark Number & Position

Other Bookmarks

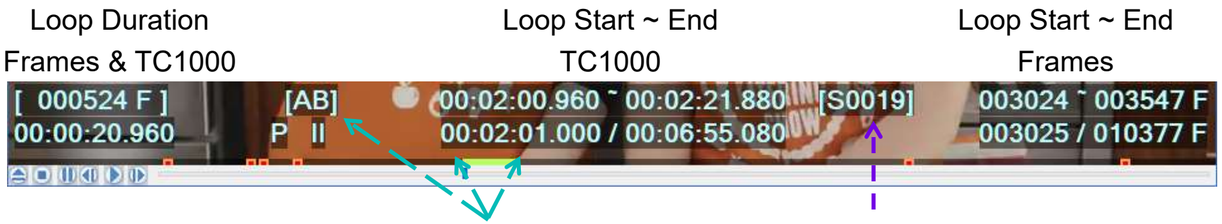
Segments Info Mode



Current Segment

Current Time Position TC1000 & Frames

AB Loop Mode with optional Segments Info



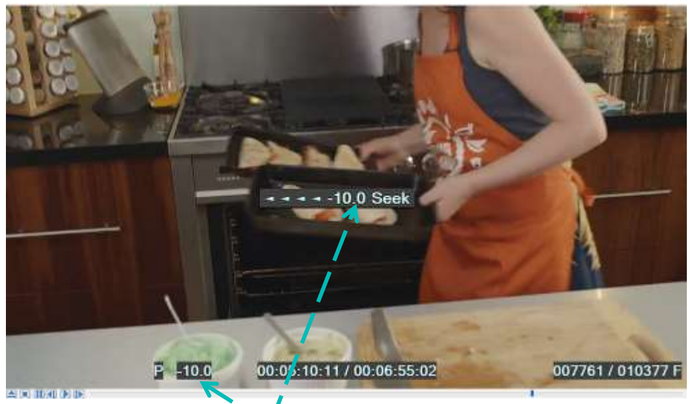
AB Loop Mode Markers

Segment Number
(if matching AB Loop Start & End Positions)

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

4.3 Seek and Play Controls and Indicators

Jog Seek Mode – Position Control:
Mouse Left Button *within Slider Area*



Jog Seek Mode – Position Control: **Ctrl + Mouse Left Button** *within Image Area,*
also **Ctrl** and/or **Shift** + **Left/Right Arrows** or **PhDn/PgUp**

Shuttle Mode Speed Control by Mouse Wheel,
also **Left/Right Arrows**

Shuttle Mode – Speed Control: **Ctrl + Mouse Left Button** *within Image Area*

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

4.4 Timeline Navigation Panel

Press **N**
to invoke
Navigation Panel
pop-up window

Text Edit Boxes:
Enter / copy / paste *either* **Segment Number**, **Frame Number** *or* **Time Position: s[.ms]**, **TC1000** *or* **SMPTE Time Code** of the **Target Timeline Position**. All related boxes content will be auto-updated after confirmation.
If confirmed by **Enter** key or **OK** button (1st OK to review, 2nd OK to confirm), VQV will create new **Bookmark** and go this position.

Timeline Info Boxes
(not editable)

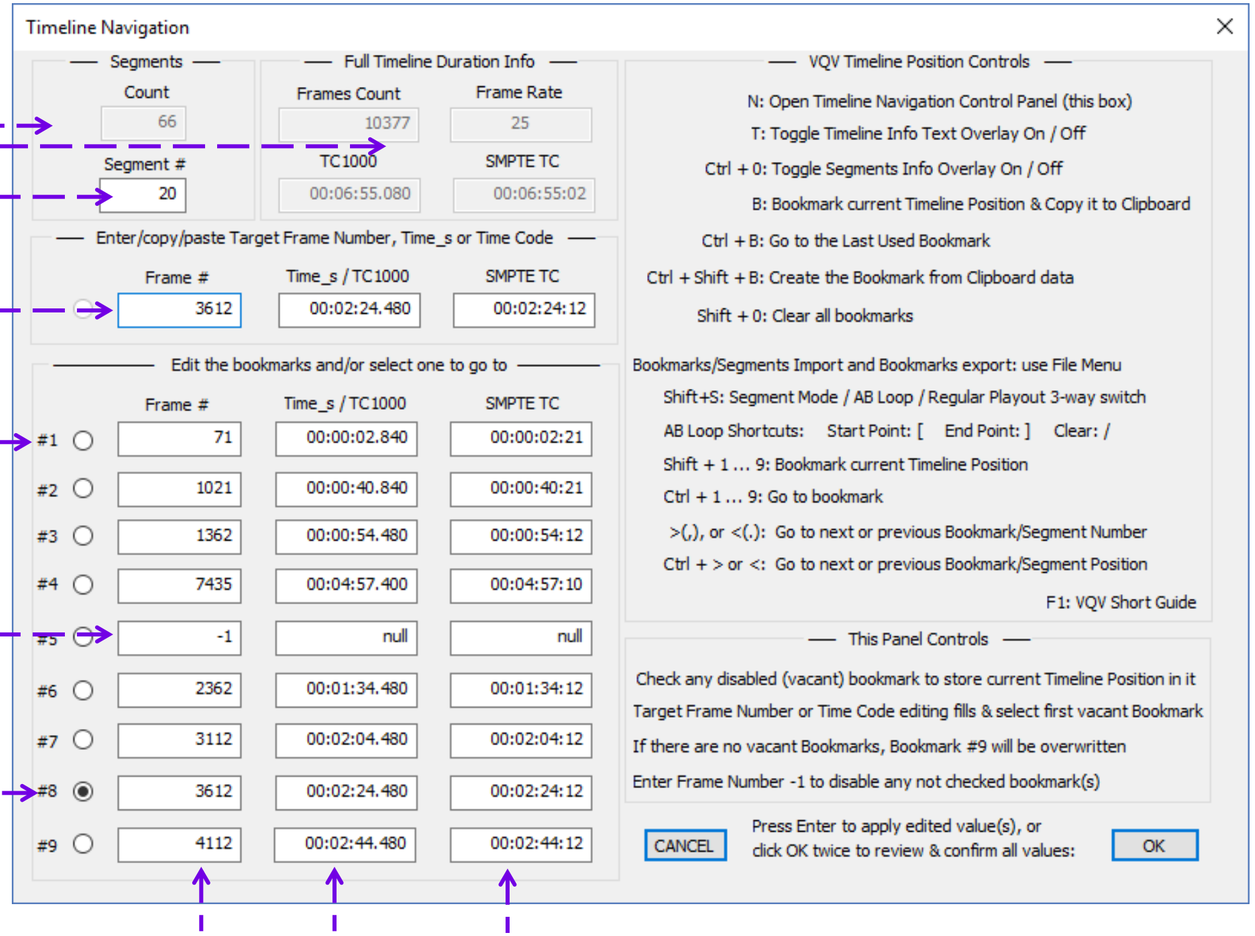
Target Segment
(if segments data available)

Target Time Position Direct Control Boxes

9 Radio Buttons
serve for direct selection of the **Target Time Position**

*Frame Number **-1** means disabled (vacant) Bookmark*

*At the dialog start the selected Radio Button designates the **Last Used Bookmark***



Review all Frame Numbers and Time Code strings, then ***confirm*** them by 2nd **OK** click

It is possible to edit more than one **Bookmark Box**
Note that Frame Numbers and Time Code strings should be ***confirmed*** by 2nd **OK** click.

Entering Frame Number **-1** disables (vacates) the edited bookmark.

Bookmarks / Segments Shortcuts:
(active only when Navigation Panel closed)
To **record** bookmark on pause or during playout press **B** or **Shift + Digit Key** from **1** to **9**.

To **go to** the recorded bookmark press **Ctrl + Digit Key** from **1** to **9** at any time.

It is possible **to clear** all bookmarks on pause or during playout by pressing **Shift + 0**

To go to the **Next** or **Previous Bookmark Number** or **Segment Number** press **<** *or* **>** key

To go to the **Next** or **Previous Bookmark Position** press **Ctrl + <** *or* **>.**
Ctrl + B: go to the **Last Used Bookmark**.

Ctrl + 0 toggles Segments Info On/Off

4.5 Bookmarks Info Report and Bookmarks Controls

Use File>Export Bookmarks Menu

to save **InFilePath.vqvbm.txt** and open in minimized Notepad window.

Report file name is fixed and it is co-sited with the analyzed media file.

```
VQV v 2.2.1. Copyright (c) 2012-2018 VideoQ, Inc.
Bookmarks Info Report created: 2018-11-25T22:06:53
Media File: "C:\VQV_Test\_HDR_Test_Sample_1knt_10b.mp4"
Frames Count: 0015000, Duration: 00:10:00.000, Frame Rate: 25
#, FrameNo,    TC1000,     SMPTE_TC
1, 0000000, 00:00:00.000, 00:00:00:00
2, 0009000, 00:06:00.000, 00:06:00:00
3, 0003000, 00:02:00.000, 00:02:00:00
4, 0006000, 00:04:00.000, 00:04:00:00
5,    null,     null,      null
6,    null,     null,      null
7,    null,     null,      null
8,    null,     null,      null
9,    null,     null,      null
== DO NOT EDIT ABOVE THIS LINE ==
== ADD YOUR NOTES BELOW =========
```

It is possible to rename the saved bookmarks file as needed.
It is also possible to add explanatory notes ***after*** the bookmarks data.

For QA/QC purposes it is helpful to add comments about the bookmarked timeline positions, e.g. “Frame 9000 Frame Average Light Level is beyond the specified limit”.

Added comments are ignored in case of opening of the modified bookmarks file via **File>Import Bookmarks** menu.

Use **B** shortcut to bookmark ***current*** **Timeline Position** and copy the TC1000 time code string of this position to Windows Clipboard.
Use **Ctrl + B** to go to the **Last Used Bookmark** timeline position.

Ctrl + Shift + B shortcut can be used to create bookmark from Clipboard data, e.g. for fast bookmark transfer from any document or from one VQV instance to another VQV instance.
The supported data string format options are:

- Frame Number, e.g. “018002”
- TC1000 Time Code, e.g. “00:06:00.040”
- SMPTE Time Code, e.g. “00:06:00:02”

4.6 Text Info Overlay

*If mouse **cursor** is in the **slider area**, then speed, frame number and time code are shown in the **Title Bar** thus duplicating the **Text Info Overlay** shown at the bottom of Active Image*

Press **T** key to toggle Text Info overlays On/Off,

Ctrl + T toggles Text Overlay Auto-hide Mode

Current playout speed
i.e. Shuttle Mode timeline steps
in **frames**. **seconds**, or **minutes.**

Pause symbol = Jog Mode

Current Frame Type
(only for compressed video),
e.g. '**I**', '**P**', '**B**'

DR Mode & Scanning Standard
- Selected Dynamic Range Mode
- Frame Height, Interlace, Rate, and Zoom *(hidden on playout)*

Video Format Info
(hidden on playout)

YUV ⇔ RGB **Narrow Range** (NR) Symbol

YUV ⇔ RGB **Full Range** (FR) Symbol

Timeline Position Info:
CurrentTimeCode / DurationTimeCode

Timeline Position Info:-
CurrentFrameNo / TotalFramesCount

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

TOC5 ⇐ Click on **TOC5** for the **Section 5 TOC**

5. Tools and Meters

5.1 Tools and Meters Categories

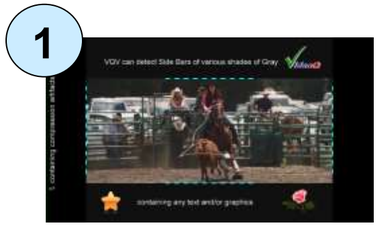
- VQV analyzers and meters can be sorted out into 3 categories:
  1. YUV & RGB **Levels Analyzers**, providing for several secondary analyzers, such as **Frame Lines RGB Range Profile**, **Video Volume Meter**, **VectorScope**, **ChromaScope**, etc.
  2. Intra-frame Activity and Inter-frame **Activity Analyzers**, also providing for **Noise Level Meter**
  3. **Bitrate, Packet Size** and **GOP Structure Statistics Analyzers**
- For all 3 categories the analysis results are presented in two formats:
  1. **Graphical overlays** – Bargraphs, Waveforms and Vector Display formats
  2. **Numerical readouts**, shown as Title Bar Message and/or Text Overlay
- Some analyzers, filters and overlays can be combined, some others are mutually exclusive

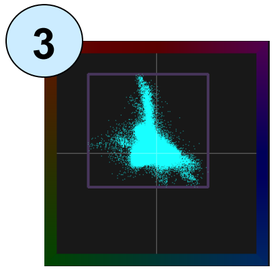
TOC5

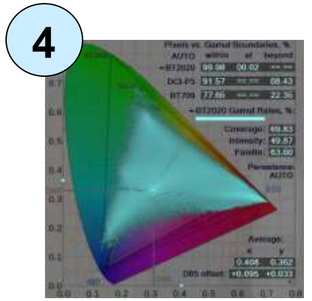
5.2 Tools and Meters Overview

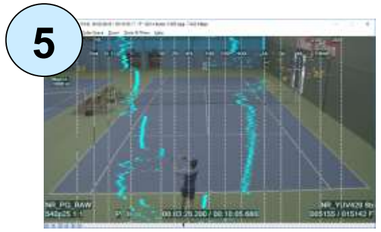
See next slides for detailed description of:

1. **Active Image Size Meter**
2. Video Volume Meter – **VV-Bars ™**
3. **VectorScope**
4. **ChromaScope**
5. RGB Frame Profile Monitor – **FrameScope ™**
6. RGB/YUV Line Parade **Waveform Monitor**
7. RGB/Light Levels **Histograms**
8. RGB/Light Levels Analyzer – **L-Bar ™**
9. Bitrate Analyzer – **C-Bar ™**
10. **Noise Meter**









5.3 Active Image Frame Size Meter

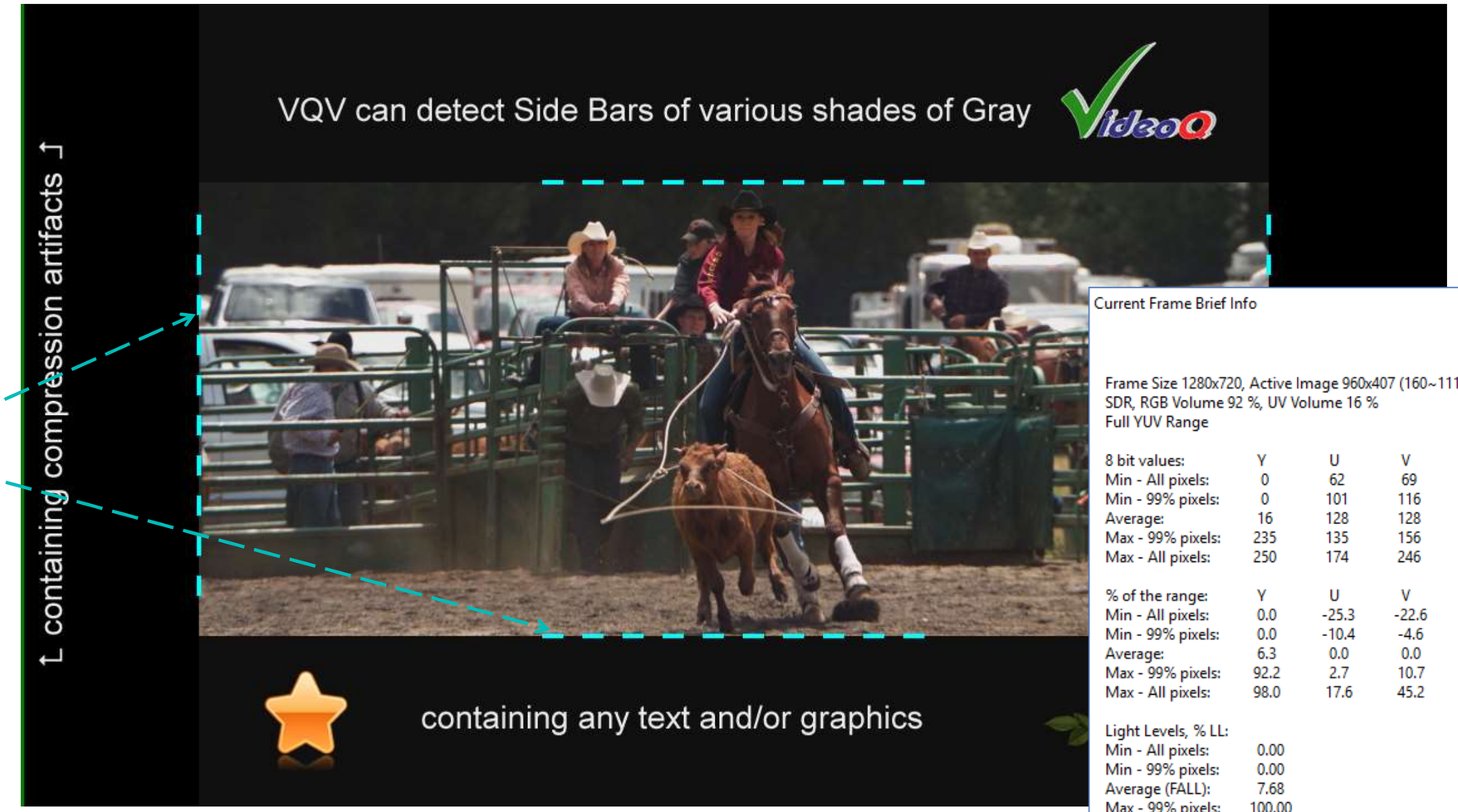
Press **Ctrl + A**
to detect
Active Image Size

Also used as Statistics Analysis Area
***Full Frame** / **Active Image** switch*

Press **Shift + A**
to show/hide
Active Image Size
Markers

Ctrl + Shift + A
Analyzed Area toggle:
Active Image / Full Frame

Active Image Size Meter results are not affected



Current Frame Brief Info

Frame Size 1280x720, Active Image 960x407 (160~1119x160~566)
SDR, RGB Volume 92 %, UV Volume 16 %
Full YUV Range

8 bit values:	Y	U	V	R	G	B
Min - All pixels:	0	62	69	0	0	0
Min - 99% pixels:	0	101	116	0	0	0
Average:	16	128	128	45	43	39
Max - 99% pixels:	235	135	156	235	235	233
Max - All pixels:	250	174	246	255	254	254

% of the range:	Y	U	V	R	G	B
Min - All pixels:	0.0	-25.3	-22.6	0.0	0.0	0.0
Min - 99% pixels:	0.0	-10.4	-4.6	0.0	0.0	0.0
Average:	6.3	0.0	0.0	17.6	16.9	15.3
Max - 99% pixels:	92.2	2.7	10.7	92.2	92.2	91.4
Max - All pixels:	98.0	17.6	45.2	100.0	99.6	99.6

Light Levels, % LL:

Min - All pixels:	0.00
Min - 99% pixels:	0.00
Average (FALL):	7.68
Max - 99% pixels:	100.00
All pixels Max (CLL):	100.00

Save full info to machine-readable "VQV_FrameInfoReport.TXT" ?

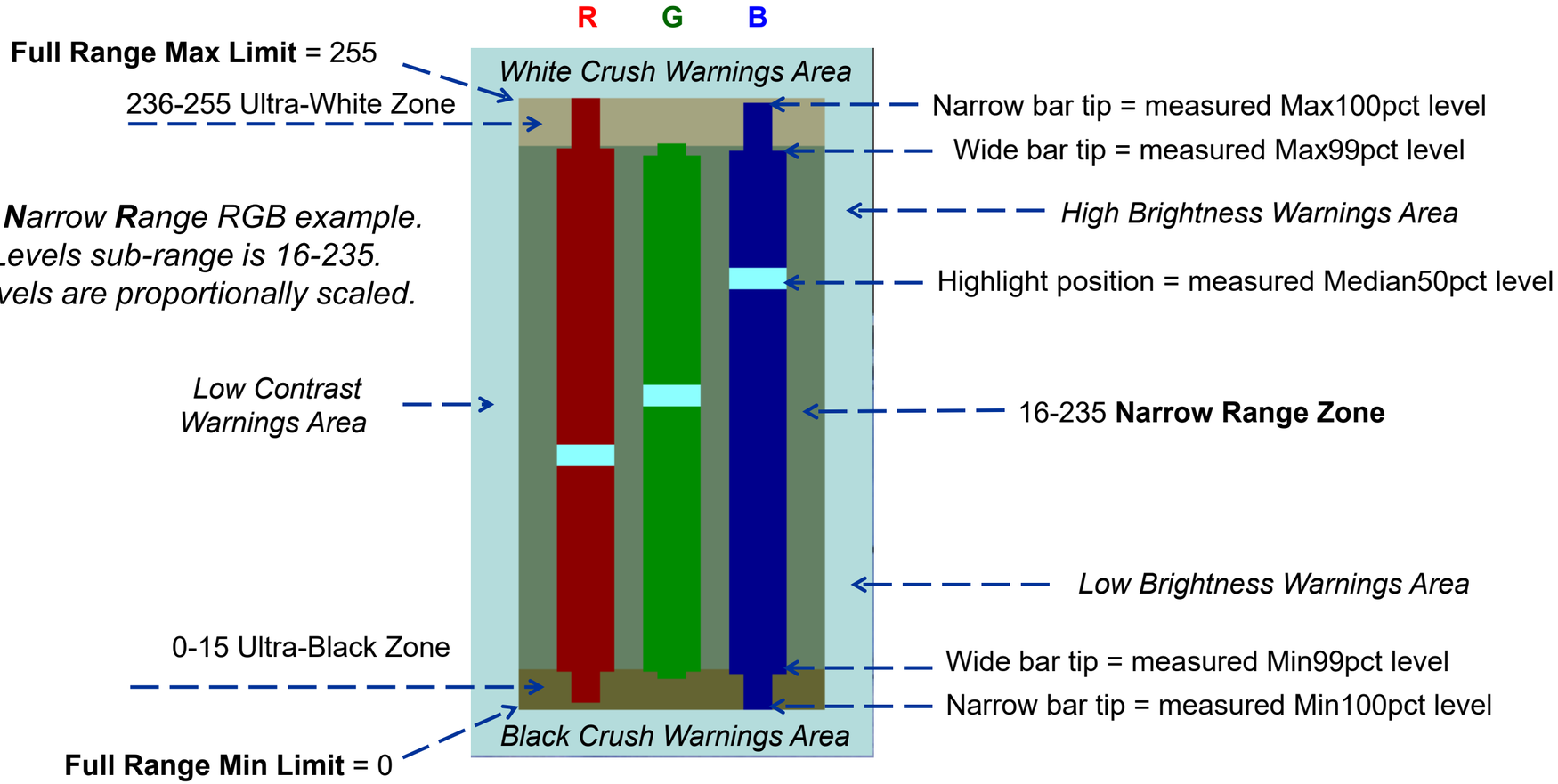
Yes No

***Active Image Size Detection** affects the results of **all other Meters** because the black bands (Letterbox, Pillarbox, PostStamp) may significantly affect image levels and activities statistics.*

5.4 Video Volume Bars – VV-Bars Overlay

Press **V**
to toggle On/Off
VV Bars Overlay

*This slide shows typical 8 bit **N**arrow **R**ange RGB example.*
For 8 bit NR encoding Valid Levels sub-range is 16-235.
For Bit Depth > 8 bit these levels are proportionally scaled.



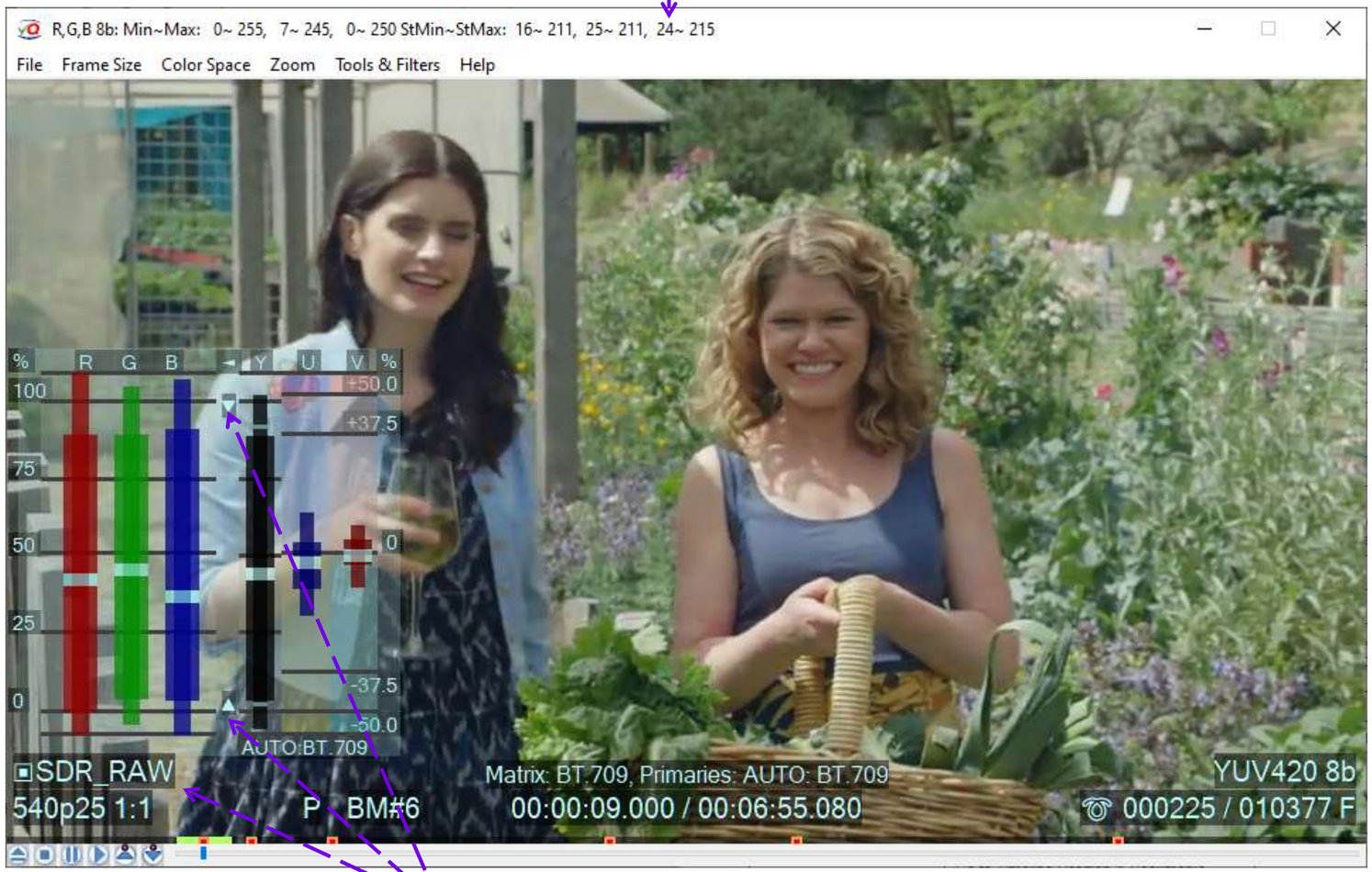
Each **Wide Bar** represents the color component range for **reliable 98%** of current frame pixels, ignoring specular highlights, whilst corresponding **Narrow Bar** shows ***extreme*** values for **all (100%)** pixels - they are nearly random and may vary a lot.

This explains the drastic difference in the dynamic behavior of two bars on live video playout:
Wide Bar size and position typically do not change significantly from frame to frame, but Narrow Bar tips are moving very fast.

5.5 VV-Bars Variants

Press **V**
to enable **VV-Bars**

Press **S**
and put **Mouse Cursor** in the **VV-Bars area**.
VQV Title Bar shows VV-Bars statistics numerical values



Selected YUV ⇔ RGB Conversion Parameters:
YUV RAW (Narrow Range within Full Range), Matrix BT.709

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

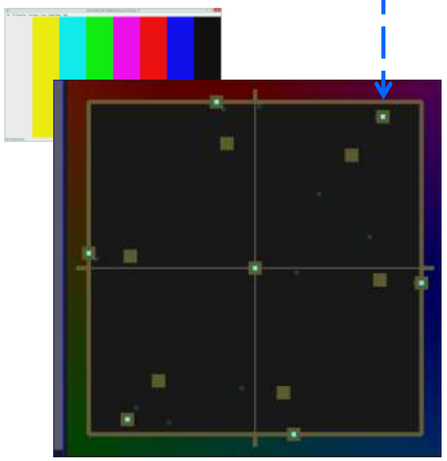
Press **Shift + V**
to cycle thru 3 Display Modes:
YUVRGB (6 Bars), **RGB** (3 Bars), **RGB Range** (1 Bar)

Selected YUV ⇔ RGB Conversion Parameters:
YUV Narrow Range ⇒ RGB Full Range, Matrix BT.709

5.6 Smart VectorScope

Press **Ctrl + V**
to toggle On/Off
VectorScope Overlay

*If Test Pattern input detected, the rectangle limits are auto-adjusted to **measured** UV levels.*
***Target boxes** (dark yellow) designate 75% & 100% Color Bars*



Peak Levels Marker
Rectangle limited by:
U & V
Min & Max values

4 Display Modes

Press **S** whilst
Mouse Cursor
is in **VectorScope area**
to change
display modes

UV Vectors Histogram
with automatic
brightness adjustment

V

U = 255, V = 255

U = 240, V = 240

Rectangular **Palette** is a visual hint for UV vectors hues.

Inner Palette edge serves as a boundary marker for Nominal Range Area (U & V from 16 to 240)

U = 240, V = 128

U = 240, V =16

U

U = 0, V = 0

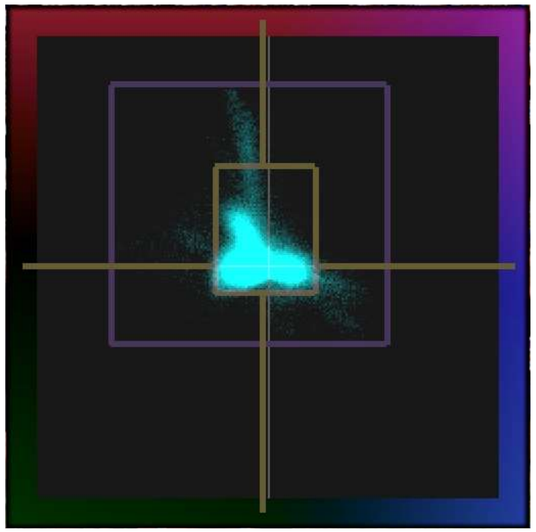
TOC5

5.7 VectorScope Modes

4 Display Modes: Press **S** whilst **Mouse Cursor** is in the VectorScope area to change the display mode

Target Boxes
are enabled automatically
by VQV Color Bars Detector

Mode 1: (default) - **AUTO**

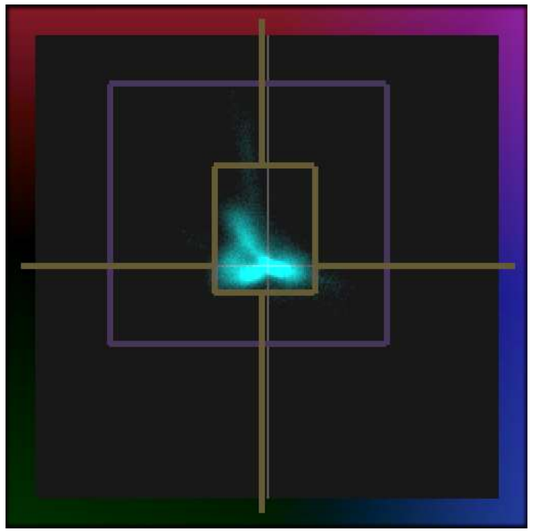


Suitable for **majority of use cases**.

Waveform brightness (Gain) is auto-adjusted to fit measured Chroma Volume limits.

Due to the built-in **Color Bars Detector** Mode 1 automatically switches to Mode 4 if Color Bars or similar test patterns are presented, so there is no need to switch modes manually.

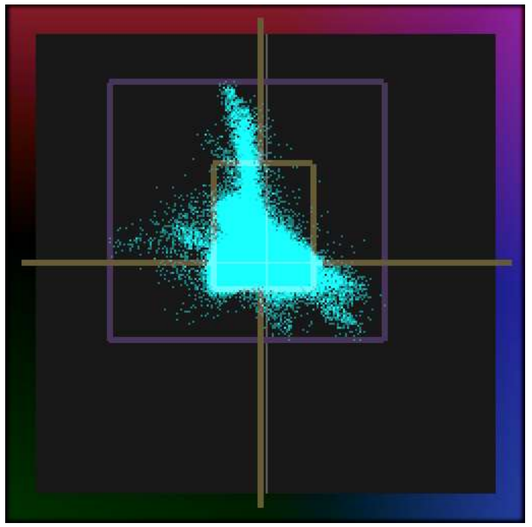
Mode 2: **Fixed Gain x1**



x1 Gain provides for better visibility of **dominant colors distribution** (2D contour shape).

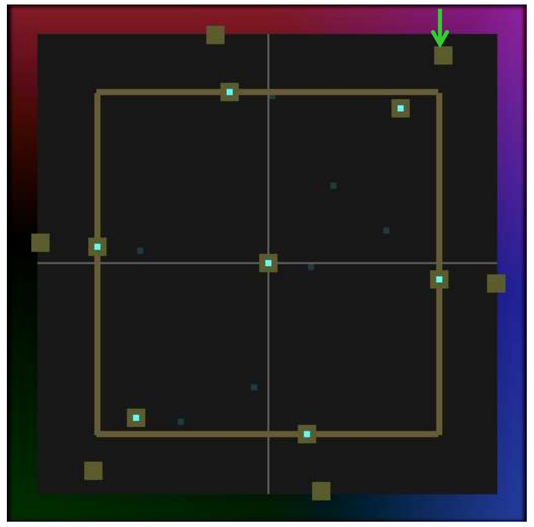
However, in this Mode low probability colors (e.g. colors of small size objects) are hardly noticeable.

Mode 3: **Fixed Gain x8**



x8 Gain provides for better visibility of **low probability colors** (e.g. colors of small size objects).

Mode 4: **Color Bars**



Mode 4 enables **Color Bars Target Boxes** (dark yellow squares) for:
SD (BT.601), HD (BT.709), UHD (BT.2100), 75% **and** 100% Color Bars

Also Gain value is adjusted and spot size increased providing for better visibility of actual Color Bars UV values and reduced visibility of spurious low probability colors, such as transitions and overshoots.

Medians and 100% peaks display disabled.

5.8 Smart ChromaScope

Press **Ctrl + C**
to toggle On/Off
ChromaScope Overlay

The background is the low contrast semi-transparent image of the **Chromaticity Diagram** showing all colors within the **spectral locus**

Cyan colored overlay represents
Video Image Chromaticity Histogram
(*depending on the Color Space selection)*

File **Metadata Info** relevant for ChromaScope: **Color Matrix**, **Primaries** and **Transfer** function

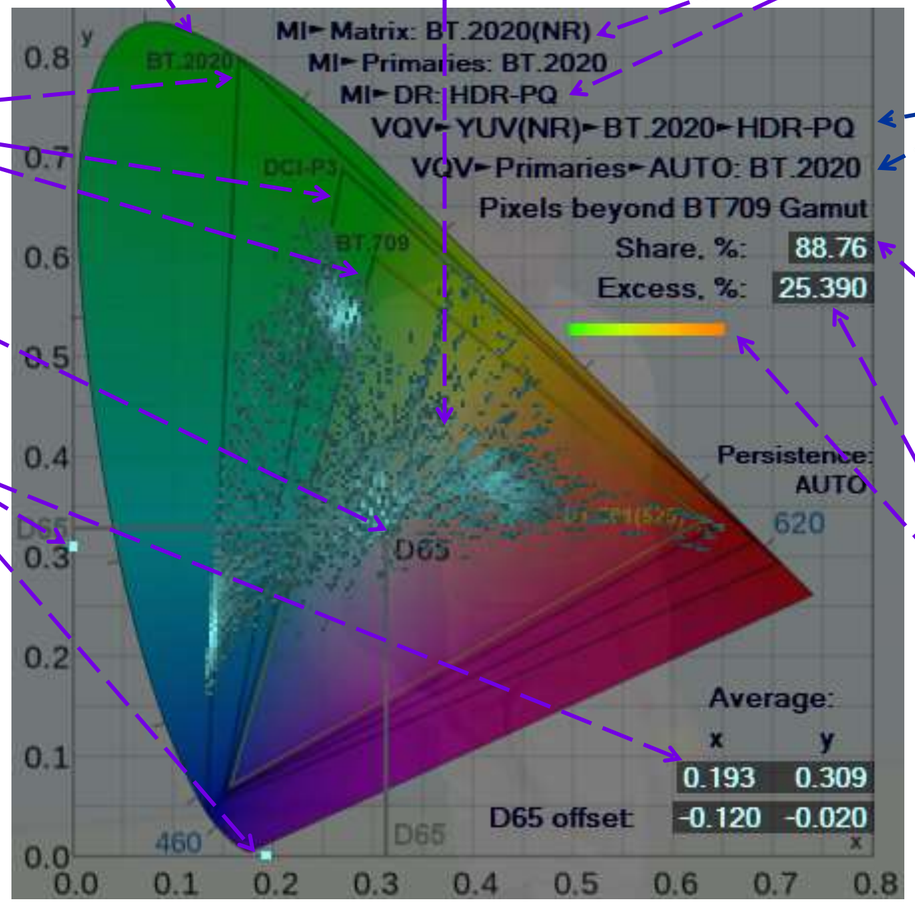
BT.2020, **DCI-P3**, **BT.709** and **BT.601 Primaries Gamut Boundaries** (color triangles)

Select **Color Space** via main ‘Color Space’ menu and ‘ChromaScope Primaries’ submenu. White point is not switchable, always **D65**

ChromaScope calculates and displays the **x** and **y** values of **Average Chromaticity** point and the offset of this point vs. the **D65 Reference White** point.

D65 Offset Markers on x and y axes are helpful for at-glance detection of the significant color shifts.

Typical color balanced video images have Average Chromaticity close to the D65 point, though for the example shown the dominance of green and blue colors is clearly visible.



User-selectable **VQV Color Processor** parameters, such as **Color Matrix**, **Primaries** and **Transfer** function, may or may not match the analyzed media file metadata.

If the selected Color Space is **BT.2020** or **DCI-P3** ChromaScope calculates and displays the **Share** of pixels having chromaticity beyond the limits of **BT.709** triangle, i.e. the percentage of colors **illegal** for the ubiquitous HD color space.

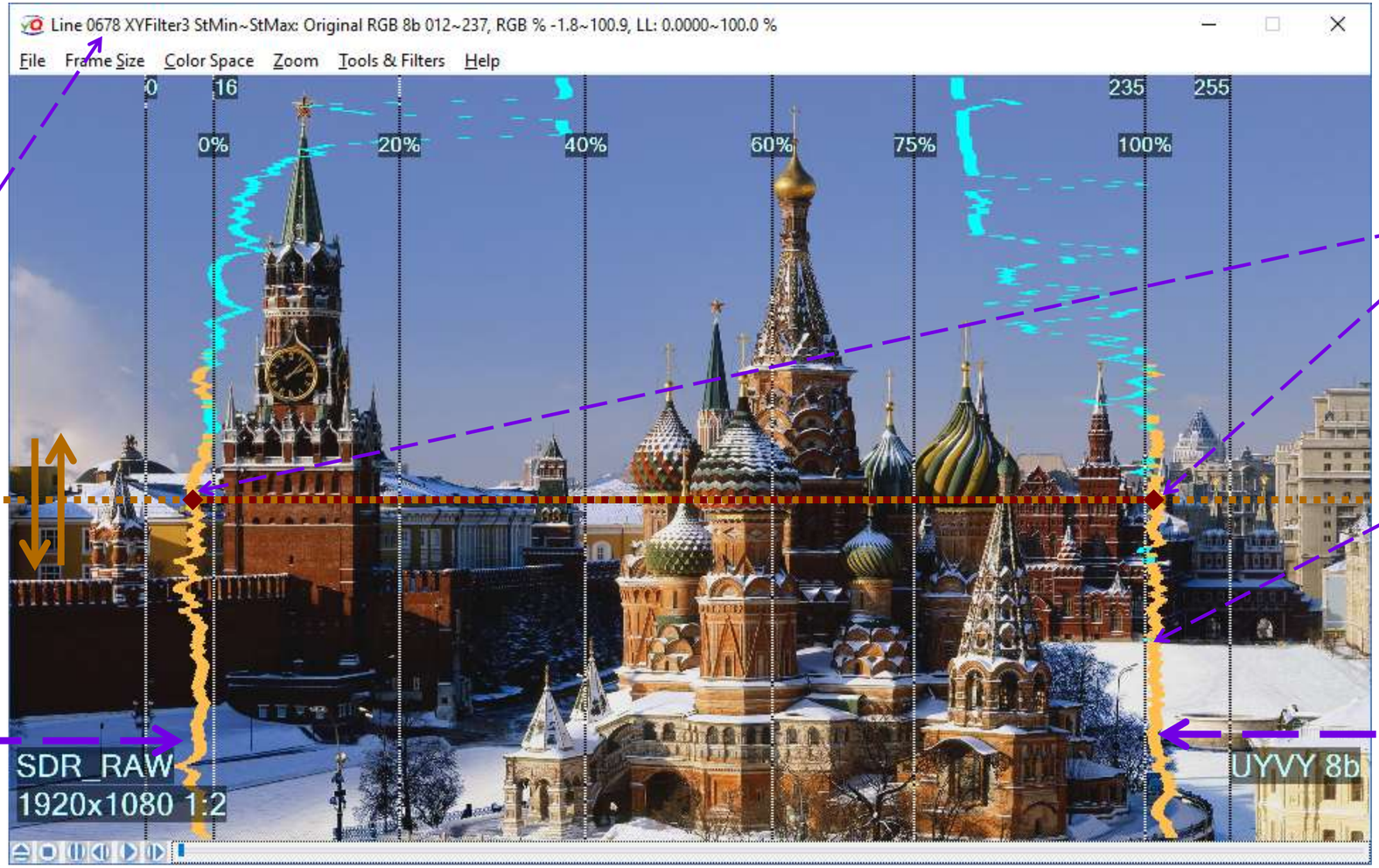
The integrated **Excess** value helps to estimate the relevance of such “difficult” pixels.
For fast estimation the Excess value is also displayed as color-coded **Bargraph** growing from Green to Red (logarithmic scale).

5.9 FrameScope Waveform Tool

Press **W** key
to toggle On the
FrameScope™
Overlay.
(Frame Profile Waveform)

Line Number and
the corresponding
Title Bar
Numerical Readout
values are defined
by the **Mouse Cursor**
vertical position

RGB / LL **Line Statistics**
Min value
updated line-by-line



Frame Profile Waveform
shows the
Current Line
RGB / LL Range
from Min(R,G,B) to Max(R,G,B)

RGB / LL
Min & Max value
beyond the valid range
(from 0 % to 100 %)
are shown in **Yellow**

RGB / LL **Line Statistics**
Max value
updated line-by-line

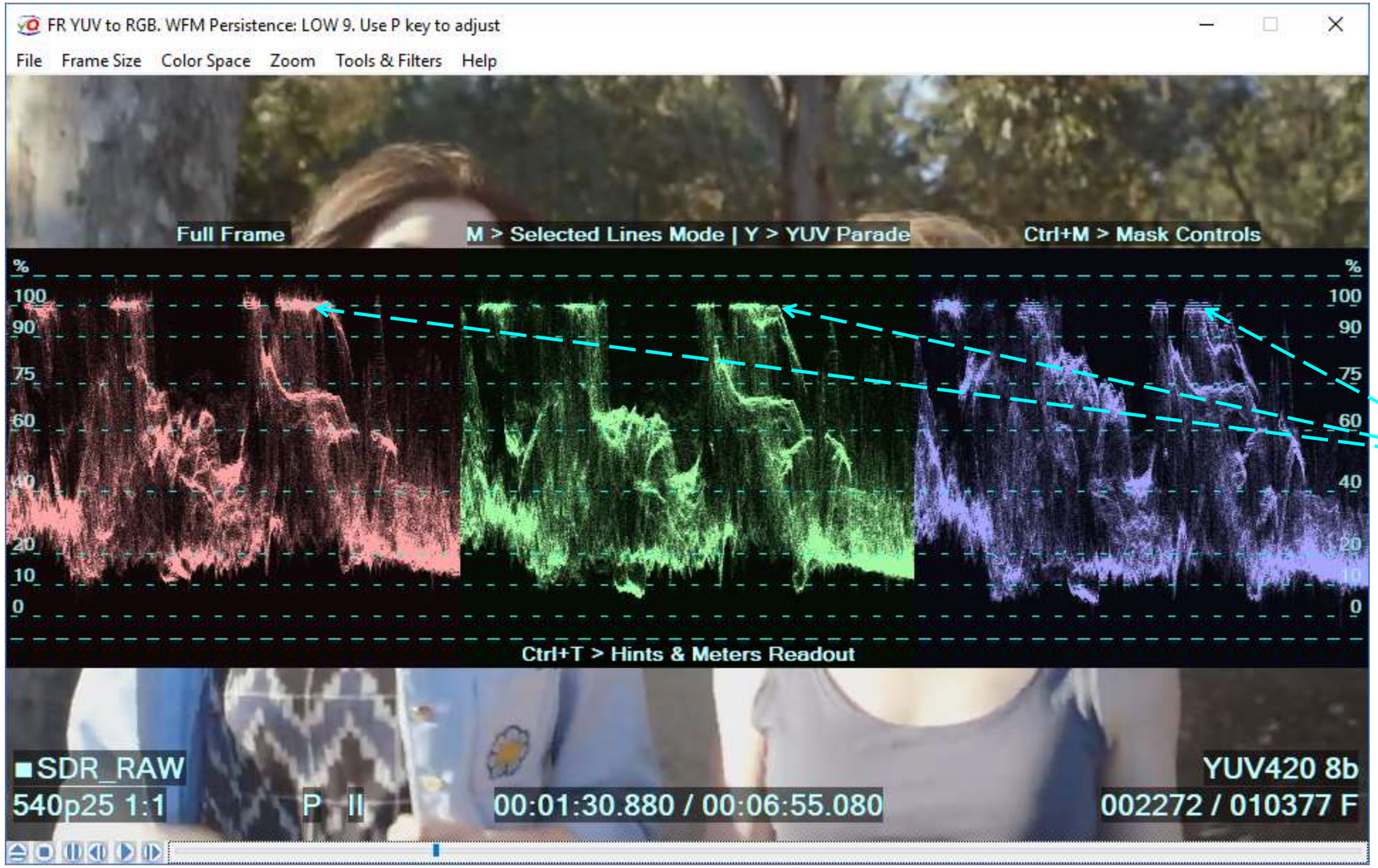
The **Graticule** vertical lines positions can be switched from **RGB Levels** in **percents** of the Reference White to **Light Levels** in **nits** or **percents** – Shortcut: **U**.

In **SDR** mode the graticule units are percents of RGB or LL range. In **HDR RAW** modes the graticule vertical dotted lines represents BT.2100 light levels.

In down- and cross- conversion modes 100% line may represent the selected **TDMB** (**T**arget **D**evice **M**ax **B**rightness) value.

5.10 Line Parade Waveform Monitor Tool

Press **Ctrl + W**
to toggle On the
Line Parade Waveform



RGB Line Parade Waveform Mode provides for easy **correlation** of the object **horizontal position** and the corresponding video **signal levels**

.

Note the **high density** of **Red** & **Green Waveforms** near the **100% (Ref.White)** marker of the Graticule (*not so strong for **Blue***).

It means massive clipping of white and yellow tones

.

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

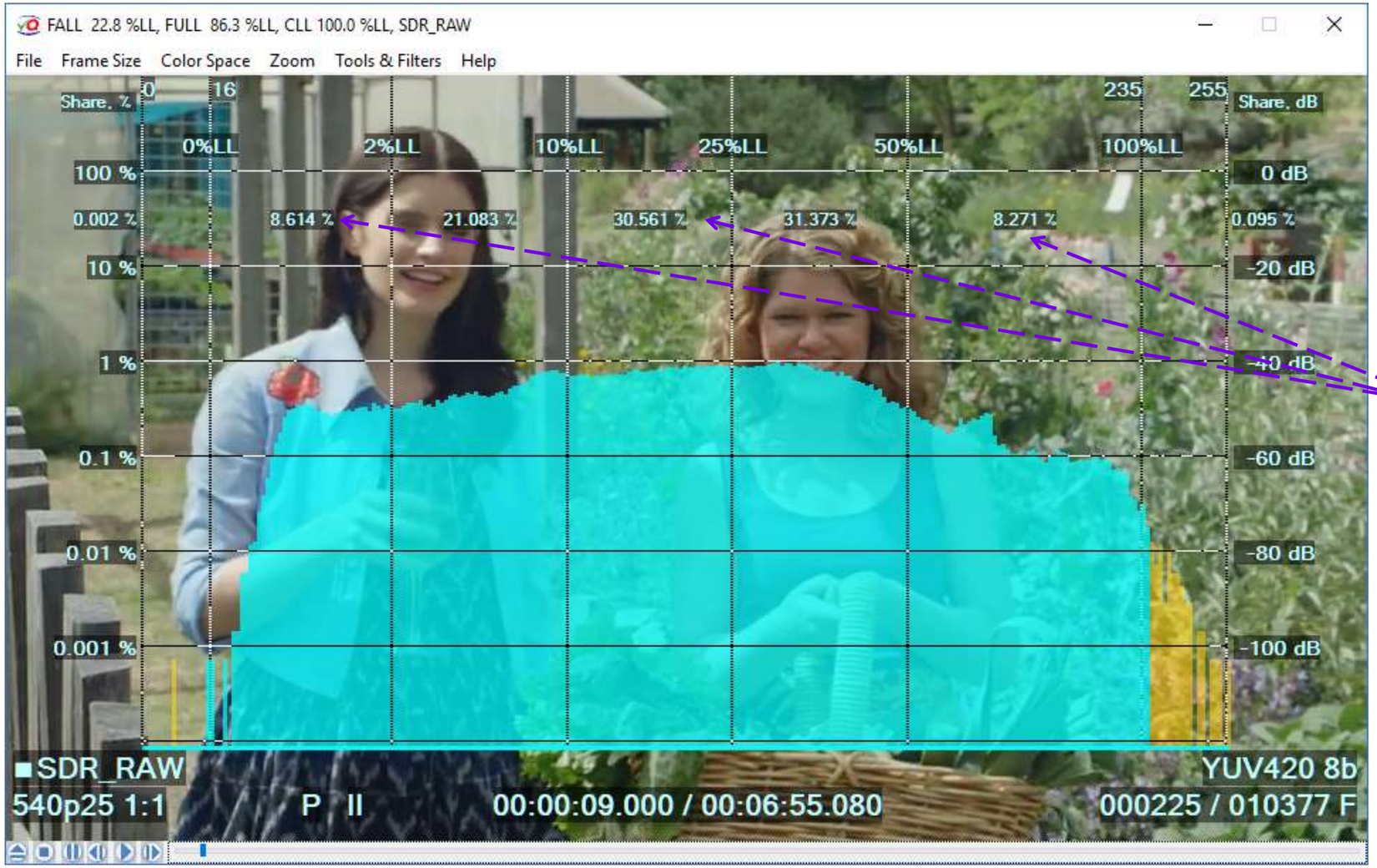
5.11 Frame Histogram Tool

Press **H**
to toggle On the
Frame Histogram Overlay

Digits keys *are shortcuts to some common* ***Dynamic Range Modes****:*

- ***0*** *– SDR = default mode*
- ***1*** *– HDR-PQ RAW*
- ***2*** *– HDR-PQ>SDR*
- ***3*** *– HDR-HLG RAW*
- ***4*** *– HDR-HLG>SDR*
- ***5*** *– LOG-RAW*
- ***6*** *– LOG>HLG*
- ***7*** *– LOG>SDR*
- ***8*** *– MSB/LSB Images*
- ***9*** *– YUV range toggle*

E.g. press **0**
to enable the default
SDR RAW Mode



Press **Ctrl + H**
to toggle On the
Alternative Sub-ranges Histogram

All sub-ranges are more or less **evenly populated**.

It means **good** SDR image

Press **U**
to toggle the
RGB / Light Levels
Units & Graticules

The default **Histogram Overlay Mode** is the **Light Levels Histogram** shown above

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

5.12 L-Bar – Video Frame Levels Statistics

Press **L** to toggle On the **L-Bar**.

Press **Play Button** or **Space Bar** to start collecting **Segment Statistics Data.**

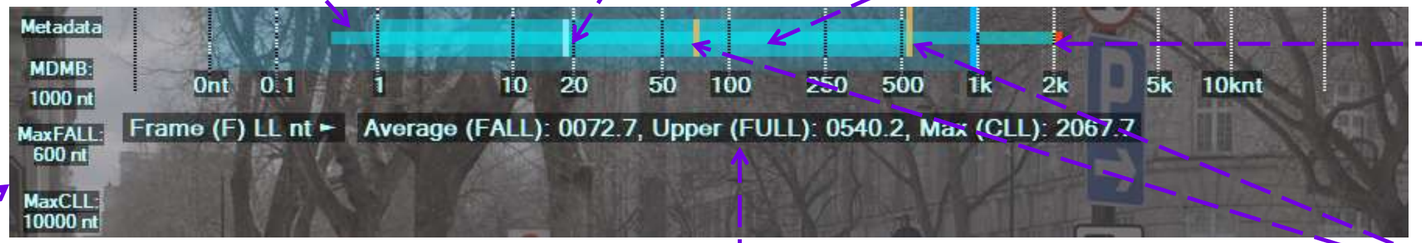
At the end of wanted fragment press **S**.

Statistic Report will be printed as text overlay. To save it to text file press **Ctrl + P**

Narrow Bar
shows 100% of pixels
(full frame RGB range)
Min & Max limits,

Cyan Highlight
shows Median Level
(50% of frame pixels)

Wide Bar
shows 99% of pixels
(most relevant RGB range)
Min & Max limits,



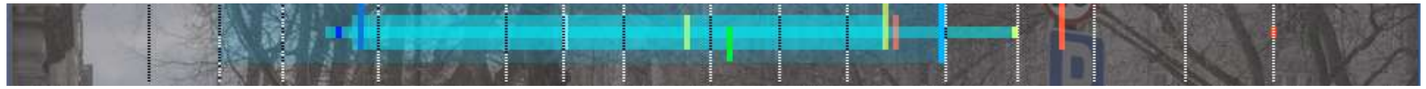
Yellow Marker:
Frame Max Light Level (CLL)
of the current frame
updated frame-by-frame

Light Levels Metadata
Numerical Readout
(if available)

Current Frame
Statistically Relevant Light Levels
Numerical Readout

Yellow Markers:
Frame Average Light Level (FALL)
&
Frame Upper Light Level (FULL)
of the current frame
updated frame-by-frame

Press **T** to toggle ON/OFF text labels and numerical readout messages:



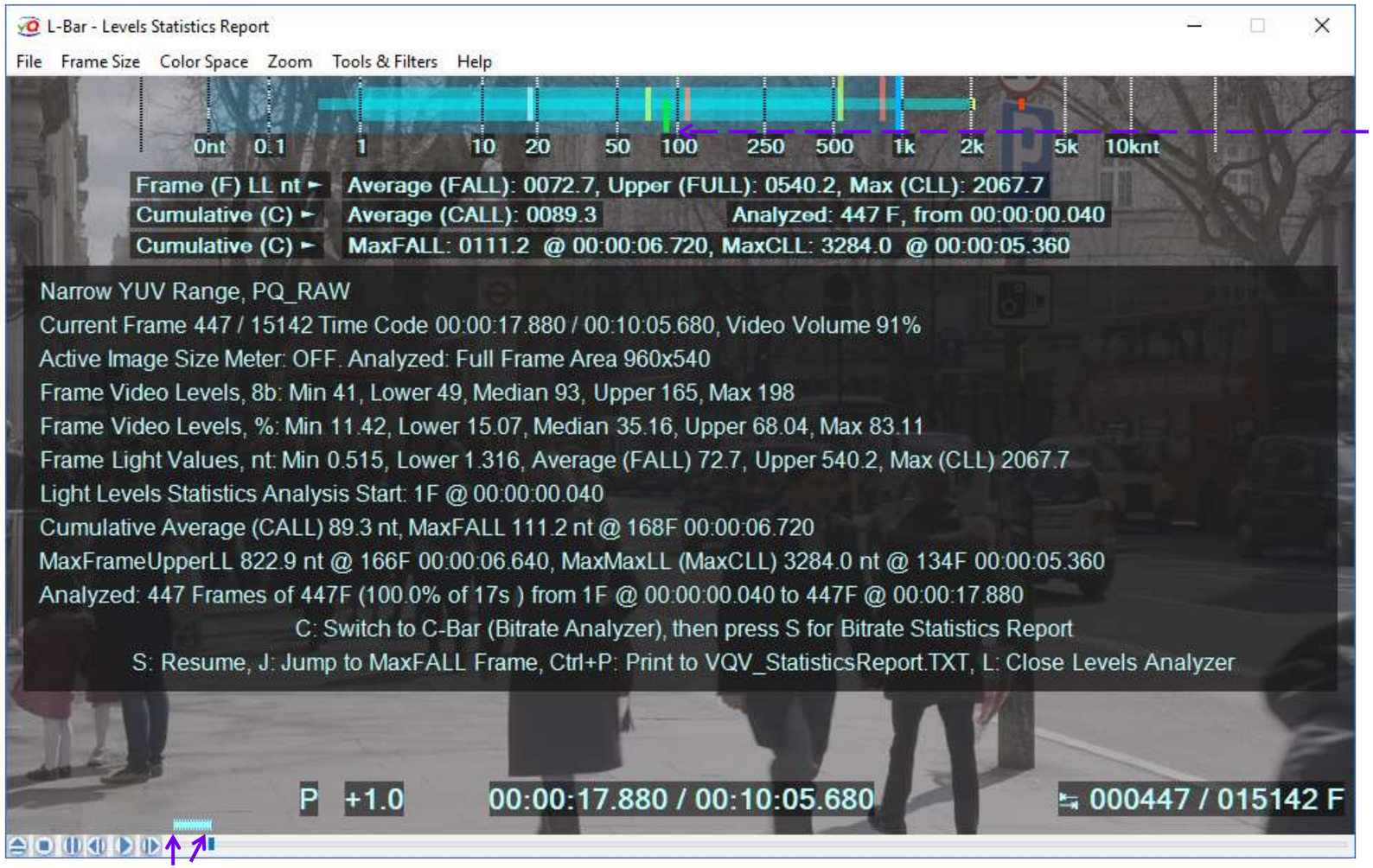
HDR sample video – courtesy of newsbyte.co.uk

5.13 L-Bar and Video Fragment Statistics

At the end of wanted fragment press **S**.

Statistic Report will be printed as text overlay.

To save it to text file press **Ctrl + P**



Green Marker:
Segment Average LL

Red Markers
max values of the corresponding **Yellow** markers within the segment

On-screen Report:

RGB & Light Levels
Current Frame Statistics
&
Fragment Statistics
up to the current frame

C-Bar Bitrate Analyzer is running in the background when **L-Bar** is enabled.
Press **C**
to switch between
L-Bar and C-Bar Modes.

Analysis Progress Bar:
From the selected start frame to the current frame

HDR sample video – courtesy of newsbyte.co.uk

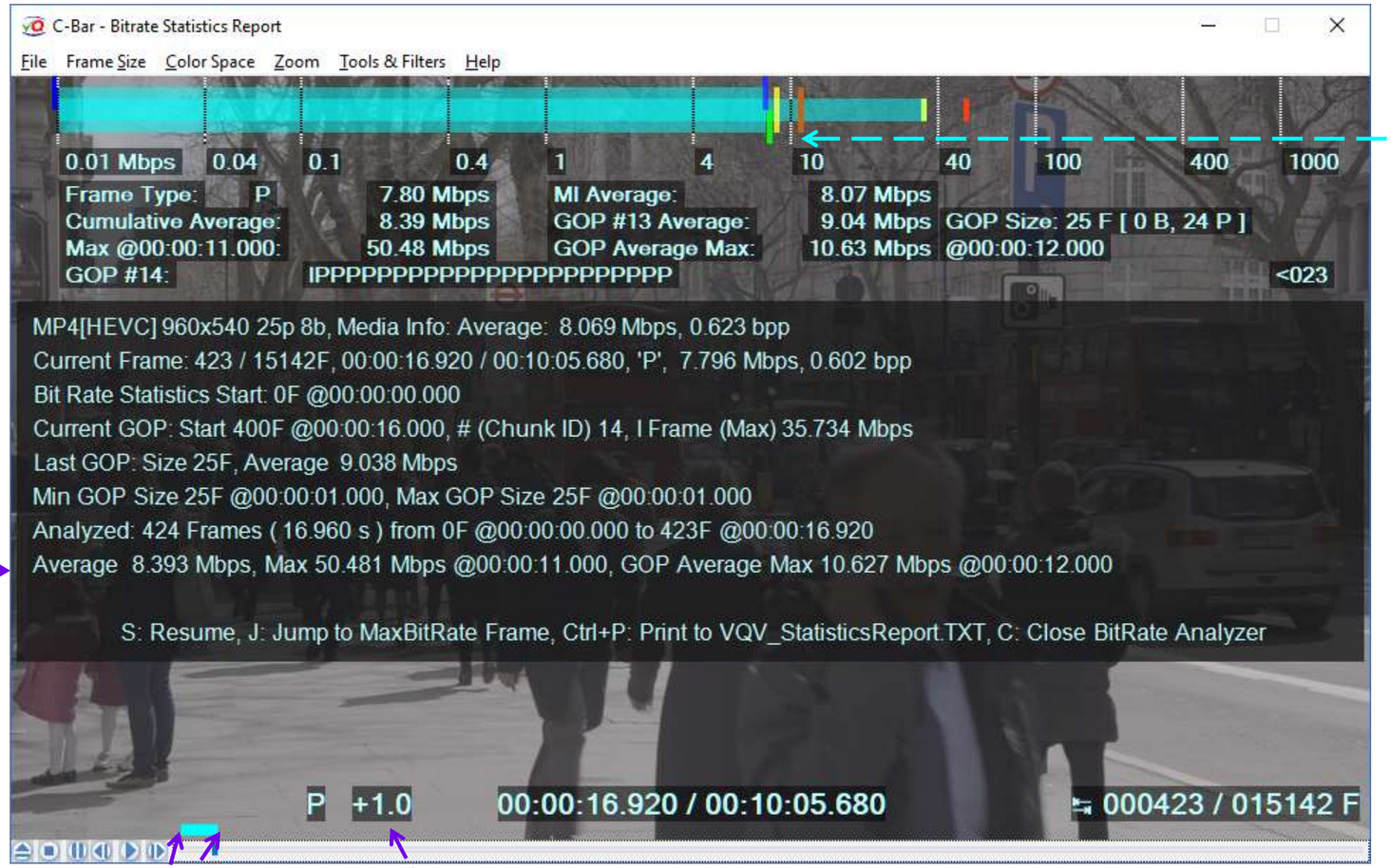
5.14 C-Bar – Compressed Video Bitrate Analyzer

Press **C** to enable
the Bitrate Analyzer tool

Logarithmic Bitrate Graticule covers very wide range: from **0.01 Mbps** to **1,000 Mbps**

Press Play Button
to collect and display **Bitrate Statistics Data**

At the wanted fragment end
press **S**
Statistic Report will be printed as text overlay;
to save it press **Ctrl + P**



C-Bar Overlay
Narrow Bar: 'I' Frame Bitrate,
Wide Bar: 'P'/'B' Frame Bitrate

On-screen Report:
Codec Info & Compressed Data Statistics
up to the current frame

C-Bar Bitrate Analyzer is running in the background when **L-Bar** is enabled.
In such case press **C** to switch between L-Bar and C-Bar Modes, otherwise pressing **C** will switch **C-Bar** Off.

Statistics Progress Bar:
From the start frame to the current frame

*Note that **full** Bitrate Statistics Report is available only if VQV plays at the nominal **+1** speed, otherwise only current frame brief report is available.*

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

5.15 C-Bar Bitrate Markers

Blue Markers:
Video Stream
Average & Max Bitrates
specified in **stream metadata**

Red Marker:
Segment Max Bitrate
updated frame-by-frame

Critical Bitrates

Green Marker:
Integrated
Average Bitrate
up to the current frame

Yellow Marker:
Last GOP
Average Bitrate

Brown Marker:
Segment Max of
GOP Average Bitrate
up to the current GOP

Yellow Marker:
Current GOP Max Bitrate
typically = I-frame Bitrate

5.16 Noise and Inter-frame Activity Meter

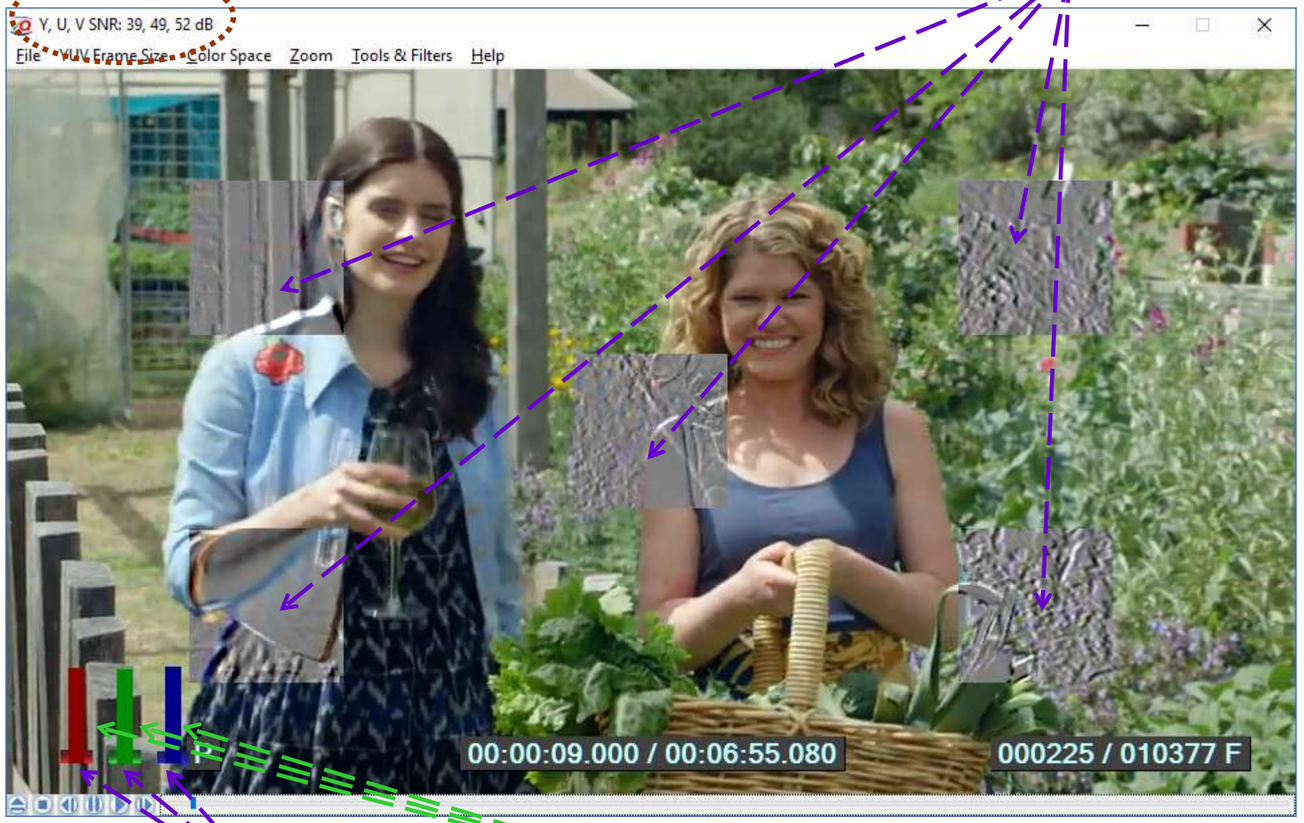
Press **Shift + N**

to toggle On the

Noise Meter

Y SNR = 39 dB,
U SNR = 49 dB,
V SNR = 52 dB

5 SNR Meter Zones



Noise Distribution
BarGraph Display

Inter-Frame Activity
BarGraph Display

Relatively poor Y SNR value is probably caused by strong Intra-frame and Inter-frame Activities creating problems for the camera noise reducer

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

TOC6 ⇐ Click on **TOC** for the **Section 6 TOC**

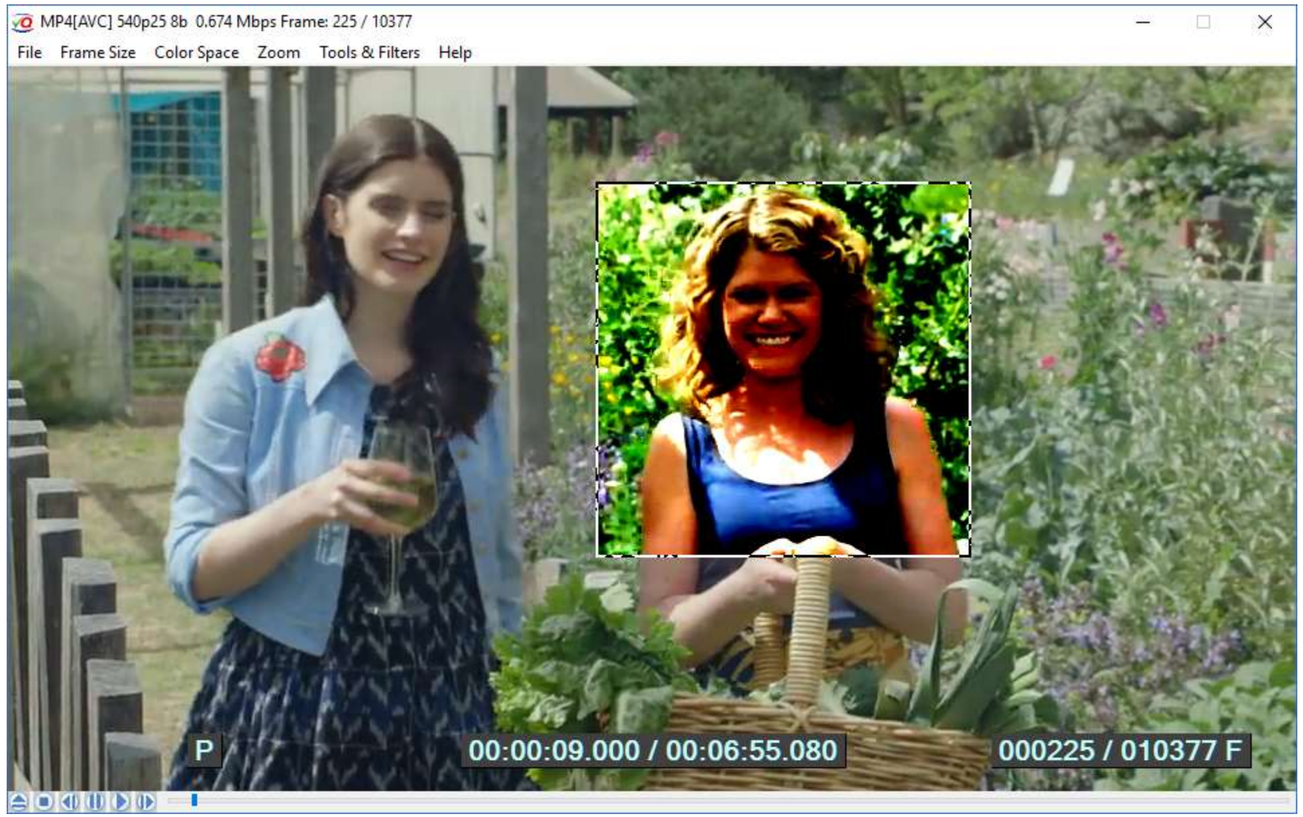
6. Displayed Image Filters

6.1 Displayed Image Filters Overview

- VQV displayed image filters can be sorted out into 4 categories:
  - **Color Components Filters**: RGB, R, G, B, Y, UV or LL images with out of range highlighter and heat map options.
  - **Digital Levels Filters**: Gain, Brightness offset, MSB/LSB selector
  - **Spatial Filter**: HPF (High Pass Filter) or LPF (Low Pass Filter) providing for intra-frame activity assessment
  - **Temporal Filter**: HPF (High Pass Filter) providing for inter-frame activity and frames repetition cadence assessment
  - Filters can be applied to:
  - Screen area limited by square mask with adjustable size and position
  - Full screen area
- **Shift + M** toggles between Mask / Full Screen modes, the default mode depends on the selected filter(s).
  - To adjust Mask Size: put mouse cursor inside the mask area, press **M** key and use **Mouse Wheel**, then click inside the mask to finish
  - To change Mask Position: put cursor in the mask area, hold **Mouse Left Button** and move the mask
- **D** key and **ESC** key **reset** all filter controls to the **default** (Off) state.
  Stop Button does the same, but also resets the Timeline Position to media file start.
- **Shift + F** toggles On/Off all filters, ***preserving*** all filter controls and settings
- **I** key cycles thru 3 de-interlaced display modes:
  - Interleaved Fields,
  - Top-Bottom Fields
  - Fields Difference
- Display filters can be combined, but filters concatenation order is fixed and can not be changed
- See next slides for detailed description and examples.

6.2 Gain Filter

Shift + Mouse Wheel (and **Shift + Up/Down Arrows**) controls displayed image Gain (contrast): x1, x2, x4, x16.
Example below: Gain = **x4** within the Mask area.



*If necessary, use **Ctrl + Shift + Mouse Wheel** to adjust the Slicing Level (brightness offset)*

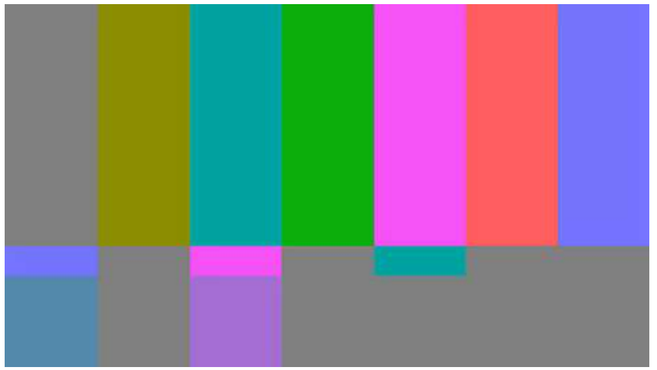
SDR sample video – courtesy of Kate McCartney & Kate McLennan, Australia

6.3 Color Components Filters

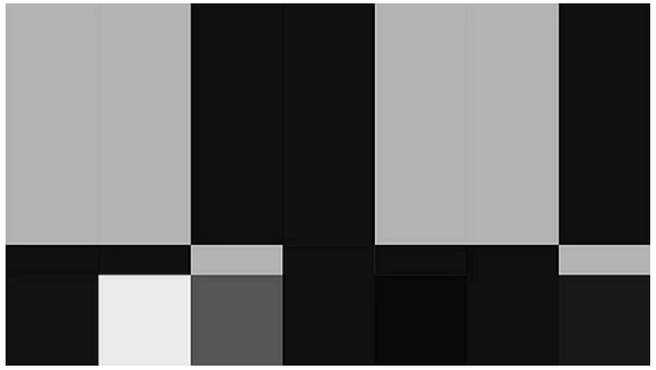
ESC or **D**: Default RGB Image

Shift + Y: Luminance

Shift + U: Chrominance (UV)

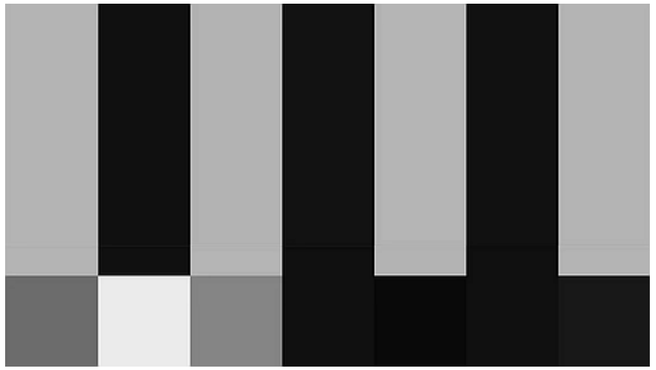


Shift + R: Red Component



Shift + G: Green Component

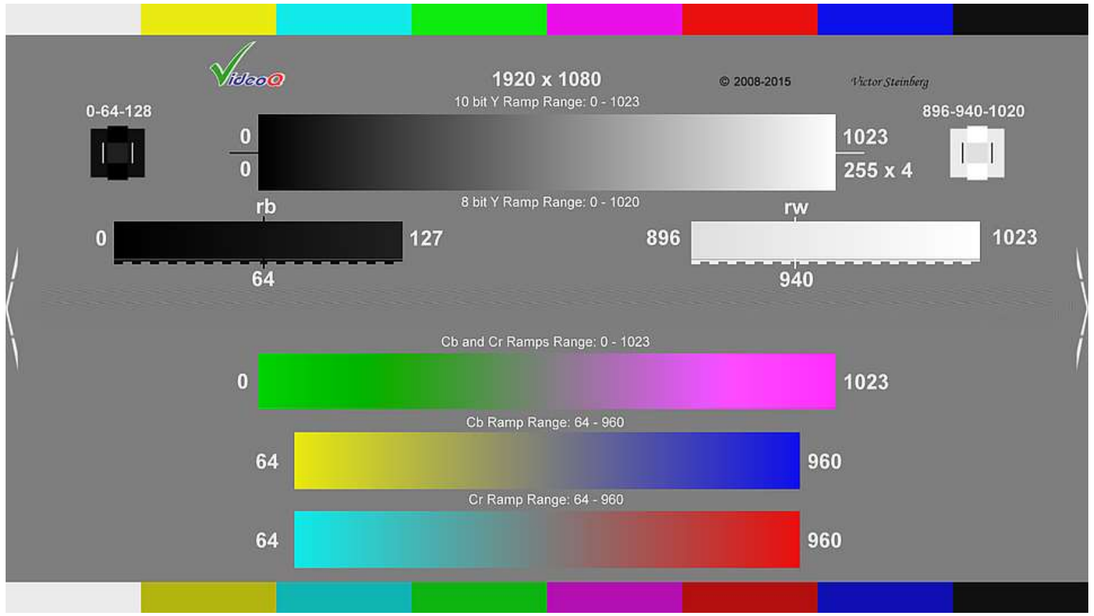
Shift + B: Blue Component



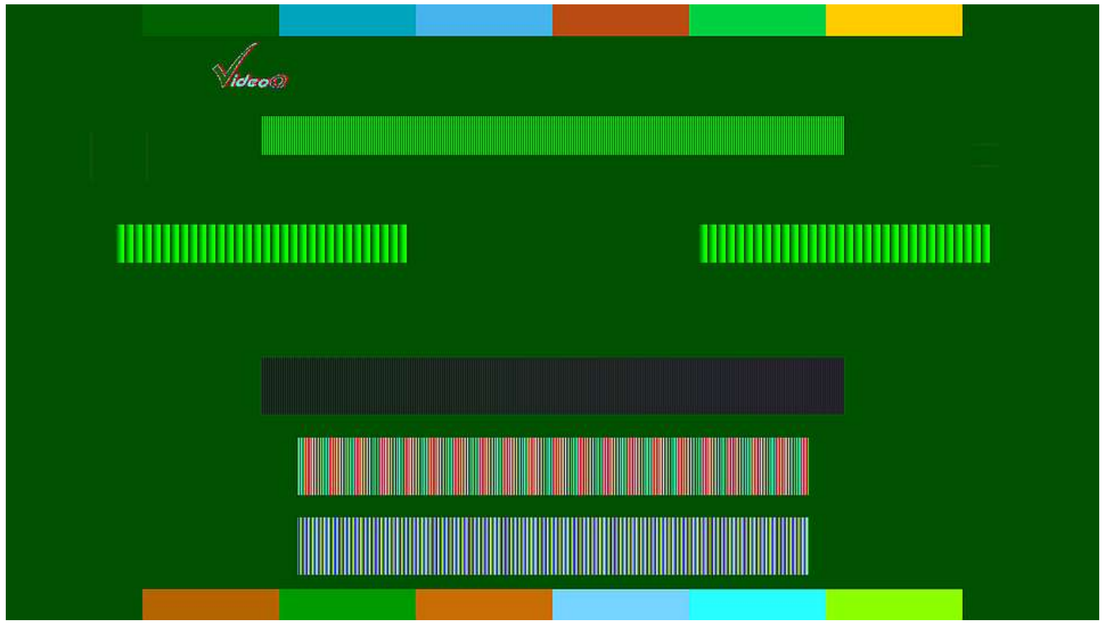
6.4 MSB/LSB Filter

Press **8** to toggle between MSB and LSB images (*only if the input bit depth is greater than 8 bit*)

MSB: 8b RGB image derived from 16b RAW YUV media file



LSB: 8b RGB image derived from 16b RAW YUV media file



Both MSB and LSB images are equally suitable for VQV filters/meters. For example it s possible to select color components, display video data values of any pixel, apply spatial HPF, etc

6.5 De-interlaced Display Filter

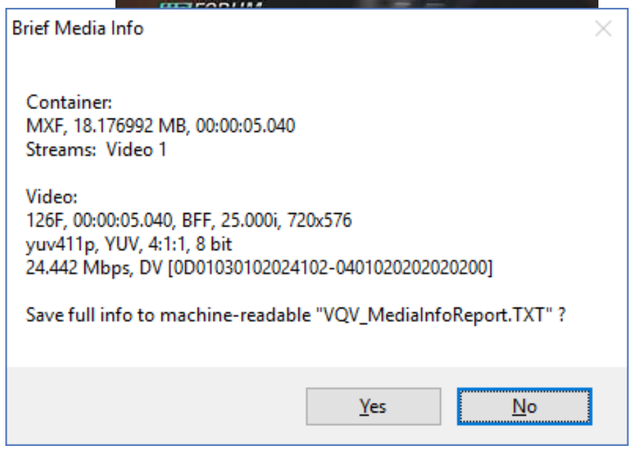
Press **I** to cycle thru 3 de-interlaced display modes: Interleaved Fields (default), Top-Bottom Fields, Fields Difference

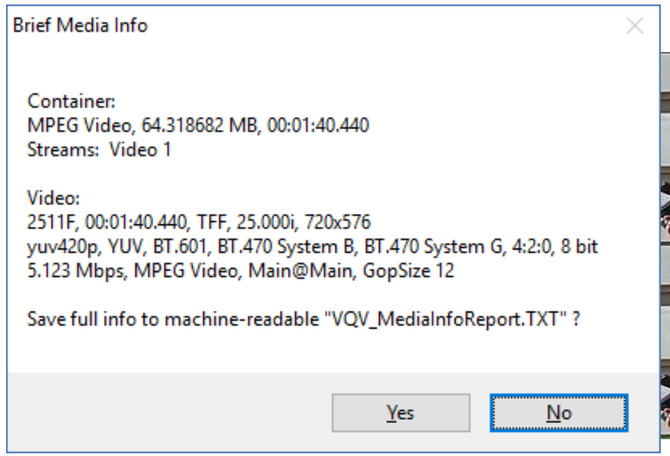
Interleaved Fields

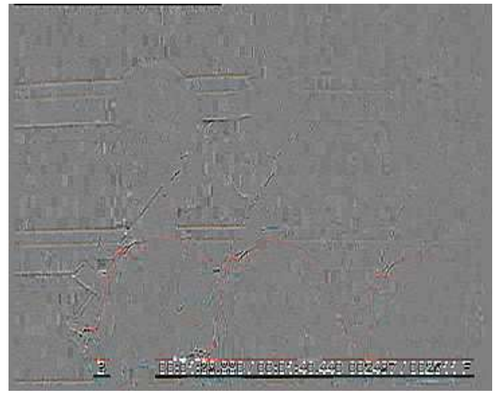
Zoom 4:1 (fragment)

Top-Bottom Fields

Fields Difference







This example shows that despite **the same 25i** declared format, only the content in the1st row is **truly interlaced**,

The 2nd row images are in fact **25psf** (Progressively Scanned Fields), i.e. 25p original was converted to 25i – probably, for distribution purposes.

6.6 Spatial and Temporal Filters

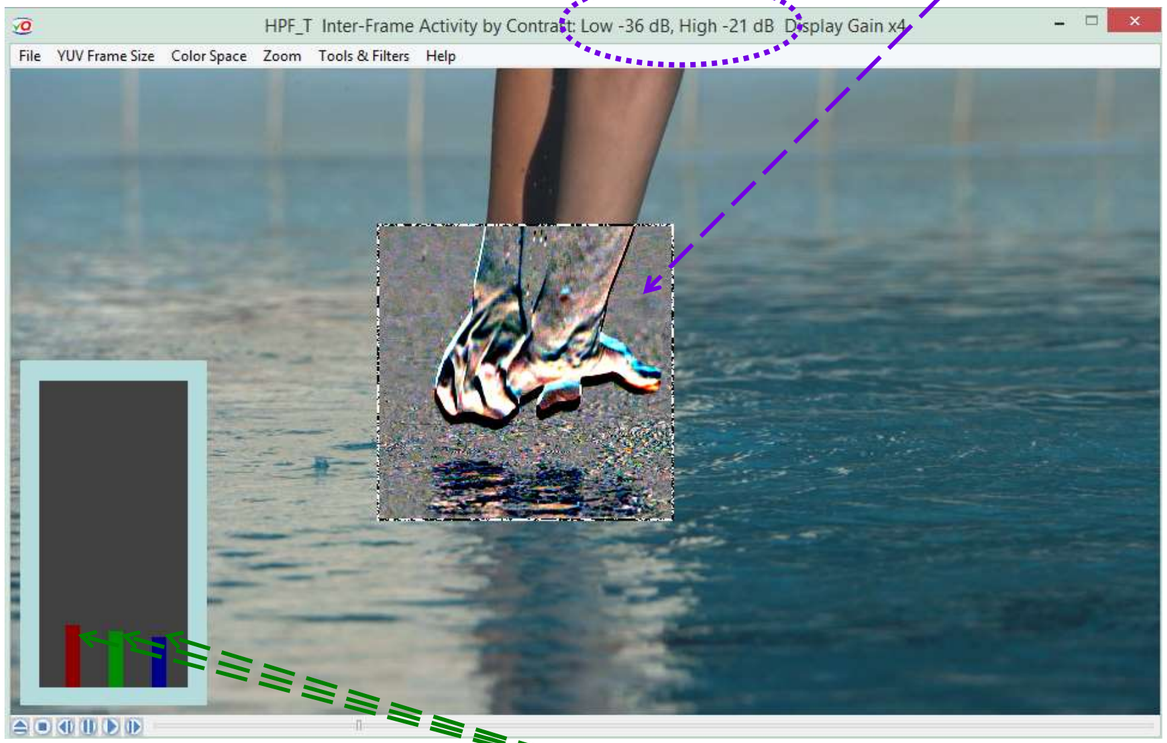
Intra-Frame Activity
Readout in dB

Intra-Frame Activity
Image

Intra-Frame Activity
BarGraph Display

Inter-Frame Activity
Readout in dB

Inter-Frame Activity
Image



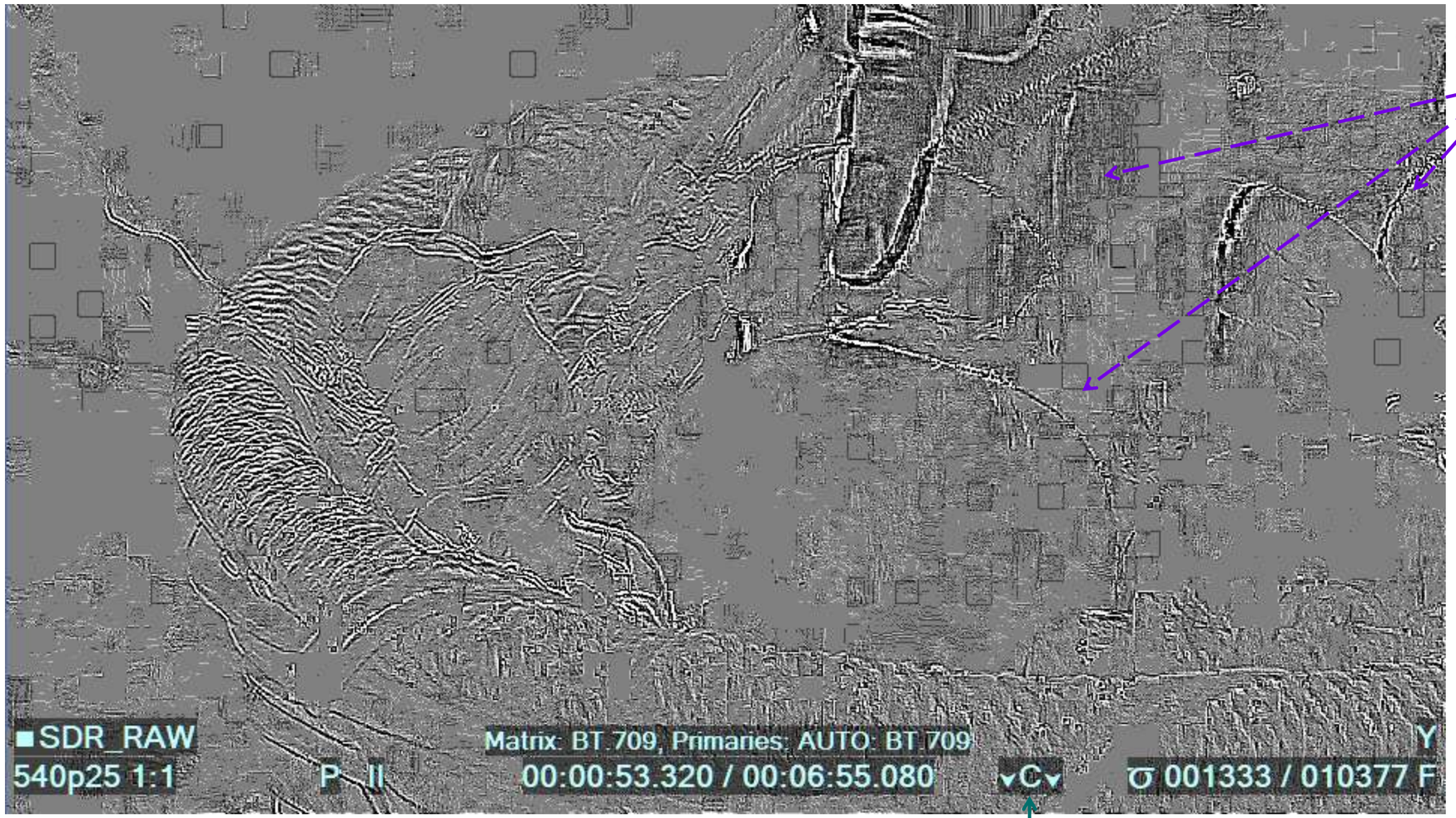
Inter-Frame Activity
BarGraph Display

Press **Shift + X**, and/or **Shift + T** to control spatial and temporal filtering

TOC6

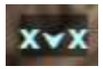
6.7 Compression Artifacts Filter

Press **Shift + C** to toggle this filter On/Off



Compression artifacts are clearly visible

Filter is ON

Press **Shift + F** to disable the filter and see normal picture: 

7. Full List of VQV Shortcuts 1 (p 1/3)

'Videola' – Jog & Shuttle Timeline Navigation Tool: **Ctrl** + **Mouse Left Button** + **Cursor Horizontal Position** within Image Area

Cursor position controls the speed selection; preset timeline step values: **+/- 0, 1, 2, 5, 10 F, 1, 2, 5, 10, 20 s, 1 m (60 s)**
In Jog Mode (i.e. starting from pause) – **Seek with variable speed**. On release of Mouse Left Button or Ctrl key – pause at last shown frame;
In Shuttle Mode (during playout) – **Play with variable speed**. On release of Mouse Left Button or Ctrl key – continue playout at last selected speed.
Select fractional playout speeds (slow motion) with **Mouse Wheel or Left/Right Arrows**: **+/- 0.1, 0.2 and 0.5** of media file frame rate

Key	Result	Shift + Key	Ctrl + Key	Ctrl + Shift + Key
Mouse Wheel	Jog Mode: **+/- 1 frame**, Shuttle Mode: **Speed** up/down,	Display **Gain**: up/down		Display Gain Filter Brightness **Offset**: up/down
Mouse Move	In Active Image: **Pixel Value** readout, In Mask Area: **Masked Filter** readout			
Mouse Middle Button	**Jog/Shuttle** toggle			
Mouse Left Button + Mouse Move	In Active Image: **Image Position** In Mask Area: **Mask Position**	Click in the image area: **Start/Stop playout**, speed: **+1F**	Hold and move the slider: **Timeline Scroll**	Click in the image area: **Continue playout**, reset speed: **+1F**
M + Mouse Wheel	**Mask Size** up/down			
Z + Mouse Wheel	**Zoom** up/down *(cursor centered)*			
Mouse Right Button	In Active Image: **Context Menu**			
Up/Down Arrows	**Zoom** up/down *(image centered)*	Display **Gain**: up/down	**VQV** to/from **VQMP** message	Display Gain **Slicing Level** up/down
Right/Left Arrows	Jog Mode: **+/- 1 frame**, Shuttle Mode: **Speed control**	Jog Mode: **+/- 10 frames**	In Jog Mode**:** **Seek, variable speed**	
PageDown/PageUp	Jog Mode: **+/- 1 s**	Jog Mode: **+/- 10 s**	Jog Mode: **+/- 1 m**	Jog Mode: **+/- 10 m**
0	**SDR RAW**	**Clear all Bookmarks**	**Segments Info** On/Off	
1	**HDR-PQ RAW**	**Record Bookmark #1**	**Go to Bookmark #1**	
2	**HDR-PQ ⇒ SDR**, Max **1000 nt**	**Record Bookmark #2**	**Go to Bookmark #2**	
3	**HDR-HLG RAW**	**Record Bookmark #3**	**Go to Bookmark #3**	
4	**HDR-HLG ⇒ SDR**, Max **100% LL**	**Record Bookmark #4**	**Go to Bookmark #4**	

7. Full List of VQV Shortcuts 2 (p 2/3)

Key	Result	Shift + Key	Ctrl + Key	Ctrl + Shift + Key
5	**HDR-LOG RAW**	**Record Bookmark #5**	**Go to Bookmark #5**	
6	**HDR-LOG ⇒ HLG Compatible SDR**	**Record Bookmark #6**	**Go to Bookmark #6**	
7	**HDR-LOG ⇒ SDR**	**Record Bookmark #7**	**Go to Bookmark #7**	
8	**MSB / LSB Image** toggle (if media file > 8 bit)	**Record Bookmark #8**	**Go to Bookmark #8**	
9	**Full / Narrow YUV Range** toggle (RGB <> YUV conversion mode)	**Record Bookmark #9**	**Go to Bookmark #9**	
Space Bar	**Jog / Shuttle** toggle *(same as Play Button)*	**Jog / Shuttle** toggle speed reset to default **+1F**		
A	**Auto-select Primaries** for: - Color Gamut Converter - ChromaScope	Active Image Size **Markers** Show / Hide toggle	**Active Image Size Meter** (Black Bars Detector): Detect once & store results; also enables Active Image Area Analysis Mode	**Analyzed Area** toggle: **Active Image / Full Frame** Applies to most meters; Active Image Size Meter results are not affected
B	**Bookmark** current **Timeline Position** and **copy** it to **Clipboard**	**B** component Image (**Blue**)	**Go to** the **last used Bookmark**	Create the **Bookmark** from **Clipboard** data
C	**C-Bar** (Compression Analyzer) toggle On/Off	**ChromaScope Primaries**	**ChromaScope** On/Off	
D	All **Filters Off, same result as ESC key:** *settings reset to defaults*	**- Fast Draw Mode (FDM)** **- Aspect Ratio Correction** (**ARC**)	**Duplicate** currently opened file in new VQV window	
E	**Enhanced Rendering Mode** On/Off, **Color Vector Correlation ™** (CVC) processing		**AV Sync Error** Meter (on *MPC Test Pattern)*	
F	Frame Profile Waveform **Filtering Modes**,	All **Filters** On/Off *(settings preserved)*	**Frame Info** Report pop-up, *or* **Line Range Selection Mask**	
G	**Gamut** Conversion On/Off	**G** component Image (**Green**)		
H	**Histogram** Overlay toggle On/Off	**RGB / Light Levels Histogram** toggle	**Histogram Mode** toggle	**HDR10+ Analyzer** On/Off, also enables **L-Bar**

7. Full List of VQV Shortcuts 3 (p 3/3)

Key	Result	Shift + Key	Ctrl + Key	Ctrl + Shift + Key
I	Cycle thru 3 **Deinterlacing Modes**			
L	**L-Bar** toggle On/Off	**Light Levels** (MaxRGB) Image, **S**: Highlighter / Heat-Map	**Transfer Function** Plot: On/Off	
M	WFM **Mask** toggle: Full Frame/Line Select, **Mask Size** control, ChromaScope **Modes**	Filters **Mask** On/Off	**Media Info** Report pop-up or WFM **Mask** Controls	
N	**Navigation** Control Panel pop-up (Go to Timeline Position & Bookmarks)	**Noise** Meter toggle On/Off	File Open in **New** Window	
O			File **Open** Dialog	
P	ChromaScope & WFM **Persistence**	Select **Primaries** for: **-** Color Gamut Converter - ChromaScope	**Print** analysis data to: *VQV.Log, VQV_Statistics.TXT, etc.*	
Q			**Quit** (Exit) VQV	
R		**R** component Image (**Red**)	**Release / Reopen** media file *same as 'Eject' button*	
S	**Switch / Start / Select** Text Messages / Display Modes		*Select **Video Stream** #* *if the number of video streams > 1*	
T	**Text Overlay Messages** On/Off	**T-Filte**r (Temporal High Pass)	**Text Overlay Auto-hide** On/Off	
U	Histogram, WFM, FrameScope and ChromaScope **Units** selection	**UV** components Image	Graticule Grid **Units** toggle: ***RGB** % vs. **Light Level** % or nits*	
V	**VV-Bars** toggle On/Off	Cycle thru 3 **VV Bars Modes**	**VectorScope** toggle On/Off	
W	**FrameScope** On/Off		**Waveform Monitor** On/Off	
X		**XY-Filter** (Spatial HPF/LPF)	**Exit** (Quit) VQV	
Y	Waveform Monitor: **RGB/YUV** toggle	**Y** components Image		
Z	**Zoom** with **Mouse Wheel** – *see above*			

8. 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