

# Video Clarity



Tools for Video Analysis

- A Silicon Valley based group of video experts
- Started in 2003, first product shipped in 2004
- Systems and offering diversified in 2006
- Expanded tools, including Sarnoff JND in 2007
- Created new capabilities for operators in 2008
- Customers are industry leaders

# Customers

(partial list)




- ClearView Video Analysis for Product R&D and Television Lab Use
  - Serve, Capture, File-based, Objective Measurement, and Subjective Viewing modes
- RTM QA & Monitoring for Transmission Testing and Manufacturing QA
  - Monitor 2 live inputs, report statistics, and alert on anomalies

# ClearView Video Analysis – Introduction

- Full Uncompressed A/V Server with I/Os up to 1080P
  - SD/HD-SDI I/O with Embedded Audio and AES-EBU
  - DVI, HDMI, VGA native input option
  - DVI, HDMI, VGA native output option
  - DVB-ASI I/O options
- Capture Device with I/Os up to 1080P
- Record and Play Simultaneously up to 1080i/720P SDI I/O
- File Input
  - AVI, JPEG, MPEG, QuickTime, TIF, RAW, BMP, DPX and many more
- Automated Spatial & Temporal Alignment
- Many Subjective Viewing Modes and Tools
- Quantitative Objective Scoring
- Pass/Fail Comparisons
- Scriptable and GUI controls

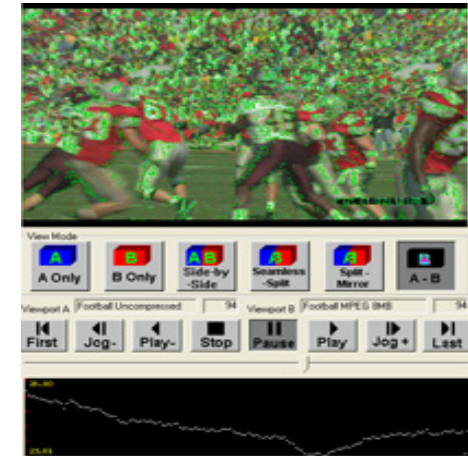
- 3RU or Portable Cube
  - Reads files, Live Input, or Generates Tests
  - Performs JND and DMOS objective indices (Video Only)
  - Performs PSNR objective metrics (Audio and Video)
  - Subjective Viewing Modes



# ClearView Video Analysis Block Diagram

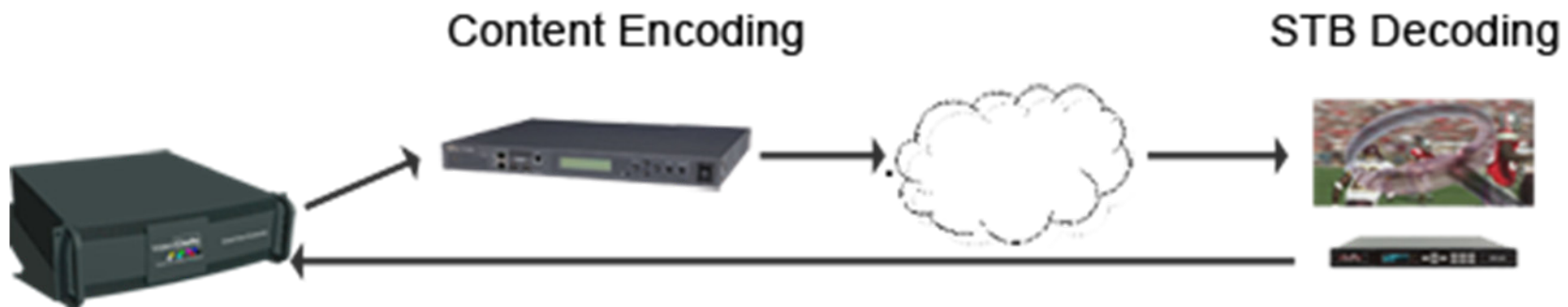
- ✓ Full Uncompressed HD Video Server
- ✓ Digital or Analog AV recording, control
- ✓ Input from file or RTM log
- ✓ Graphical or Scripted Command set
- ✓ Multiple Viewing Modes (Video with Audio)
- ✓ Objective Scoring

ClearView System GUI



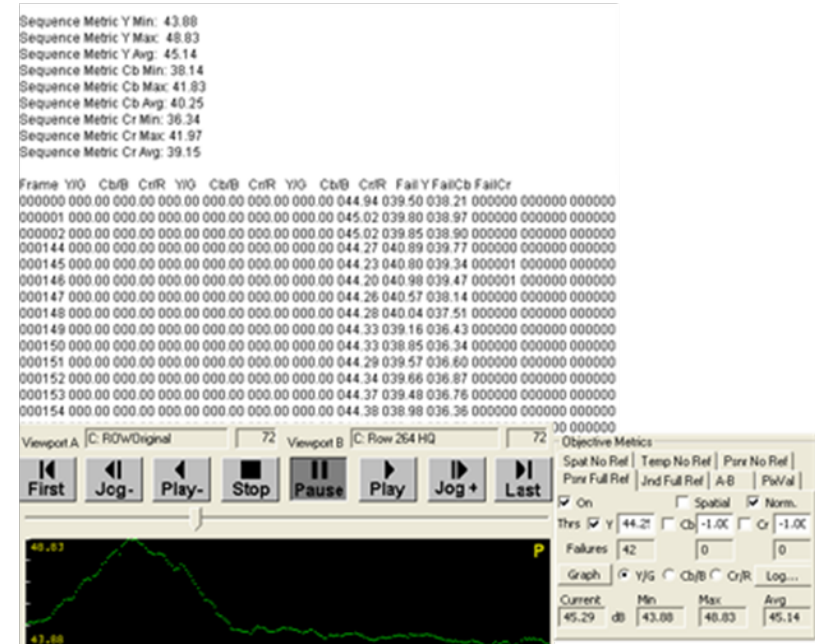
# ClearView Video Analysis – Encoder Testing

- ✓ Serve A/V sequence to the Encoder
- ✓ Capture A/V sequence from the Decoder
- ✓ Automatic Alignment
- ✓ Calculate the Objective Score
- ✓ Generates Pass/Fail against threshold
- ✓ Multiple Subjective Viewing Modes
- ✓ Graphical or Scripted Control



# ClearView Video Analysis – STB Testing

- ✓ Capture Processed A/V sequence
- ✓ Input Reference “Gold” File
- ✓ Automatic Alignment
- ✓ Reports Differences between reference & processed A/V sequences
- ✓ Generates Pass/Fail against threshold
- ✓ Multiple Subjective Viewing Modes
- ✓ Graphical or Scripted Control



# ClearView Video Analysis – Subjective Testing

- ✓ Play 2 AV sequences in multiple viewing modes with a horizontal or vertical split
- ✓ Full Control over which field is displayed, playback speed, in/out points
- ✓ Remove color components
- ✓ View color components pixel-for-pixel
- ✓ Play multiple movies concatenated



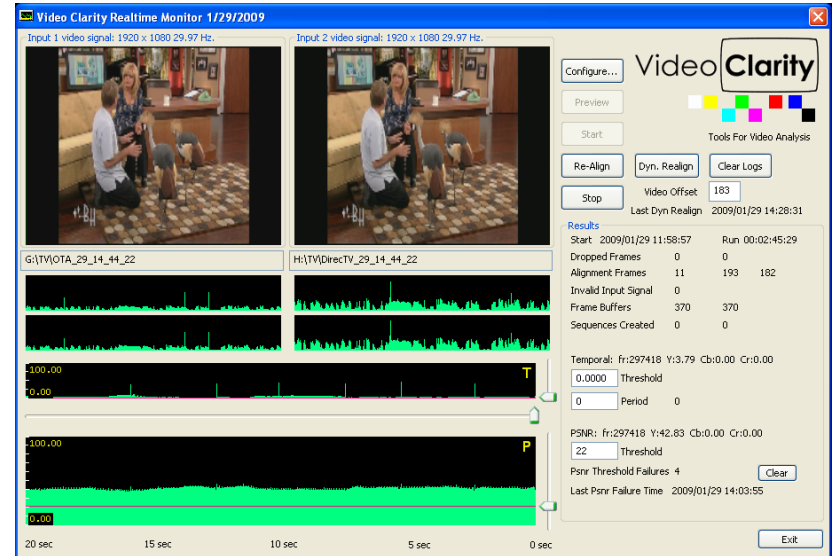
# ClearView Video Analysis Benefits

- Off Line Full A/V Analyzer
  - Generate Mean Opinion Scores (MOS)
  - Generate Just Noticeable Difference (JND)
  - Generate Quantitative Differences
  - Measures A/V Sync
  - Inspect the A/V with your own Eyes & Ears

- Capture 2 A/V Signals and in Real-Time
  - Align Audio and Video Separately
  - Detect the Presence of A/V
  - Calculate the Level Differences
  - Continuously Report Quality Scores
  - Saves Errors

# RTM QA & Monitoring - Block Diagram

- ✓ Input from Analog or Digital
- ✓ Automatic Alignment
- ✓ Checks for no audio/video on Reference
- ✓ Alerts on degraded audio/video
- ✓ Alerts on Lip Sync problems
- ✓ Saves Impairments for Full Analysis
- ✓ Graphical or Scripted Control



- Quality Monitoring in Real Time
- Alerts on Potential Lip Sync Issues
- Continual Reporting of A/V Quality
- Records only when Impairments are Detected, which allows Long Term Monitoring

- High-quality, reliable video quality analysis and monitoring systems
- Product line is configurable for simple to complex testing requirements
- New products and features will continue to be added for our growing number of industry leading customers