

# Reference Player for DCP, IMF & broadcast

ICE, for Image Control Engine, is the most advanced Reference Player for 4K DCP, IMF, HDR content in BT.2100, broadcast deliverables like AS10, AS 11-DPP as well as RAW data, allying in a unique GUI performances, reliability and ease of use.

ICE offers numerous tools to validate and check the compliancy of packages with multiple compositions, display subtitles and captions with full confidence or analyze HDR, bit rate encoding or audio loudness. High resolution and high frame rates media are playback in sync with audio, for the best possible quality control.

## Extensive source media support

- Support for Interop and SMPTE DCP, including stereo3D DCPs up to 4K @60 FPS
- Support for IMF and other mezzanine formats such as ProRes 444, Avid DNxHD 444, XDCAM, AVC Intra, AS-11 UK DPP, AS-10...
- Support for HDR content encoded in Dolby Vision, HDR10 or HLG
- Native support of RAW data at the camera resolution (ARRIRAW, DNG, RED R3D, SONY F65, F55 RAW, Phantom flex 4K, Canon C500, etc..)
- Support for uncompressed formats such as DPX, TIFF, OpenEXR, etc...

## Tools for advanced Quality Control

- HDR monitoring (Dolby Vision, HDR10, HLG)
- Histograms, waveform, and vectorscope to analyze color information (color space, video range, tonal distribution, etc), including an HDR mode
- Encoding bitrate measurement
- Advanced Color Management system supporting ACES, native or custom workflows (3D LUT)
- EBU R128 audio loudness monitoring and peak control
- Switch from one soundfield to another in playback mode
- NLE timeline with display of video, audio and subtitle tracks, markers and reels
- Display of the files and packages metadata
- Validation process and tests for JPEG2000 interoperability (IMF and DCP)
- Export of validation results (PDF reporting)
- Playout on reference monitor or projector (HD, UHDTV, DCI 2K & 4K)
- Support for ACES proxy



## DCP quality control

- Support 2K and 4K DCI specs, including Stereo3D, up to 4K @ 60 FPS
- Support for Interop and SMPTE DCP
- Support of supplemental packages
- Support of packages with multiple CPLs and PKLs
- Playback of proxy resolutions
- Playback of encrypted DCPs
- Synchronization with KEYMaster\* to receive the KDMs using the TKR protocol

*\* Marquise Technologies' KEYMaster manages and delivers KDMs for theater distribution or internal use*

## Subtitles and Captions inspector

- Display of text and spotting list metadata including fade in/out, support of unicode, list of font and styles
- Support for embedded fonts
- Support for Interop, SMPTE Phase 2, SMPTE (MXF) and TTML (captions and subtitles), and TTML IMSC 1.0 (IMF)

## Configuration

ICE is a software solution that runs on certified hardware configurations.

- OS: Windows 10 64 bit
- JPEG2000 decoding based on high-end GPU technology (min 2 GPUs)
- Video OUT: support for Bluefish444 (Neutron, Supernova S+) and AJA (Kona 3G and 4G)
- RS422 remote control capabilities
- Support for Tangent Device panels

## IMF quality control

- Support for IMF Apps #2/2e Studio Profile, and App #4 Cinema Mezzanine
- Real-time playback of high bit rates JPEG2000 IMF profiles
- Integration of Photon for IMF validation
- Support of packages with multiple CPLs
- Playback of version files (supplemental packages)
- Support of multiple soundfields

## HDR monitoring

- Support of Dolby Vision, HDR10 (ST-2084 and ST-2086 metadata) and HLG
- Display of the HDR metadata for DoVi, PQ and ST-2094 (dynamic metadata)
- Luminance measurement (max FALL, max CLL)
- Image scopes enhanced with HDR graticules and readouts
- Remote control of HDR mastering display (Eizo, Canon) for full confidence in the monitor settings

## Audio monitoring

- VU-Meter, Sample Peak and True Peak for channel's inspection
- Loudness Meter based on EBU R128 Loudness Recommendation
- Surround Scope (repartition of the channels)
- Phase Correlation Meter
- Toggle of soundfields in playback mode
- Down mixing from 5.1 and 7.1 to stereo