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FSi XM652U Colour Space XM W-OLED Display User Guide

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XM W-OLED Calibration Using ColourSpace

Sample ColourSpace Work-flow (Resolve as TPG, Probe CR100, Back 1D LUT, then 3D LUT Upload)
Connecting to Resolve as your test pattern generator
Start DaVinci Resolve and create a new timeline. There must be content in your timeline before starting the

celebration. Verify that the monitor is receiving a signal from Resolve then click on the Color Tab in Resolve. Click on the Workspace menu in Resolve. Select Monitor Calibration. Select LightIllusion. A pop-up dialog in Resolve will request an IP address, which can be found once you start ColourSpace. Start ColourSpace and click on the profiling icon. From the profiling settings window set Patch Size to L32, then select the Hardware Options tab. From the Hardware drop-down menu select Network Server and click connect. Below the connect button you will see a drop-down menu labeled calibration patches, set this option to Automatic. Take note of the IP address listed in the Network Server Options area. Enter this IP address in Resolve and press Connect. Do not close the Calibration network connection window in Resolve as this will terminate your connection. Return to ColourSpace and click on the Manual Measure button and move the sliders to ensure test patterns are being properly generated, leave the sliders set to 128,128,128 to display grey on screen.

Connecting your probe
With the CR100 plugged into your computer click on the Probe Options button in ColourSpace.
From the Probes menu select Colorimetry Research CR100. Select Rescan if no active com ports are shown. Then press connect. Once connected verify you have the correct XM W-OLED matrix active on the probe. Set extra delay to at least 0.25 seconds (we suggest 1 second). Next, ensuring that grey is still being displayed on your monitor and the probe is positioned in front of the screen, click on Probe Calibration to establish sync for your CR100.

Connecting ColourSpace to the XM Monitor
From ColourSpace open an additional profiling window (do not close the other profiling window already open with your active probe and network connections), select hardware options, and from the hardware drop-down menu select FSI XM. In the Network Address field type in the IP address of the monitor and then press connect. Next select the Gamut memory position where you will save your LUTs. This selection should match the GAMUT selection made on the monitor as outlined in the pre-calibration steps at the beginning of this document. From the Select LUT dialog select UnityBypass. Then from the Load toggle select 1D+3D, then press upload. This will load unity LUTs to both the Front 1D LUT and 3D LUT memory positions. Next, do the same for the back 1D LUT selection. Loading UnityBypass LUTs clears previous LUT based calibrations in that memory position allowing for a neutral (uncalibrated) starting position for display profiling.

Profiling the XM Monitor
Next return to the first profiling window in ColourSpace where your probe is actively connected to begin profiling the monitor. Click on the Display Characterization icon, then select a desired profiling mode. To build the back 1D LUT we suggest profiling with Grey Only Large RGB / Grey Ramp RGB Large. Ensuring that the CR100 probe is positioned at the center of the monitor, press the Start button to begin profiling.Once your profile completes click on the graph options tab, then select Rename to give the profile an easy to identify name, then press save to save the completed profile.
Once the profile is saved open a LUT Tools window in ColourSpace. From the LUT Tools window enter your de-sired LUT name in the NAME field. From the source dialog select your target colour space from the colour space drop-down menu (e.g. Rec709, P3). From the destination dialog select the calibration profile you just saved. En-able the Limit Luminance Toggle and select 100nits or some lower target if you prefer (only do this for the back 1D LUT generation). Then click create new to generate your calibration LUT. Once your LUT is generated click on the Manage LUT icon, then select save.
Next return to the Hardware Options window that is already connected to the monitor and from the Select LUT dialog change from UnityBypass to the LUT you just saved. Ensure that the gamut is still set to the memory position you want to save to and that Load is set to back 1D, Then press Upload. This will load just the 1D LUT component of the LUT you have generated. We suggest this workflow for XM OLED since the native uncalibrated color temperature of these panels is 10,000K. By building a back 1D LUT you can estabilish a neutral 6500K white balance and desired EOTF reponse as the baseline for an additional profile that will then be used to build your 3D LUT to complete the calibration. Next return to the profiling window in ColourSpace where your probe is actively connected to begin profiling the monitor a second time, this time with the back 1D LUT you just created still active on the monitor. Click on the Display Characterization icon, then select the desired profiling mode. We suggest profiling with Grey Only Large RGB / Grey Ramp RGB Large (quick) or Cube Based 17^3 (slow).
Once your profile completes click on the graph options tab, then select Rename to give the profile an easy-to-identify name, then press save to save the completed profile.
Once the profile is saved open a LUT Tools window in ColourSpace. From the LUT Tools window enter your de-sired LUT name in the NAME field. From the source dialog select your target colour space from the colour space drop-down menu (e.g. Rec709, P3). From the destination, dialog select the calibration profile you just saved. Then

click create new to generate your calibration LUT. Once your LUT is generated click on the Manage LUT icon, then select save. Next return to the Hardware Options window that is already connected to the monitor and from the Select LUT dialog change from UnityBypass to the LUT you just saved. Ensure that the gamut is still set to the memory position you want to save to and that Load is set to 3D Only, then press Upload. Your calibration is now complete and saved to the monitor in the specified gamut position.

Additional Considerations

If you plan on utilizing the Back 1D LUT for calibration please remember to calibrate for this position first using Grey Only or Grey Only Large profiling, upload to the monitor's back 1D LUT position, then profile with this Back 1D LUT active. When creating a PQ-3D LUT you will also want to use the EOTF nit option in ColourSpace to specify the corresponding measured peak luminance of the display (e.g. 650nits). To do this select the Space Management option, select a standard Colour Space (e.g. ST2084 P3 D65), then select Modify. In the nits field type in the corresponding peak luminance target (e.g. 650nits), then change the Output name accordingly (e.g. ST2084 P3 D65 650) and press save. This will now be presented as a new source target option when creating your LUT.

For PQ calibration a popular approach is to build a back 1D LUT targeting gamma 2.2 D65 first. Then profile with this active in the back 1D LUT slot and build a 3D LUT targeting PQ next.

When calibrating for HDR on W-OLED an L10 window test patch size is suggested to avoid loading behavior. However, please keep in mind that excessive use of small bright test patches can cause burn in on OLED displays, for this reason we advice using smaller profiling test patch sets (e.g. Grey Ramp RGB Large) for HDR calibration. Please note that W-OLEDs are best suited to SDR mastering applications. While W-OLEDs can be calibrated for use in as less color critical HDR monitoring scnearios they will exhibit volumetric limitations at high light output levels. This is normal and a limitation of the W-OLED technology. Questions? **E-mail: Support@FlandersScientific.com** or Call: +1.678.835.4934

Documents / Resources

 FSI Flanders Scientific Inc. ColourSpace XM W-OLED Calibration Guide Using ColourSpace with Direct LUT Upload Capability for XM652U, XM651U, XM650U, XM552U, & XM551U Flanders Scientific, Inc. 6215 Shiloh Crossing Suite D Alpharetta, GA 30005 Phone: +1.678.835.4934 Fax: +1.678.935.1901 E-Mail: Support@flandersscientific.com www.FlandersScientific.com	**FSi XM652U Colour Space XM W-OLED Display** [pdf] User Guide XM652U, XM651U, XM650U, XM552U, XM551U, XM652U Colour Space XM W-OLED Display , XM652U, Colour Space XM W-OLED Display

References

- ▣ **Flanders Scientific**