**Monitor Calibration - Calman ISF Workflow V1 REVISED**

*IN PROGRESS*

<table>
<thead>
<tr>
<th>Instructions</th>
<th>Images</th>
</tr>
</thead>
<tbody>
<tr>
<td>Put the Klien on a tripod if necessary</td>
<td><img src="image1.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Pic of putting on the lens hood</td>
<td></td>
</tr>
<tr>
<td>Pic of screwing on tripod plate</td>
<td></td>
</tr>
<tr>
<td>Pic of the cup smashed up to the TV so rubber is blocking out all the light</td>
<td></td>
</tr>
<tr>
<td>Put the Klien Monitor puck right on the screen completely flush to the monitor</td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Log into laptop with commpower password</td>
<td>.\commpower to local account on laptop</td>
</tr>
<tr>
<td>Connect Murido signal generator via USB to laptop.</td>
<td><img src="image3.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Make sure the Murido drivers are installed</td>
<td><a href="http://www.murideo.com/downloads.html">http://www.murideo.com/downloads.html</a></td>
</tr>
<tr>
<td>Klein camera should be plugged into the computer and the Murido Signal Generator connected via USB</td>
<td><img src="image4.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Plug in the HDMI to the Murido Signal Generator output to the TV you want to calibrate</td>
<td><img src="image5.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Now you should see the images from the murido on the TV</td>
<td><img src="image6.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Turn off the lights in the room put in the CC environment</td>
<td><img src="image7.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Also put something on the computer monitor “Resolve”</td>
<td><img src="image8.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>
Open Calman software

Enter in the details and click Start Session

Client – Default
Calibrator – your name
Display System put in as much info as possible

Remember under Workflow choose ISF Calibration
This Screen you will pick the hard ware for stages 1,2, not necessarily 3

On step 1 make sure you choose OLED or LED or Plasma or Projector etc

Step 1 pick the port and put a checkbox on the kind of instrument you are using Klein > Search
Tab one find meter. Add the Klein Meter find the Select it from the checklist.

Find your source generator next tab. Windows Size 100% or 10% depending OLED on if you have a consumer or Business TV power source will depend on how it affects the light output so use a light meter to see if the light is diminished by going to 100%.

Also pick the target display – Choose LCD (LED)
This is also where you choose the window size 100%

Choose 100%

Generally rule is consumer TV's set to 10% to be on the safe side

If you want to connect the computer to the TV you can hook up the Ethernet or Serial Port and click "Next"

Murido 6G Genrator

Frame Grab pc01

Click on the

Setup the meter position

Click on Next
Click on the little "Gear" mark in the Upper Right hand corner

Pick the Resolution 3840 x 2160 24P

Colorspace target D65HDBT 709
Gamma Formula ITUBT1886
Luminance Levels Video 16-235
Close by clicking the right pointing arrow

On the Sony TV in Suite press Menu and put in the following
Next > Next > Pre-Calibration Settings
Picture Mode
Color Temperature
Gamma
Backlight
Brightness
Color
Sharpness
Contrast
Tint
Low Red
Low Green
Low Blue
High Red
High Green
High Blue
Notes – Grad Hallway CMB 4.112A (example)
Click "Next"

Replace this with PC picture 2
Right click on HISTORY 1
Title it Custom or Cinema or whatever mode you think will look close to the best
Click on the "goal-post" looking thing to read the series
Click on the Read Series button

Pre Calibration View to document the as found condition of the display
Looks good on Luminance and all the colors look good
The Big Y number in this data is the Luminance
Click on Next

Mode Settings
Select a Picture Mode on the TV
If you have to change the mode on the sony PVMX550 you need to put in the passcode 4112
See Picture is as and close to 6500K as possible on this mode setting usually Cinema, Movie or Custom Mode will provide calibration controls and fairly closer to color correction. . . AVOID VIVID, Dynamic, Sport etc. . .
To get the mode to be read press > Gamma
Preset – Press Read Series or "Goal Post"

Now go into each of the Gamma Settings to test each of them to find the right one that reads closest to the target line 6500. Good to write these down or can re-name each history tab

Rename the history tab to put in the Gamma Setting
Go through each Gamma setting titling each one per setting
-1 setting choose the best setting from all the modes you tried

Here is what the 2 point Gamma reading at should look like
See this example
Click on Next
To set the "white point BLOCK" and color space click on the "Infinity button" and while it is running toggle through all the color temp settings that the TV has

SONY PVMX550
We don't change the color temp doesn't work. Color Science is already set.

But on other TV's
Change the color temperature to warm 2 on the TV
Click on the "Infinity" button and warm 2 then warm 1, neutral, cool and found out warm 2 is best because the dot was closest to the white point

Click on Next

Turn off all Auto Features
No automatic adjustments should be on
Click on Next once all the settings on the TV are off
Adjust Luminance

Click on Read Continuous and adjust the Backlight setting on the TV. In our example, we set it to max and according to the specs, we should be 30-40 for a dark room. These are the specs for the rooms that we want to follow.

The max reading is 24.4 for our Sony TV.

Click on Next.
Next click on the Dynamic Range

Dynamic Range to check this click on Read Series

This is the result of the Read

Not Bad but can adjust
Press these buttons

Press Brightness and will get the controls to adjust for the Black PLUGE test pattern – You want to barely see 16 and 17 but should not see any squares below 16 those should be invisible.
Press Contrast button to put up the White Pludge you want to see up to 254 and don't want to see any pink tones or noise?
On Sony - Press Picture and will get the controls to adjust for the "Contrast" all these terms are different

Gamma Settings control
We went to lower the Gamma to make it work better
Turned on Advanced Contrast Enhancer and LED Dynamic Control
Look at the Moving Stripe pattern you want to see the display look darker.
This turns on Local Area Dimming
We ended up turning on Local Area Dimming by turning on LED Dynamic Control. Optimizes contrast by adjusting brightness in individual sections of the screen. Gamma also was changed to -2; this is a repeat of Gamma on step 2, but this is a 10-point control instead of a 2-point control. Click on Next.

This Sony 65 does not have blue only mode. But click on Color and Tint to see the Color Bars on the Monitor.
Resolution/Bit-Accuracy

You can click on the test patterns here.
Pull up ISF Geometry to check for OverScan.

**Grayscale Two Point Adjust**

We recommend that you select 80% and 90% for your first pass to adjust the white balance controls.

1. Select the 80% white pattern and click the Read Continuous button. Adjust the Red and Blue High controls to balance the red and blue levels to the green level.
2. Select the 90% to adjust the Red and Blue Low controls.
3. If the Delta is still high at some level(s), reselect your adjustment points closer to those levels and repeat steps 1 and 2 above.

**NOTE:** With displays that change luminance between window patterns and full field patterns, use the area down to check the smallest window available as well as full field.

You will control the RED Green and Blue Gain=High controls.

You will go to your White Balance settings to find your RGB Gain and Bias.
This is what we ended up with
Then we clicked on 30 % and adjust the Red Green Blue low or Bias controls

OOOW
We don't have these options in this TV. Because we only have Hi and Low and we don't have a control called RGB balance or alike.

Click Next
On the TV go to the Color Management RED setting Luminance
Click on Infinity button on the calman use the remote to adjust the Luminance, Then Tint, then Saturation.
Try to get the dot in the box.
See pic #7
Red Green Blue get Gamut Luminance to 0 or close by playing with Luminance and Saturation
The Delta controls get them to 0 or close
Delta L = Luminance
Delta C = Chroma
Delta H = Hue
Read the white #’s the Target numbers are what you are trying to get the current readings to match.

OLED New LG – set the backlight for Day Mode
Color Workflow for CMS Primary Colors Red, Green and Blue
Pick Green go to infinity mode
Start adjusting with Luminance
Increase/decrease the luminance
Saturation increase/decrease
Tint increase / decrease
Go back to Luminance
Next Re – Read all 6 Colors again pressing the "Goal Post"
Color Workflow for CMS Secondary Colors Cyan, Magenta, Yellow, White
Pick Cyan go to infinity mode
Start adjusting with Hue or tint
Luminance adjust
Pick Magenta
Start Adjust Tint/hue
Saturation
Then finally Luminance adjust till you get in the hole
Pick Yellow
Start Adjust Tint/hue
Saturation
Then finally Luminance adjust till you get in the hole
Run the "Goal Post" again to see how all the 6 colors are affected
You will usually do two passes

![CalMAN Color Management System](image)

Go down to Color Management System
Click on the "Goal Post"
Select the RED Color then Right click on Gamut Luminance area of the image and choose Properties tells us the exact percentage we are off on RED
This shows on the scale how far we are off.

If you click on the color of the box as we have clicked on Green then you will get the close up of the offset of the color green dot is out of the box.
Saturation Sweeps to show where the saturation falls

Re check the White Levels
You will get the Black Pluge Slide back up and the White Pluge slide back up set these again and set these by eye

Should

Press Brightness and will get the controls to adjust for the Black PLUGE test pattern – You want to barely see 16 and 17 but should not see any squares below 16 those should be invisible

Press Contrast button to put up the White Pludge you want to see up to 254 and don't want to see any pink tones or noise?
Now go to the Sony OLED and let's compare.
Go to ETOF and set it to 2.4

ColorChecker Analysis
.4 not visible. .6 is visible then you should try to fix it.