# LG OLED 2017/2018/2019 Templates of DeviceControl Interface for LightSpace users

DeviceControl Interface is a browser-based control program developed by Riccardo Biasiotto which enables different test images (and more) to be displayed via the Raspberry Pi based 'PGenerator', as well as managing Panasonic (OLED/LCD/Plasma) TV's or Lumagen Processors settings, also DDC (Direct Display Control) capability on selected Panasonic TV models.
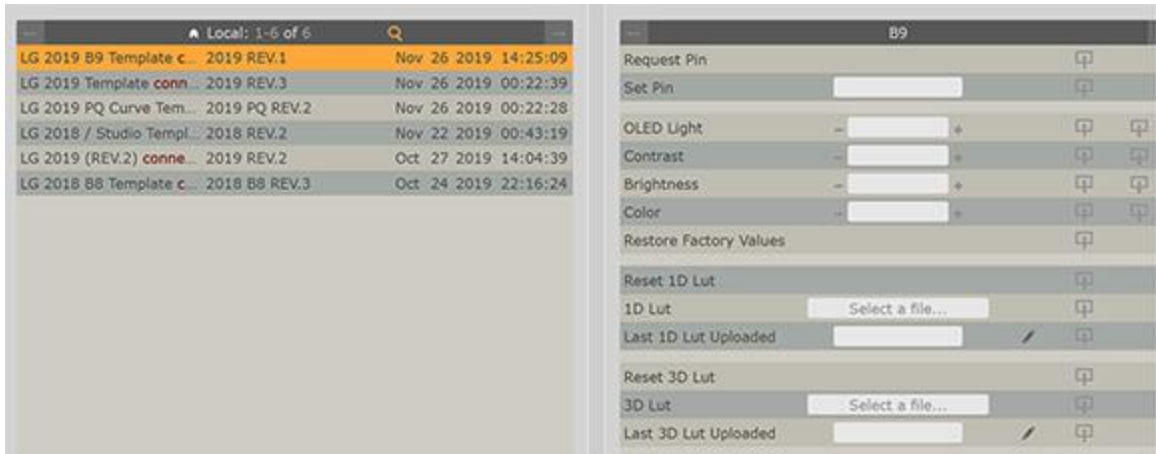
The most popular custom additions by an 'unknown' calibration enthusiast user are the LG Templates for Device Control which features the direct loading of 1D and 3D LUT's generated via LightSpace into:

LG 2018 B8/C8/E8/G8/W8 OLED TV's, as well as basic DDC (Direct Display Control).

LG 2017 B7/C7/E7/G7/W7 OLED TV's with 'special' Technicolor firmware installed, including DDC.

LG 2019 B9/C9/E9/W9/Z9/R9 OLED TV's, as well as basic DDC (Direct Display Control).

It has also been added for LG 2019 OLED TV users the free LG 2019 PQ Curve Upload Template, which provides the capability to upload custom HDR10 tone-mapping (7 parameters) behavior when the LG's Dynamic Tone Mapping setting is disabled.

LG C8/E8/G8/W8/C9/E9/G9/W9 OLED TV's have (33-Point Cube 3D LUT) while the LG 2017 B7/C7/E7/G7/W7, LG 2018 B8, and LG 2019 B9 have (17-Point Cube 3D LUT) capabilities.

You can see very detailed instructions about how to request access, how to set up and connect your LG OLED TV using LG Templates for DeviceControl Interface here.

There is a very informative page also, which is explaining the LUT capabilities of LG OLED's here.

You can find much useful info about related to profiling and methods to perform the best possible pre-calibration adjustments before starting the profiling.

LightSpace users with LG OLED's have posted to AVSForum many times their results after verification of 1000 patches, and they usually get about 0.25dE2000 - 0.35dE2000 average.

The verification of 1000 color points (10-Point Cube), is a very advanced analysis of real performance with too many different areas of the gamut measured, for example, ColorChecker SG other users as maximum are using

it will measure 96 colors but not capturing the whole colorspace performance while typical CalMAN users are verifying using only 20-30 patches.

From March 2018, when I posted the extensive analysis of CalMAN's engine problem here, CalMAN has released a lot of 'improvements', but the results as still suffering from many issues.

You can see the comparison I posted in November 2019, where the users used the latest versions of LightSpace/CalMAN with their i1Display PRO's here.

What will I need to perform 3D LUT SDR profiling using LightSpace with an LG OLED TV?

1) Ted's LightSpace CMS Calibration Disk for pre-adjustments of contrast/brightness or post-cal visual evaluation of color/grayscale ramps.

2) For users without external pattern generator, it is recommended to use PGenerator from here with a Raspberry Pi 3 Model B+ Kit with 4/8GB SD Card. RGB 16-255 patch generation will provide the best possible results. External pattern generators can also be used: Accupel/DVDO/Murideo (16-255), Lumagen Radiance (16-235), madVR TPG (16-235), a verified notebook/PC output (16-255) or Resolve's TPG (16-235).

3) Request access to LG Templates of DeviceControl Interface and read the instructions here.

4) X-Rite i1Display PRO OEM colorimeter, where is available a spectral correction table (WRGB OLED) created from FSI working with Light Illusion and X-Rite; useful for users without a Spectro.

For improving more the i1Display PRO OEM color accuracy, it can be used the i1PRO2/3 to create a 4-color matrix meter profiling or a higher grade Spectro (JETI, PhotoReasearch or Colorimetry Research) to create a volumetric meter profiling.

5) Access the LG's Service Menu to perform the RGB Balance calibration and disable the ASBL (TCP)

There several methods to access the Service Menu here, or you can buy the LG Service Menu Remote Control from eBay; search for 'MKJ39170828' Remote.

It can also be used the AnyMote App from any smartphone equipped with a built-in IR transmitter.

5) Follow these instructions for profiling using LightSpace.

LG OLED 2019 PQ Curve Upload Free Template for DeviceControl Interface

The LG 2019 PQ Curve Upload Template Free Template for all users of DeviceControl Interface can be used for custom PQ Curve Upload (7 HDR10 tone mapping parameters) for LG 2019 B9C9/E9/W9/Z9/R9 OLED TVs.

This template is free for all people, whatever calibration software they will use, it will be useful even for CalMAN users, where they can install it to a different PC from the one they use for calibration, or to any windows based tablet, for quick upload or custom tone mapping settings.

Instructions about how to get that free template are available [here](#).

About LG 2019 OLED's Custom Tone-Mapping capabilities, the official CalMAN Guide info was not so informative for users to understand these capabilities or how to use them, so I spend a lot of my time to write without any direct help from LG or CalMAN the most complete guide exist for these features for all LG 2019 users to understand the whole Tone-Mapping concept.

CalMAN 2019 Home for LG users (with higher license level also) or with the Free LG 2019 Template of DeviceControl Interface, they will have more complete instructions to help them decide which custom settings to upload to the TV.

[How to use the LG 2019 PQ Curve / Explanation of HDR10 tone mapping engine parameters / How HDR10 PQ-Curve Tone Mapping works](#)?

Additionally, its available an explanation of these two functions below, as they are affecting tone-mapping also:

[What is the 'Peak Brightness' setting and how it's affecting the LG OLED TV luminance output?](#)

[How 'AI Brightness' is working and why it has to be disabled when custom PQ Curves are used?](#)

LG Hidden Diagnostics Menu

LG's 2015-2019 has a secret menu with some valuable info that can help for trouble solving or for checking some additional stuff.

I have posted to AVSForum about how to enter to that hidden menu [here](#).

'Unofficial' support for branded X-Rite colorimeters for LightSpace

The following X-Rite colorimeters:

X-Rite ColorMunki Display
X-Rite i1Display PRO Retail
X-Rite i1Display PRO Plus Retail (added)
SpectraCAL C6
SpectraCAL C6-HDR
SpectraCAL C6-HDR2000
HP DreamColor
NEC SpectraSensor Pro

Quato Silver Haze 3
Wacom Color Manager
ASUS ProArt i1Display PRO

..can work with LightSpace/ColourSpace also, using an alternative connection method.

Use the 'Contact Us' button located to the end of this newsletter to ask for more details.

LightSpace Home Cinema license levels explained

They are available two LightSpace Home Cinema Software License Versions:

LightSpace HTL (Home Theatre Light) & LightSpace HTP (Home Theatre Pro).

Both versions share the same features as the LightSpace CMS (Full Version) but are limited to export 3D LUTs to eeColor 3D LUT Box, Q, Inc / Murideo Prisma Video Processor, or Lumagen Radiance / Radiance 2XXX / Radiance Pro 4x4x Video Processors only, as these are the only LUT Devices in the Home Cinema Market with HDMI In-Out.

LG OLED 33-Point 3D LUT, 17-Point 3D LUT, or 1024-Point 1D LUT export for DeviceControl Interface for LG's are supported from both LightSpace Home Cinema license levels.

Calibration of displays connected to a madVR based Home Cinema system using LightSpace HTL/HTP is straightforward, with integration for profiling and LUT upload. 65-Point Cube 3D LUT files format can be uploaded directly from inside LightSpace to MadVR Video Renderer.

Additionally, LightSpace HTL/HTP can export 'Light Illusion' LUT format for use with SpaceMan ICC and VCGT (Video Card Gamma Table) LUT format for SpaceMatch DCM.

Meter Support and access to LUT Manipulation Filters are the only differences between that two LightSpace Home Cinema Versions.

PGenerator Patch Generator for LightSpace

PGenerator is a Raspberry Pi-based patch generator that enables the generation of calibration patches for the measurement and profiling of any display via an HDMI connection, developed by Riccardo Biasiotto.

PGenerator can be controlled directly by LightSpace CMS; it can generate any required color patches, required for a display/projector profiling useful for manual calibration when required.

PGenerator can output bit-perfect RGB values (0-255 or 16-255 or 16-235) and add to its output an HDFury device for HDR10 Metadata+AVI info frame injection. It can become an accurate (RGB) HDR10 patch generation solution also.

PGenerator can work via Wireless, Wired, or Bluetooth connection with LightSpace.

The [latest firmware release](#) is supporting direct LAN connection of the PC/notebook with the PGenerator.
That connection options can resolve some communication problems.
The users can connect with LAN cable their PC/Notebook with the PGenerator, reboot the PGen, and use the
LightSpace Network Manager to connect.
About DeviceControl Interface with PGen, it is essential to configure the IP address to 0; for IP AutoDiscovery.

For more details about PGenerator, see [there](#).