



## The Sony VPL-HW40

### Introduction

The equipment used in these tests can be seen at the end of this report. All measurements were taken from the projector lens, so that the screen had no impact on the results. The contrast results should not be taken as conclusive in real world comparisons, but are representative for these 2 projectors as they are tested in same conditions at same time.

### Out of the box

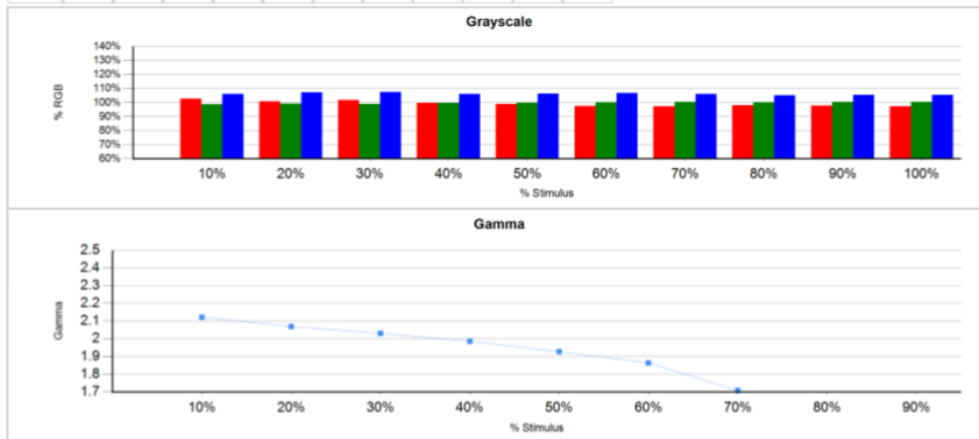
Out of the box the projector is set to Cinema Film 1, and greyscale, gamma and gamut are inaccurate as can be seen below with whites badly crushed and red clipping at the high end:



### ChromaPure Pre-Calibration Grayscale Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
x	0.280	0.311	0.309	0.309	0.309	0.308	0.307	0.307	0.308	0.308	0.308
y	0.336	0.321	0.321	0.320	0.322	0.322	0.322	0.323	0.324	0.324	0.324
Y	0.049	0.810	3.839	9.307	17.362	28.204	41.410	58.346	78.429	92.707	107.271
dE	21.7	4.4	4.6	5.0	3.6	3.6	3.8	3.4	2.9	3.0	3.0
CCT	8.328	6.671	6.605	6.780	6.789	6.826	6.908	6.879	6.812	6.830	6.843
Gamma	0.00	2.12	2.07	2.03	1.99	1.93	1.86	1.71	1.40	1.38	0.00

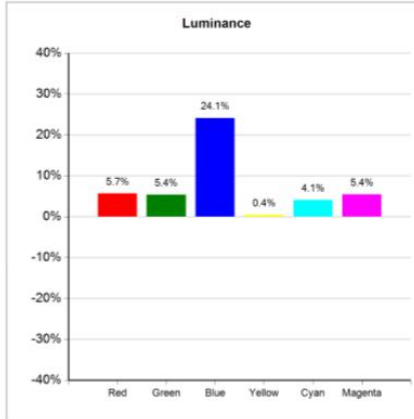
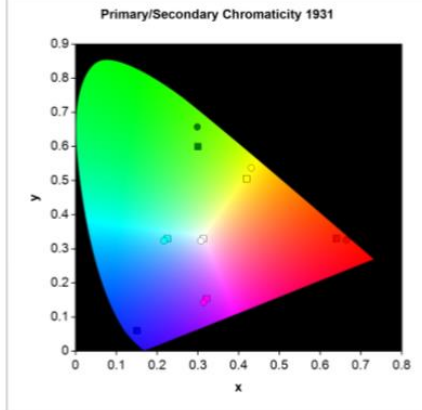




### ChromaPure Pre-Calibration Color Gamut Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

	White	Red	Green	Blue	Yellow	Cyan	Magenta
x	0.308	0.665	0.299	0.152	0.432	0.217	0.314
y	0.324	0.326	0.657	0.059	0.537	0.324	0.143
Y	1.000	0.225	0.754	0.090	0.932	0.820	0.300
cd/m2	87.9	15.3	51.2	6.1	83.3	55.7	20.4
dE	3.1	3.9	5.0	4.0	4.2	2.2	2.4



### Reference Mode Pre Calibration

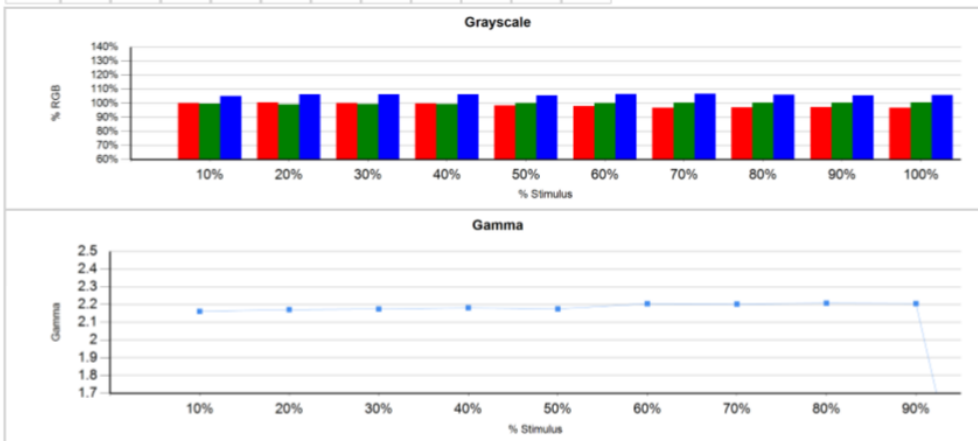
So we then look to the most accurate mode which (as in previous Sony projectors) is Reference, and these early results are far better, but still show visible errors in the greyscale, although the gamut is very good using BT.709:



### ChromaPure Pre-Calibration Grayscale Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
x	0.283	0.309	0.309	0.309	0.309	0.308	0.307	0.308	0.307	0.307	0.307
y	0.338	0.323	0.322	0.322	0.322	0.323	0.322	0.322	0.323	0.324	0.323
Y	0.046	0.736	3.240	7.789	14.473	23.647	34.628	48.691	65.265	84.674	106.828
dE	20.6	3.2	4.0	3.9	3.8	3.2	3.7	3.8	3.5	3.1	3.3
CCT	8,086	6,737	6,761	6,789	6,790	6,817	6,883	6,937	6,895	6,858	6,896
Gamma	0.00	2.16	2.17	2.17	2.18	2.18	2.21	2.20	2.21	2.21	0.00

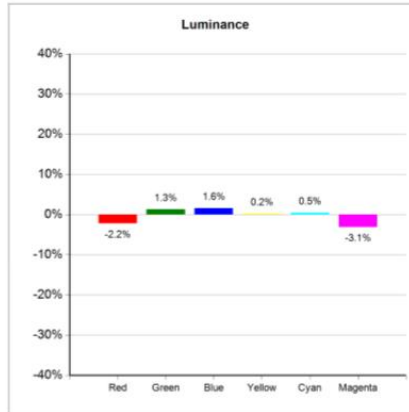
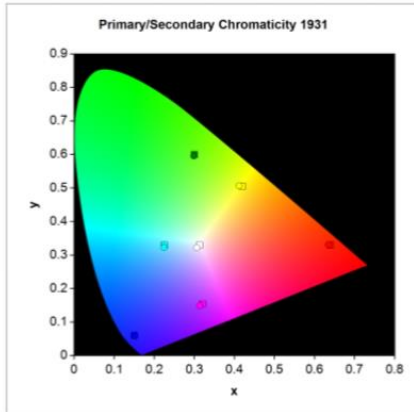




## ChromaPure Pre-Calibration Color Gamut Quick Report

Date: 24/04/2014  
Meter: Display3  
Gamut: Rec709  
dE Type: CIE94

	White	Red	Green	Blue	Yellow	Cyan	Magenta
x	0.308	0.635	0.299	0.152	0.412	0.224	0.314
y	0.323	0.331	0.598	0.058	0.507	0.323	0.149
Y	1.000	0.208	0.724	0.073	0.930	0.791	0.278
cdim2	56.5	11.8	41.0	4.1	52.6	44.7	15.6
dE	3.7	0.8	0.6	1.1	1.6	1.6	1.2



### Reference Mode (calibrated high lamp)

So we then move to calibrate the projector, which it does very well (with limitations):

First we look at high mode where there is serious clipping of the red channel as we move closer to 100%. This means contrast cannot exceed 68 on this unit, which is very low.

The other notable point is that the adjustable colour temperature that Sony have left us with is Custom 5. There is an obvious colour tint in this mode, and it needs some major work to calibrate it, nearly maxing out certain channels of colour. Go on previous experience with Sony projectors, custom3 is the preferred starting point, as you will see with the HW55 information later.

There is no such problem with the colour gamut, which starts out very well, and can be tweaked to a reference level using the inbuilt RCP.

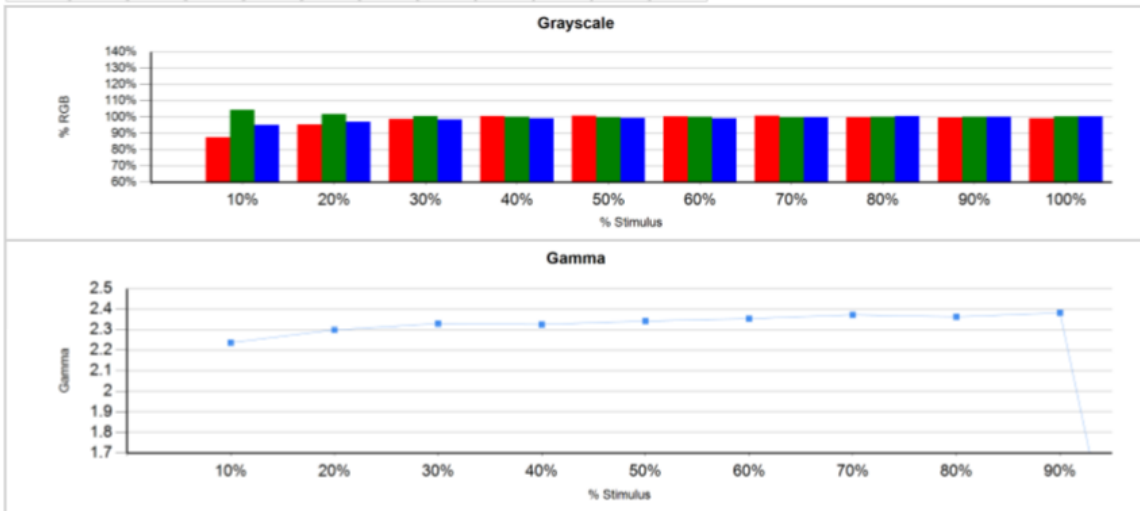
Gamma was also moved to 2.4 to improve the depth of the image:



## ChromaPure Post-Calibration Grayscale Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

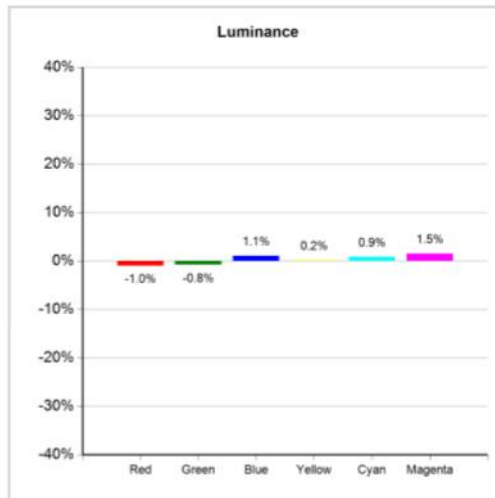
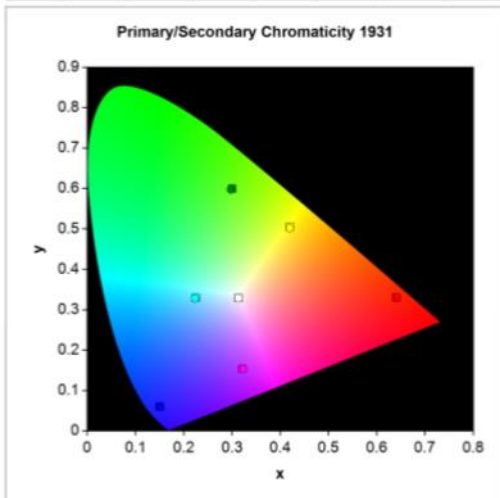
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
x	0.275	0.307	0.311	0.313	0.314	0.314	0.313	0.313	0.312	0.312	0.312
y	0.348	0.339	0.334	0.331	0.330	0.329	0.330	0.329	0.329	0.329	0.329
Y	0.040	0.402	1.714	4.198	8.235	13.681	20.841	29.765	40.943	53.974	69.374
dE	30.3	8.6	3.6	1.4	0.6	0.4	0.5	0.3	0.3	0.2	0.4
CCT	8,395	6,732	6,543	6,488	6,447	6,450	6,491	6,469	6,534	6,525	6,540
Gamma	0.00	2.24	2.30	2.33	2.33	2.34	2.35	2.37	2.38	2.38	0.00



## ChromaPure Post-Calibration Color Gamut Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

	White	Red	Green	Blue	Yellow	Cyan	Magenta
x	0.313	0.642	0.298	0.151	0.419	0.223	0.324
y	0.329	0.332	0.597	0.059	0.502	0.328	0.154
Y	1.000	0.211	0.710	0.073	0.929	0.794	0.289
cd/m2	34.0	7.2	24.1	2.5	31.6	27.0	9.8
dE	0.4	0.9	0.6	0.7	0.4	0.4	0.6



## Reference Mode (calibrated low lamp)

In low lamp mode, there is not actually much difference to high lamp mode, as we can actually get to 80 on the contrast before clipping occurs negating much of the gains made from the bulb change.

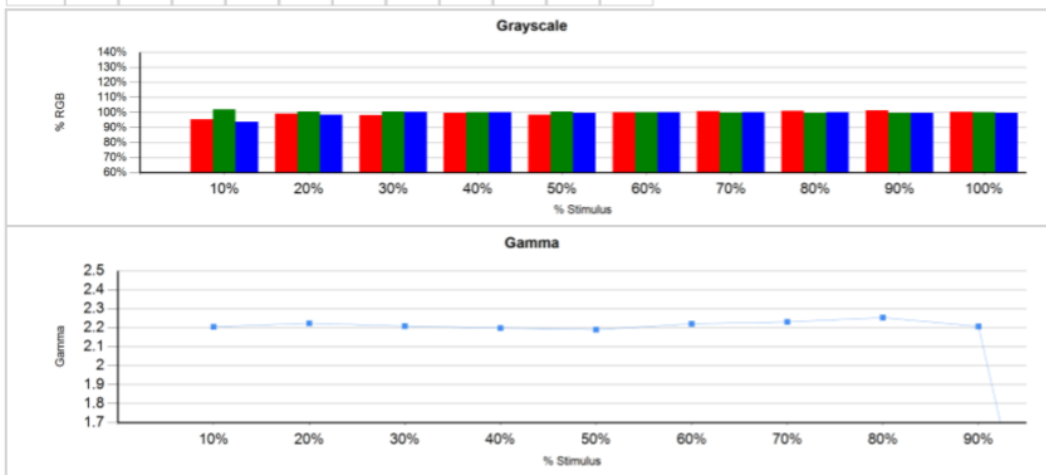
Again, it calibrated very well:



### ChromaPure Post-Calibration Grayscale Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

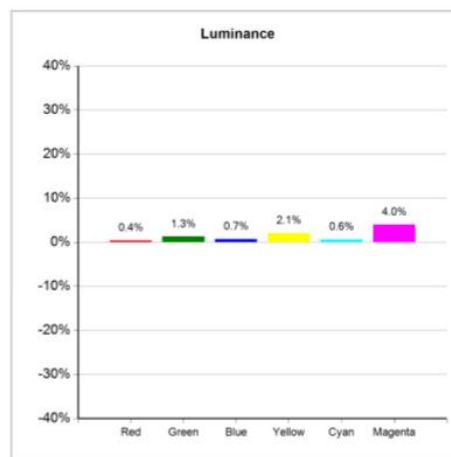
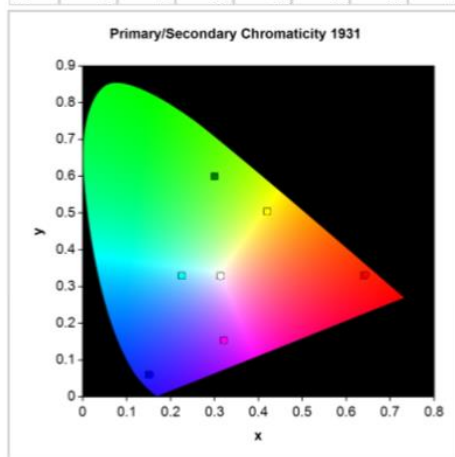
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
x	0.271	0.314	0.313	0.311	0.312	0.312	0.313	0.313	0.313	0.314	0.313
y	0.345	0.338	0.331	0.329	0.329	0.330	0.329	0.329	0.329	0.329	0.329
Y	0.031	0.377	1.689	4.234	8.071	13.263	19.462	27.309	36.600	47.960	60.517
dE	31.1	5.6	1.3	1.0	0.3	1.0	0.1	0.5	0.6	0.6	0.3
CCT	8.699	6.400	6.469	6.582	6.521	6.548	6.507	6.478	6.470	6.438	6.473
Gamma	0.00	2.21	2.22	2.21	2.20	2.19	2.22	2.23	2.25	2.21	0.00



### ChromaPure Post-Calibration Color Gamut Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

	White	Red	Green	Blue	Yellow	Cyan	Magenta
x	0.314	0.645	0.300	0.154	0.420	0.226	0.322
y	0.328	0.332	0.599	0.060	0.504	0.329	0.154
Y	1.000	0.214	0.724	0.073	0.947	0.792	0.296
cd/m2	30.3	6.5	22.0	2.2	28.7	24.0	9.0
dE	1.2	1.4	0.4	0.8	0.8	0.3	1.1



Based on these results the calibrated lumens at max and min zoom (for low lamp mode) were (high lamp mode not much better):

Max Zoom (low lamp) – 662 lumens

Min Zoom (low lamp) – 510 lumens

Max Zoom (high lamp) – 797 lumens

Min Zoom (high lamp) – 682 lumens

The image displays two side-by-side screenshots of the 'Lumens Calculator' software interface. Each window has tabs for 'Lumens Calculator', 'Color Decoding', and 'Calibration Rep'. The left window shows the following input values: Measurement Type: Lux, Measurement Value: 231, Select Dimension: Width, Enter Screen Size (inches): 89, Select Aspect Ratio: 1.78:1, and Select Gain: 1.0. The 'Calculate' button is highlighted. The resulting output values are: Screen Area (feet): 30.8, Screen Area (meters): 2.9, Diagonal: 102.0, Height: 50.0, Width: 88.9, fL: 21.5, cd/m2: 73.6, Lux: 231.0, and Lumens: 662.3. A 'Help' button is located at the bottom left. The right window shows the following input values: Measurement Type: Lux, Measurement Value: 466, Select Dimension: Width, Enter Screen Size (inches): 55, Select Aspect Ratio: 1.78:1, and Select Gain: 1.0. The 'Calculate' button is highlighted. The resulting output values are: Screen Area (feet): 11.8, Screen Area (meters): 1.1, Diagonal: 63.0, Height: 30.9, Width: 54.9, fL: 43.3, cd/m2: 148.4, Lux: 466.0, and Lumens: 510.2. A 'Help' button is located at the bottom left.

White Balance	Lumens Calculator	ColorDecod	White Balance	Lumens Calculator	ColorDecodi
Measurement Type	Lux		Measurement Type	Lux	
Measurement Value	278		Measurement Value	623	
Select Dimension	Width		Select Dimension	Width	
Enter Screen Size (inches)	89		Enter Screen Size (inches)	55	
Select Aspect Ratio	1.78:1		Select Aspect Ratio	1.78:1	
Select Gain	1.0		Select Gain	1.0	
Calculate			Calculate		
Screen Area (feet)	30.8		Screen Area (feet)	11.8	
Screen Area (meters)	2.9		Screen Area (meters)	1.1	
Diagonal	102.0		Diagonal	63.0	
Height	50.0		Height	30.9	
Width	88.9		Width	54.9	
fL	25.8		fL	57.9	
cd/m2	88.5		cd/m2	198.4	
Lux	278.0		Lux	623.0	
Lumens	797.0		Lumens	682.1	
Help			Help		

## Vs the VPL-HW55

### Initial observations

There are no such clipping concerns with red in the HW55, especially when starting with custom3 greyscale. Calibration is reference again, as it was with the HW40, but at much better light levels (there is no gamut reports as these are reference like the HW40):

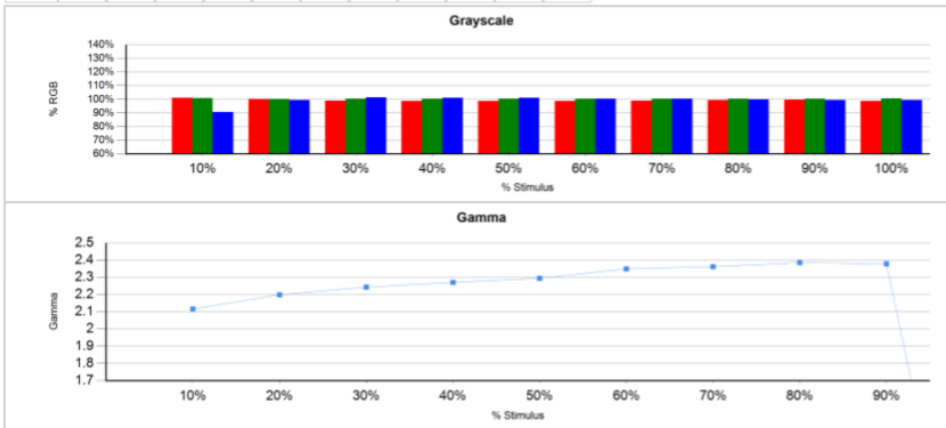
### High Lamp mode (calibrated reference mode)



#### ChromaPure Post-Calibration Grayscale Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
x	0.309	0.320	0.313	0.311	0.311	0.311	0.312	0.312	0.312	0.313	0.312
y	0.328	0.340	0.330	0.328	0.328	0.328	0.329	0.329	0.329	0.330	0.330
Y	0.040	0.889	3.414	7.888	14.072	23.959	35.389	50.011	69.003	91.461	117.515
dE	1.7	5.9	0.3	0.8	0.8	0.7	0.6	0.5	0.4	0.6	0.9
CCT	6.701	6.080	6.470	6.602	6.604	6.595	6.582	6.555	6.522	6.493	6.518
Gamma	0.00	2.12	2.20	2.24	2.27	2.29	2.35	2.36	2.39	2.38	0.00



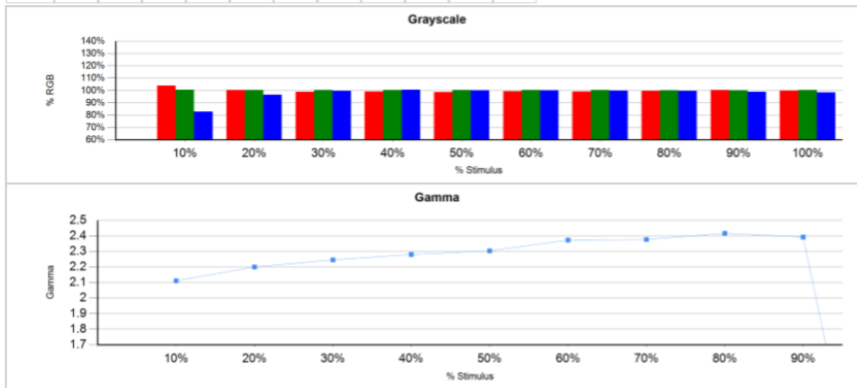
## Low Lamp mode (calibrated reference mode)



### ChromaPure Post-Calibration Grayscale Quick Report

Date: 24/04/2014  
 Meter: Display3  
 Gamut: Rec709  
 dE Type: CIE94

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
x	0.303	0.327	0.315	0.312	0.312	0.312	0.312	0.312	0.313	0.314	0.314
y	0.324	0.349	0.333	0.330	0.329	0.329	0.329	0.330	0.330	0.330	0.331
Y	0.033	0.561	2.104	4.859	8.983	14.699	21.599	31.097	42.331	56.419	72.599
dE	4.7	10.7	2.2	0.8	0.5	0.7	0.3	0.6	0.4	0.7	1.1
CCT	7.114	5.722	6.348	6.526	6.564	6.559	6.528	6.529	6.500	6.438	6.436
Gamma	0.00	2.11	2.20	2.25	2.28	2.30	2.37	2.38	2.42	2.39	0.00



Min zoom (high lamp mode) – 1135 lumens

Max Zoom (high lamp mode) – 917 lumens

Maz Zoom (low lamp mode) – 731 lumens

Min Zoom (low Lamp mode) – 623 lumens

**White Balance** | **Lumens Calculator** | Color Deco

Measurement Type: Lux

Measurement Value: 396

Select Dimension: Width

Enter Screen Size (inches): 89

Select Aspect Ratio: 1.78:1

Select Gain: 1.0

**Calculate**

Screen Area (feet): 30.8

Screen Area (meters): 2.9

Diagonal: 102.0

Height: 50.0

Width: 88.9

fL: 36.8

cd/m2: 126.1

Lux: 396.0

Lumens: 1,135.3

**Lumens Calculator** | Color Decoding | Calibration

Measurement Type: Lux

Measurement Value: 255

Select Dimension: Width

Enter Screen Size (inches): 89

Select Aspect Ratio: 1.78:1

Select Gain: 1.0

**Calculate**

Screen Area (feet): 30.8

Screen Area (meters): 2.9

Diagonal: 102.0

Height: 50.0

Width: 88.9

fL: 23.7

cd/m2: 81.2

Lux: 255.0

Lumens: 731.1

**Help**



White Balance	Lumens Calculator	Color Decoding	Lumens Calculator	Color Decoding	Calibration
Measurement Type	Lux		Measurement Type	Lux	
Measurement Value	896		Measurement Value	569	
Select Dimension	Width		Select Dimension	Width	
Enter Screen Size (inches)	55		Enter Screen Size (inches)	55	
Select Aspect Ratio	1.78:1		Select Aspect Ratio	1.78:1	
Select Gain	1.0		Select Gain	1.0	
Calculate			Calculate		
Screen Area (feet)	11.8		Screen Area (feet)	11.8	
Screen Area (meters)	1.1		Screen Area (meters)	1.1	
Diagonal	63.0		Diagonal	63.0	
Height	30.9		Height	30.9	
Width	54.9		Width	54.9	
fL	83.3		fL	52.9	
cd/m2	285.3		cd/m2	181.2	
Lux	896.0		Lux	569.0	
Lumens	981.0		Lumens	623.0	
			Help		

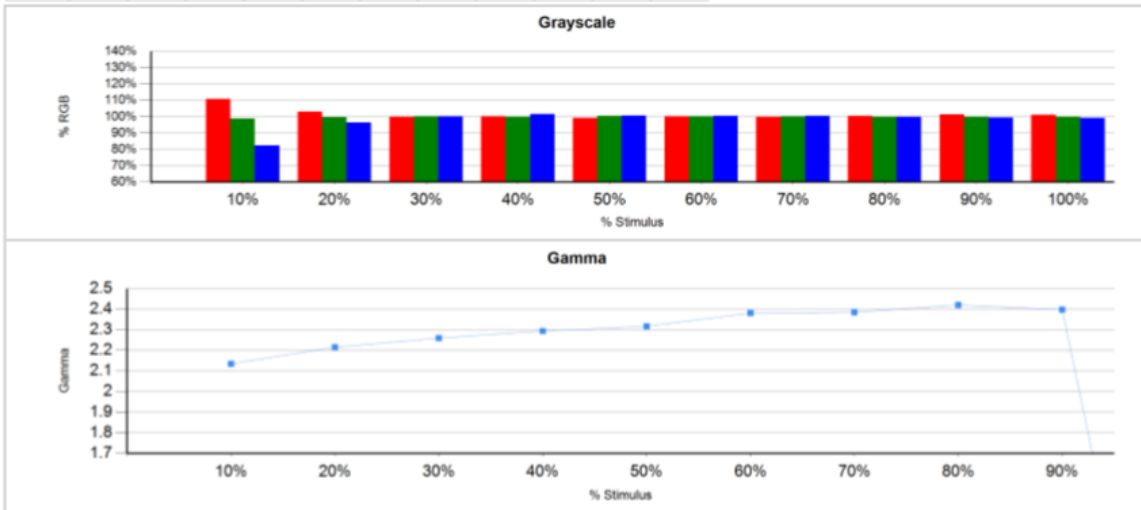
The benefits of this extra lumens, is that it can be used more effectively for bigger or lower gain screens, and also the extra lumens can be dialled back using the manual iris, which in turn can increase contrast as the black level can drop too. As an example, the report below shows the greyscale calibrated to 16ftl setting the iris at 60, which results in the black level dropping to 0.024 (on/off contrast of 2294:1) compared to 0.031 (on/off contrast of 1952:1) on the best HW40 mode as there is no manual iris to limit the output.



## ChromaPure Post-Calibration Grayscale Quick Report

Date: 24/04/2014  
Meter: Display3  
Gamut: Rec709  
dE Type: CIE94

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
x	0.308	0.333	0.317	0.313	0.312	0.312	0.313	0.312	0.313	0.314	0.314
y	0.321	0.347	0.333	0.329	0.327	0.329	0.329	0.329	0.329	0.329	0.330
Y	0.024	0.404	1.558	3.626	6.727	11.054	16.315	23.521	32.088	42.770	55.063
dE	4.4	10.9	2.3	0.1	1.0	0.5	0.2	0.2	0.2	0.6	0.6
CCT	6.860	5.492	6.239	6.509	6.570	6.562	6.514	6.520	6.485	6.430	6.430
Gamma	0.00	2.13	2.22	2.26	2.29	2.32	2.38	2.38	2.42	2.40	0.00



### Final settings for the HW40

Please note these settings are only really relevant for our projector, in our environment, but these settings are recorded for future purposes:

Picture mode: Reference

Reality Creation – Personal preference

Lamp power – Low

Motionflow – Personal preference

Contrast – 80

Brightness – 53

Color – 50

Hue – 50

Colour temp – Custom 5 \*see below

Sharpness – Min

NR – Off

MPEG NR – Off

Film mode – Auto 1

Contrast enhancer – Off

Gamma Correction – 2.4

XV Color – Off

Color space – BT.709

Colour Temp (custom 5):

Gains: R29, G-30, B-26

Bias: R-5, G0, B-2

RCP (User 1)

Red – C6, H-1, B-21

Yellow – C9, H-1, B-13

Green – C-10, H-22, B4

Cyan – C-6, H1, B-3

Blue – C-2, H-24, B3

Magenta – C11, H-5, B-28

**Final Notes**

Please let me know if you see any inconsistencies or want any more information on this report ([ricky@kalibrate.co.uk](mailto:ricky@kalibrate.co.uk)). Or if you have found this useful, please consider buying your next projector through us ([www.kalibrate.co.uk](http://www.kalibrate.co.uk)), as the more we sell, the more models we can invest in and test, and the better testing equipment we can invest in.

**Equipment used**

Jeti 1201 Spectroradiometer

Display 3 Colorimeter

AEMC CA813 Lightmeter

ChromaPure calibration software

DVDo AVLab TPG Pattern Generator