Lamp measurement report – 27 Aug 2011

Endurance test 5x Pharox III

by

Lemnis

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Summary measurement data

parameter	initial	after endurance test
Color temperature	3028 K	3053 K
Illuminance I_v@25deg ambient temp	54.2 Cd	52.5 Cd
Beam angle	196 deg	199 deg
Power P	5.86 W	5.76 W
Power Factor	0.51	0.53
Luminous flux @ 25deg ambient temp.	380.4 lm	380.9 lm
Luminous efficacy	64.9 lm/W	66.2 lm/W
CRI_Ra	85.6	86.4
Coordinates chromaticity diagram	x=0.4413 and y=0.4163	x=0.4359 and y=0.4085
parameter	**initial**	**after endurance test**
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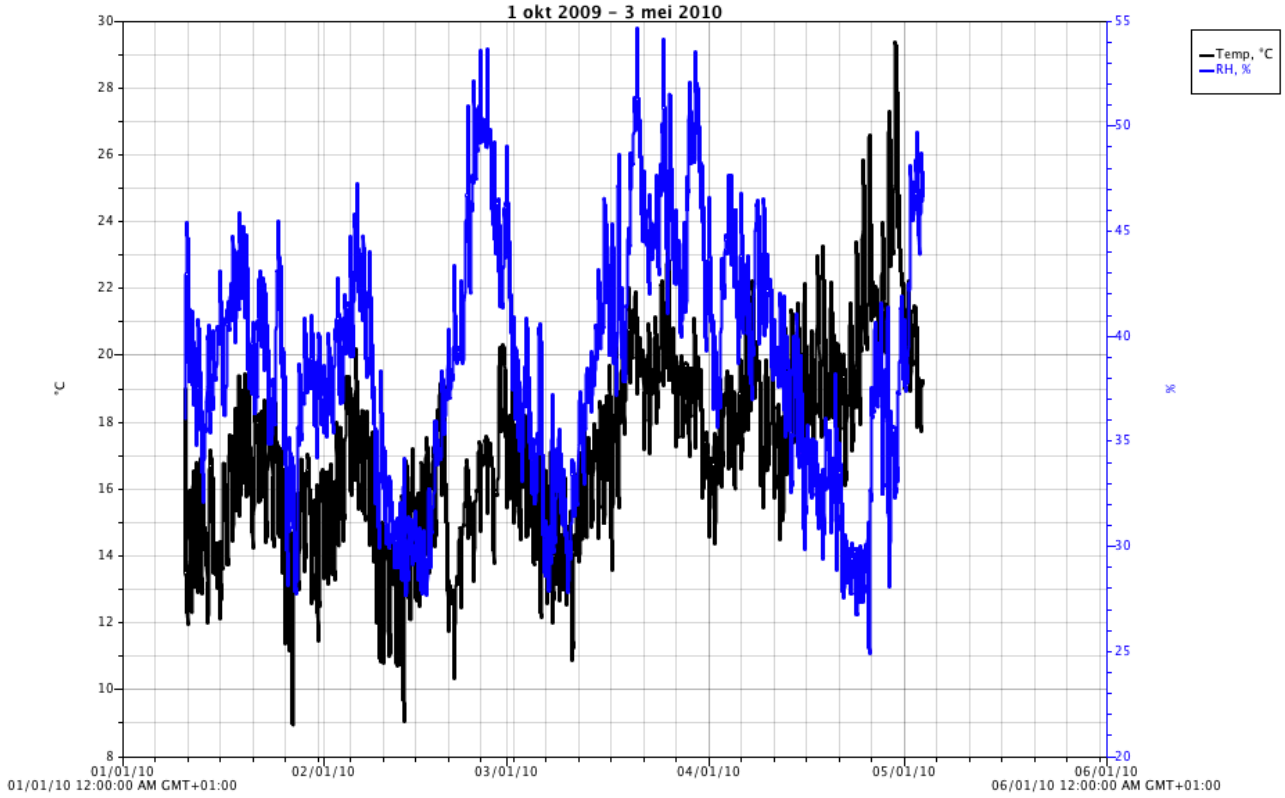
Test duration and test environment

The start was in Juan 2011 and the test lasted until Nov 2010.

During this time the lamps have seen the following temperatures and humidity.



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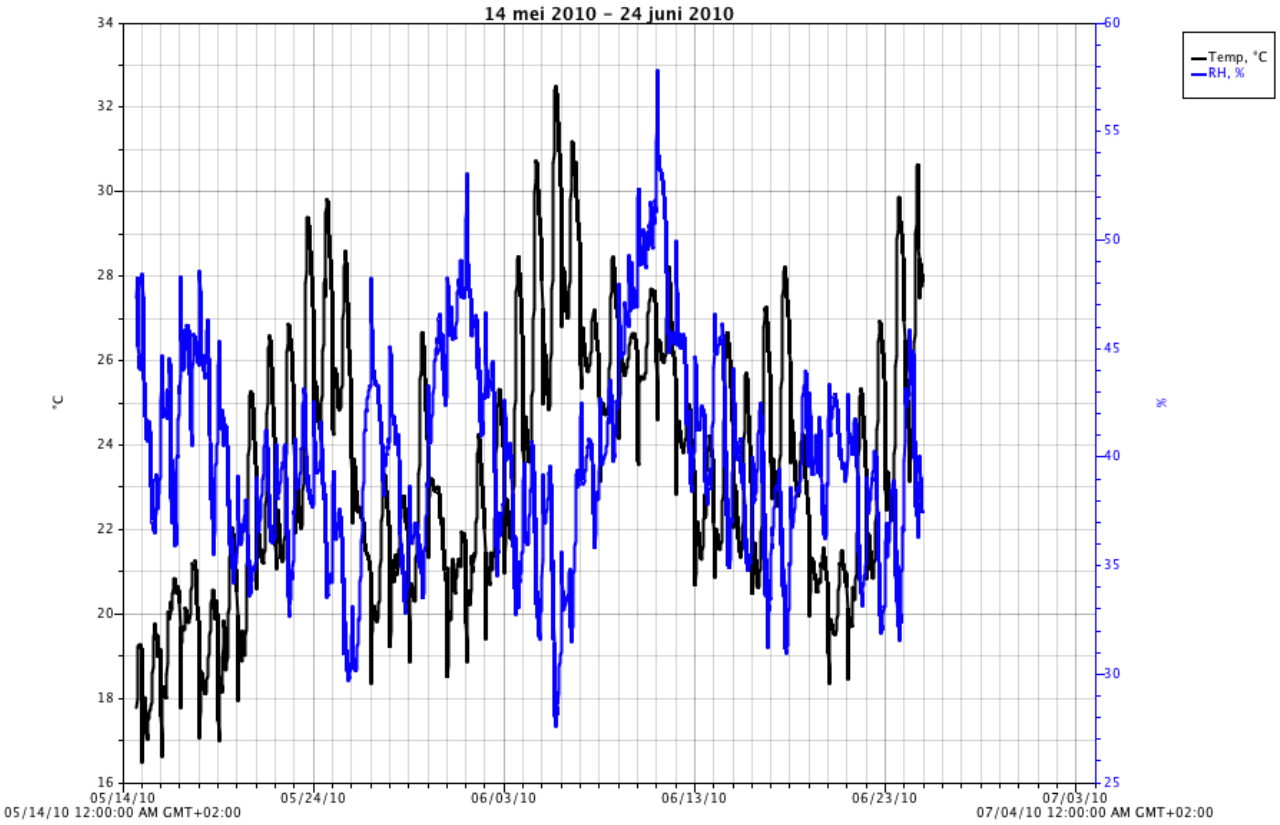

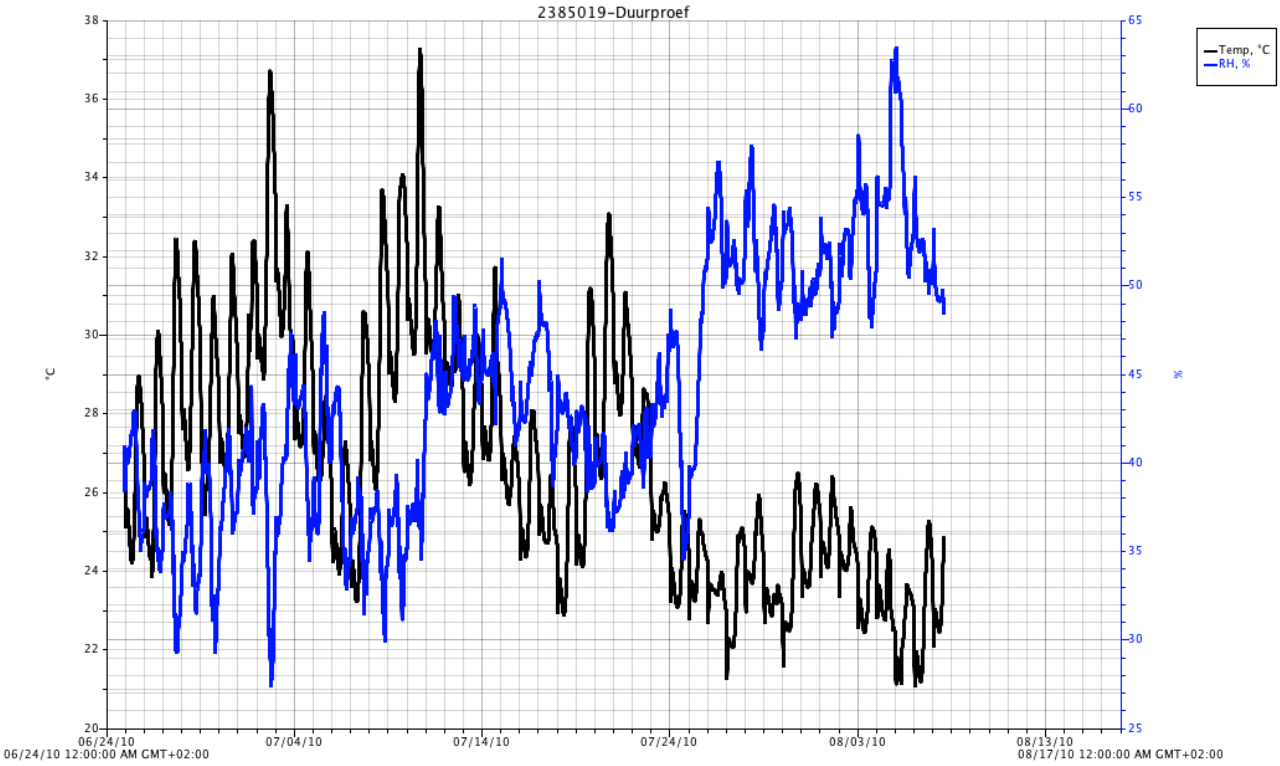

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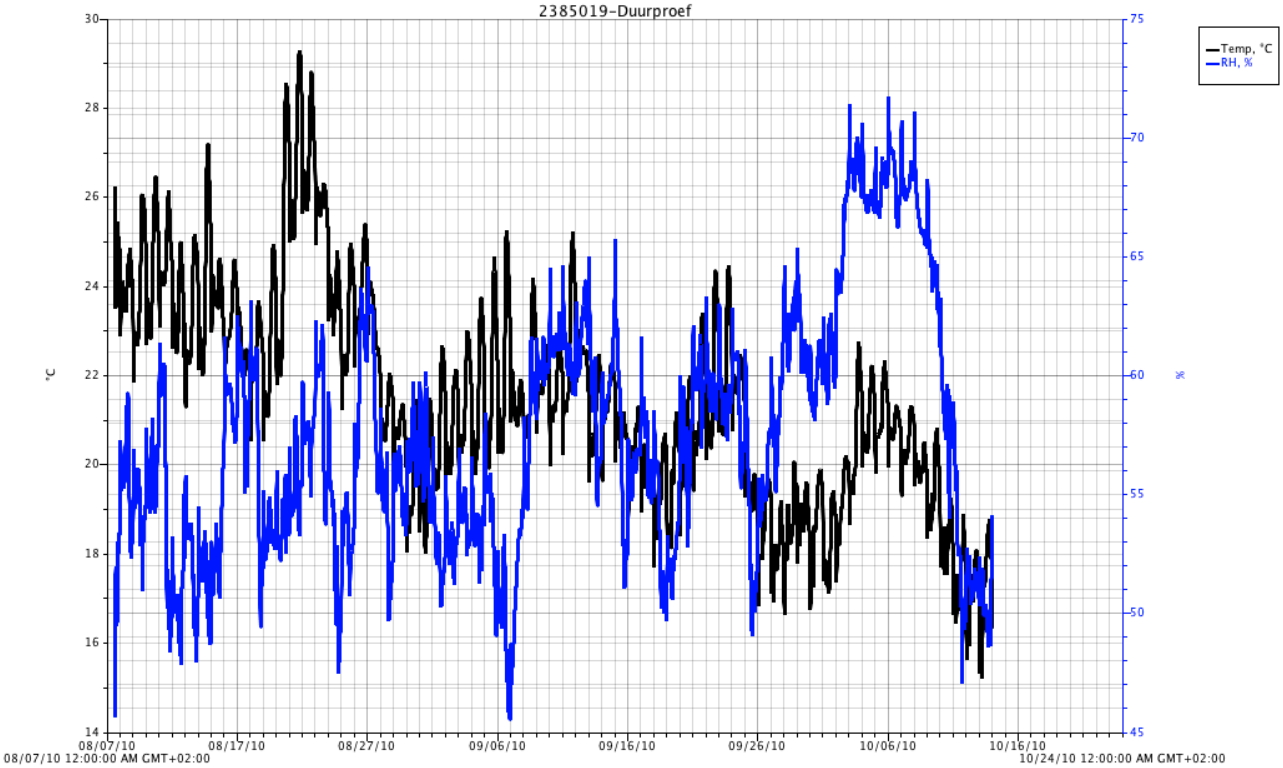

Periode of 2010

The ambient temperature varied between 9 – 37 degres C and the relative humidity between 25 – 72 %.

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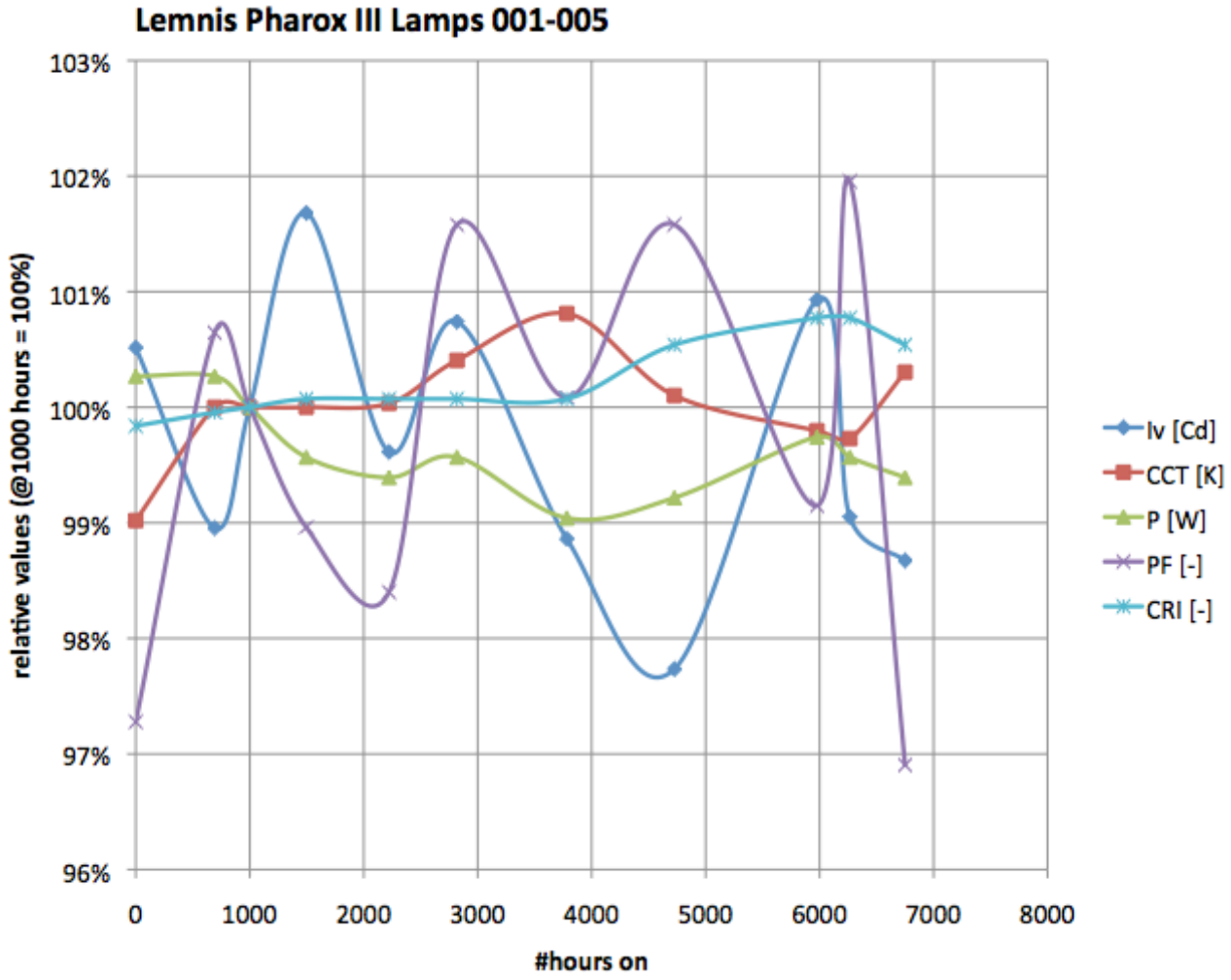
Change of lamp parameters

In this chapter two graphs showing the change of parameters (illuminance and chromaticity coordinates).



The change of lamp parameters during the life time test (all are avrages of the 5 lamps).

See hte explanation article on OliNo for more explanation about the test (setup).

There is little deviation and change.

Herewith the results of the single lamps separately.

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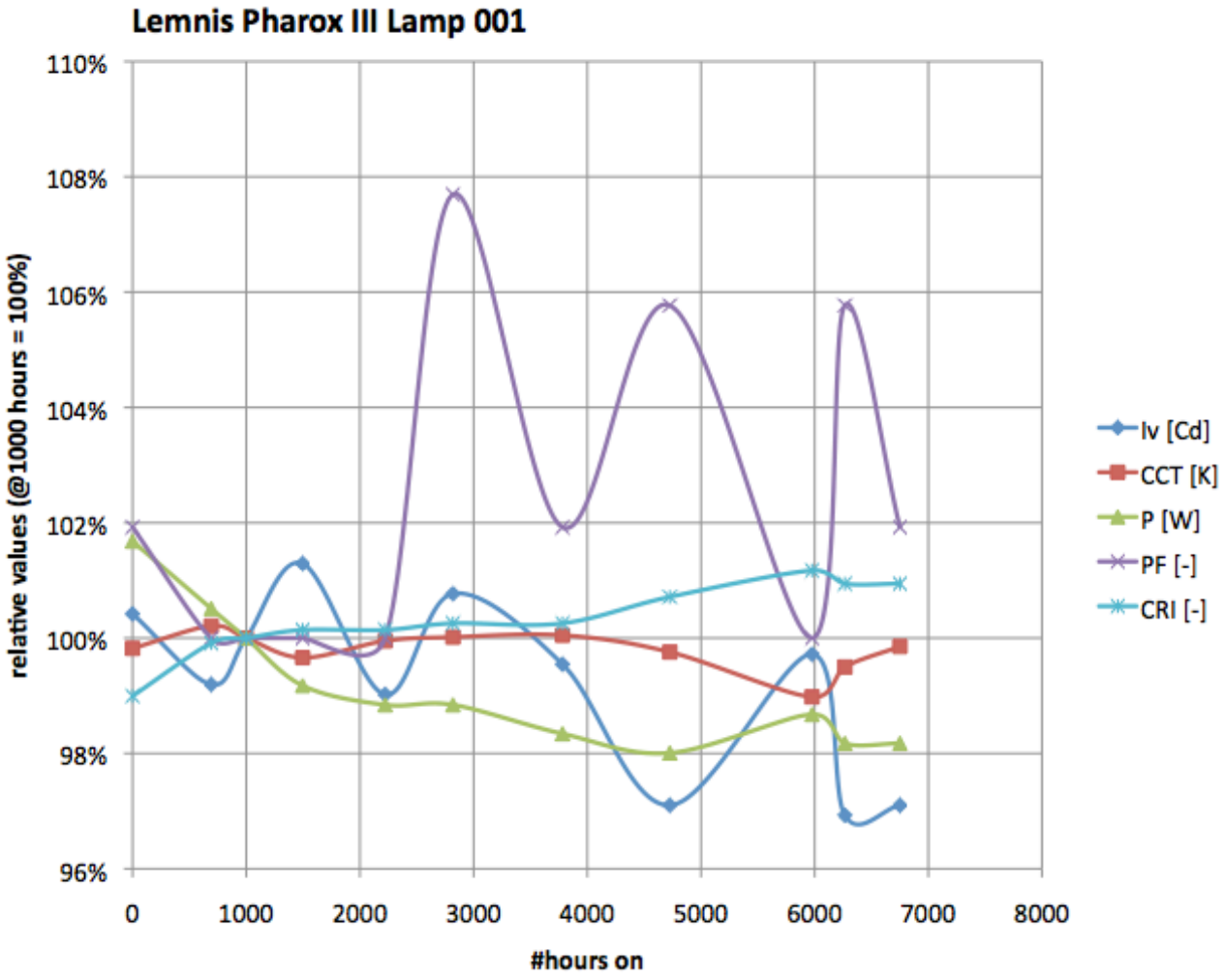

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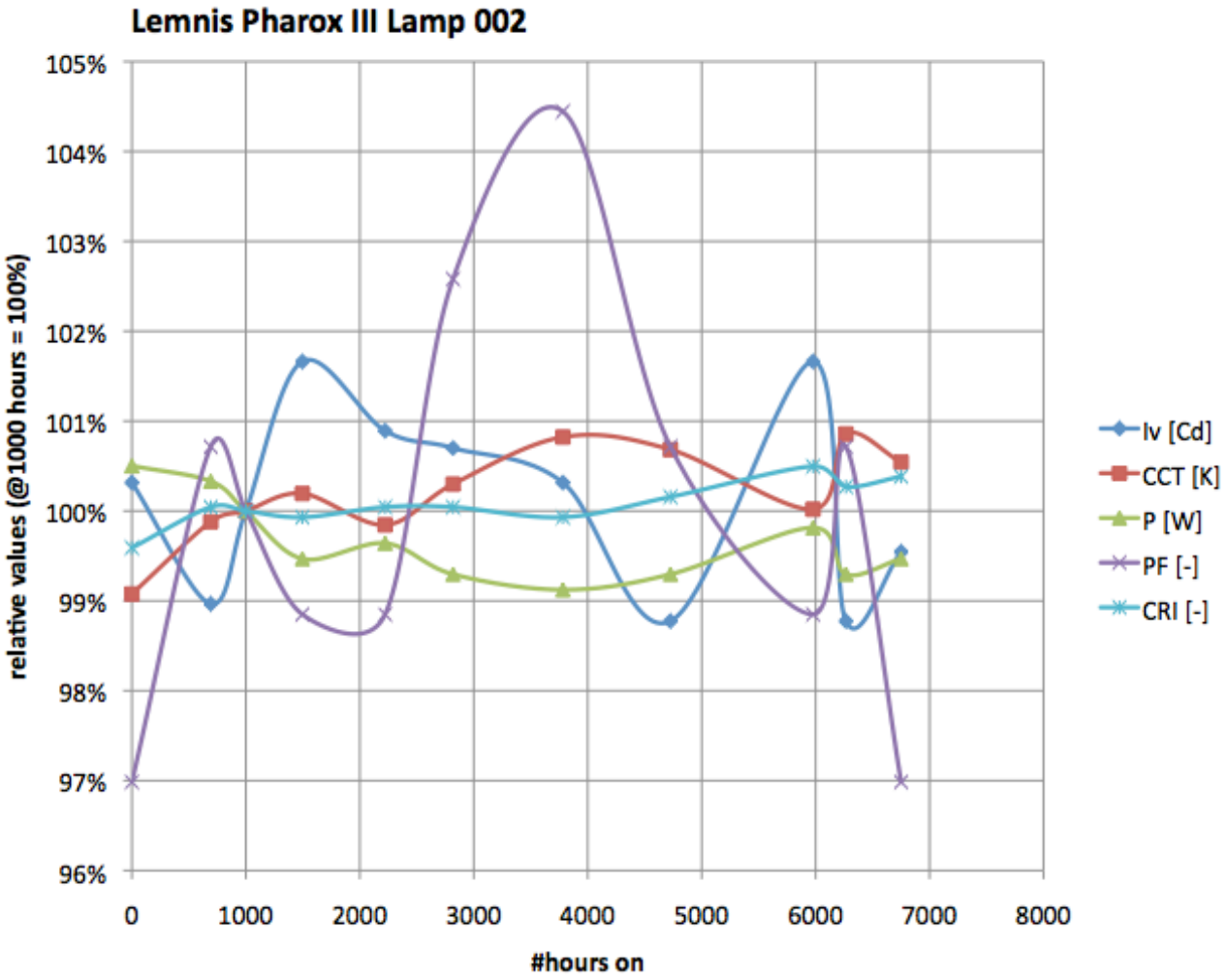

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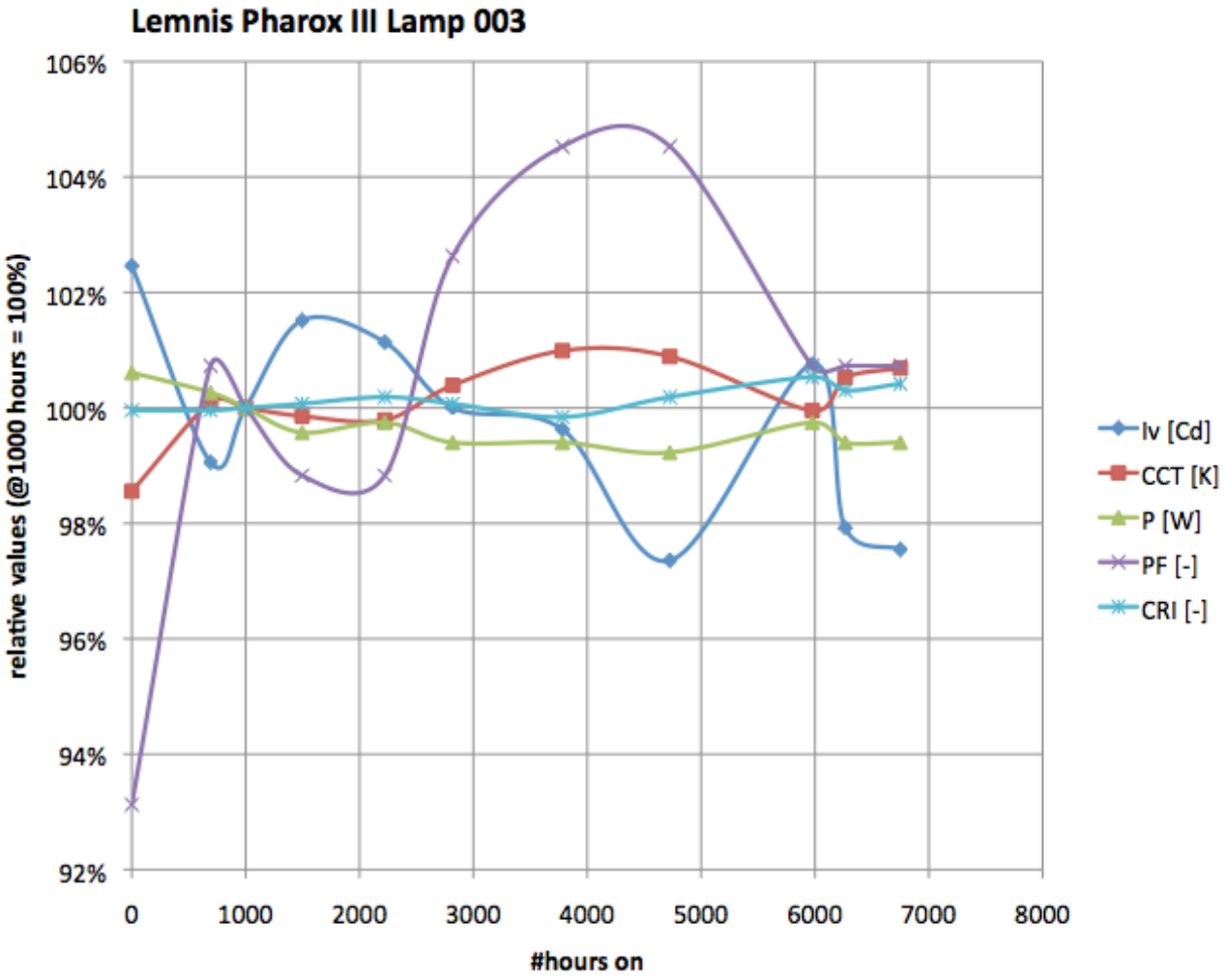

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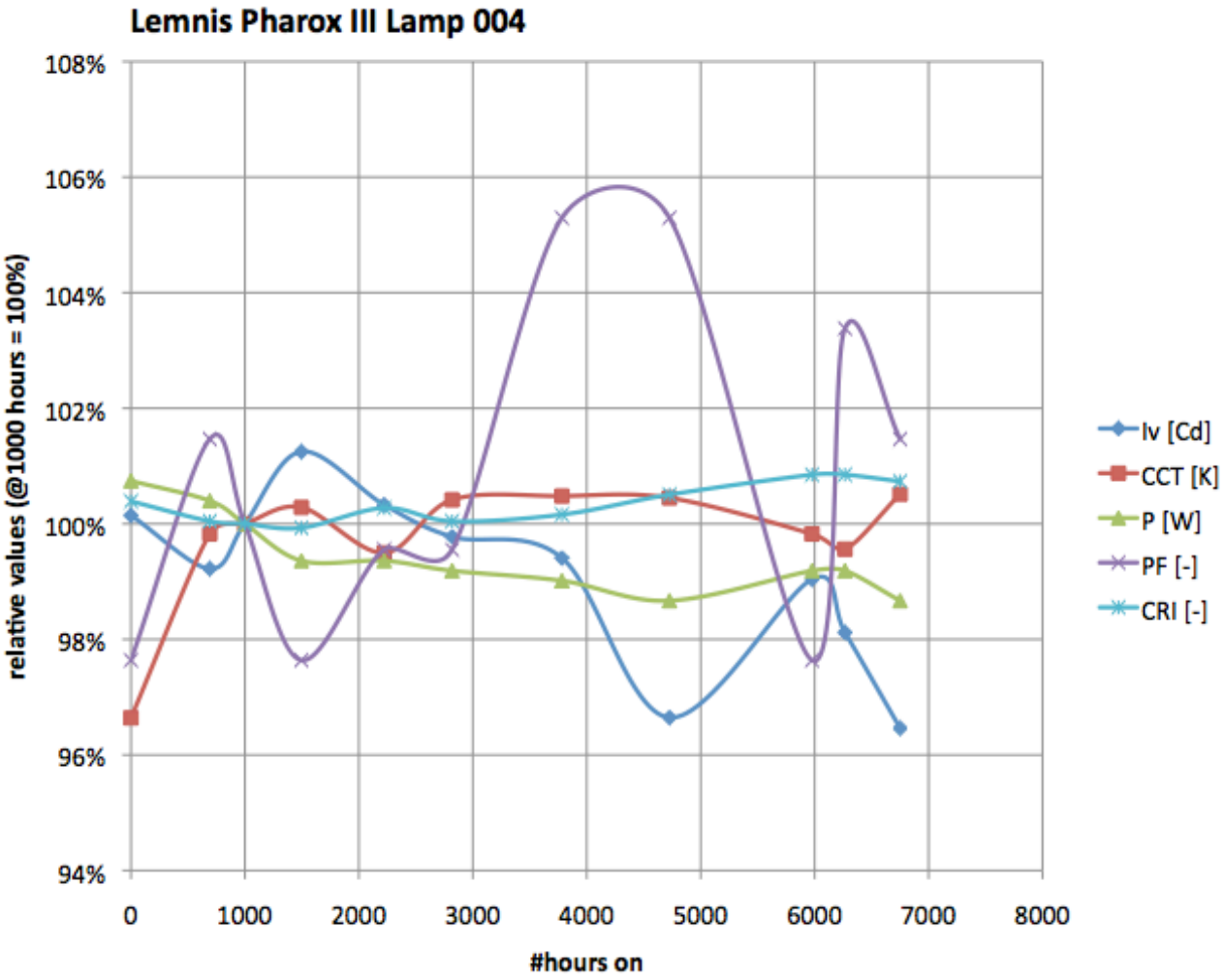

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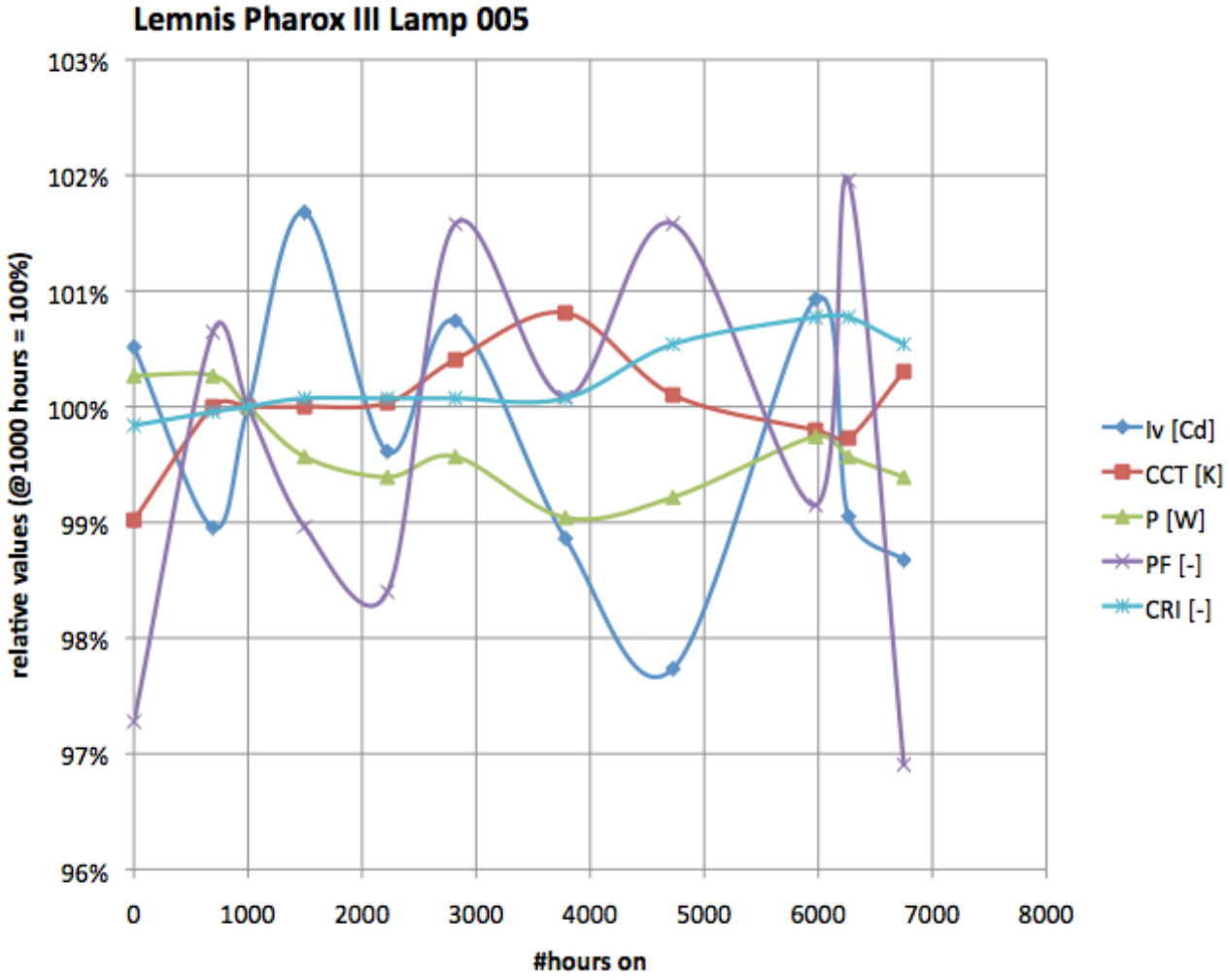

The changes of parameters of each lamp separately.

An extrapolation done towards 70 % of the illuminance is done. The illuminance is taken as a reference for the luminous flux (given that the beam angle has not changes significantly during the lifetime).

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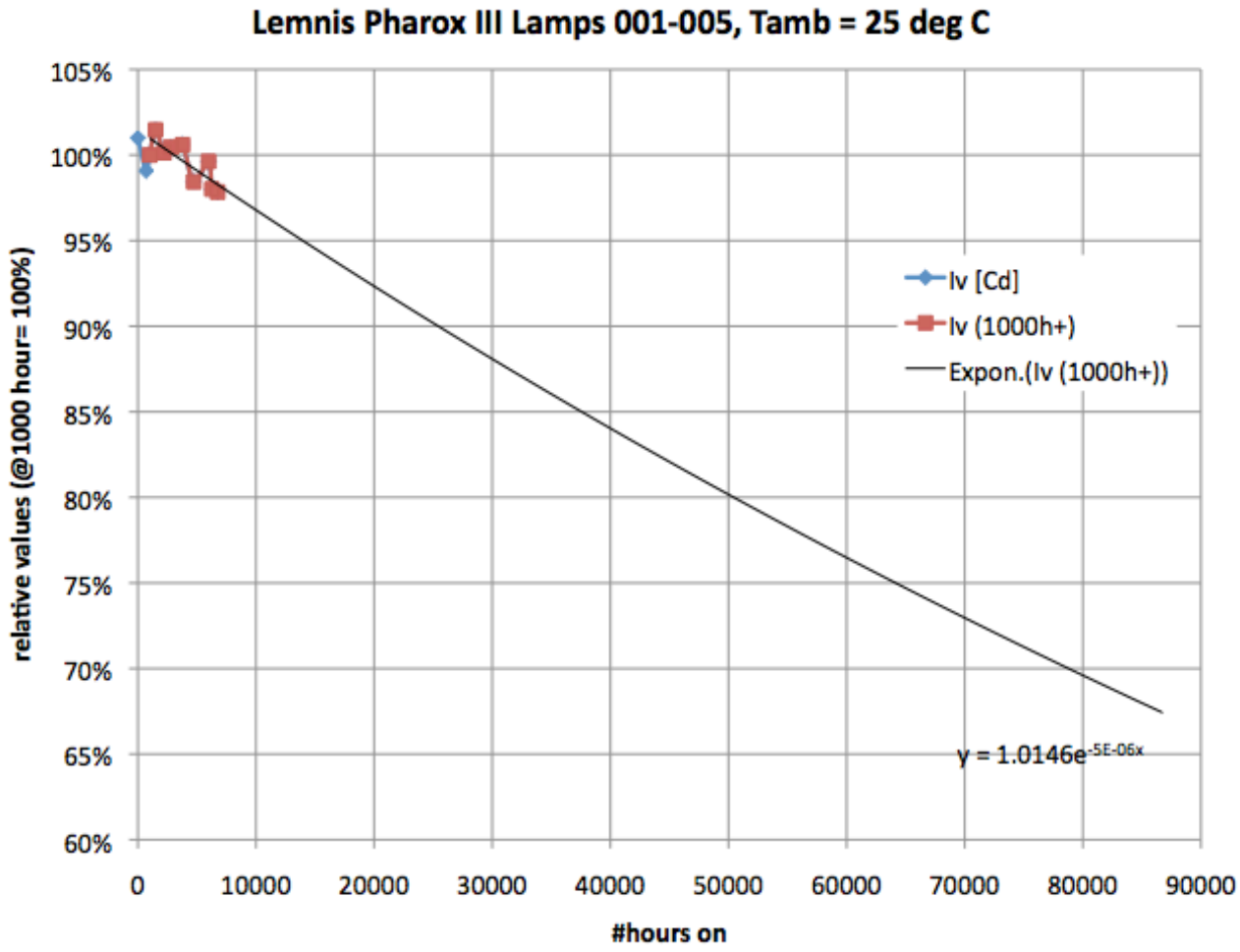

Extrapolation of the averaged illuminance.

Iv is calculated to its value at T-amb of 25 deg C (the intensity decreases 1 % at 2 deg C increase). See the explanation article of the endurance test for more explanation and link towards a document explaining the background of the extrapolation.

The result is 80.000 hours before the 70 % level is reached.

Herewith the results of the single lamps separately.

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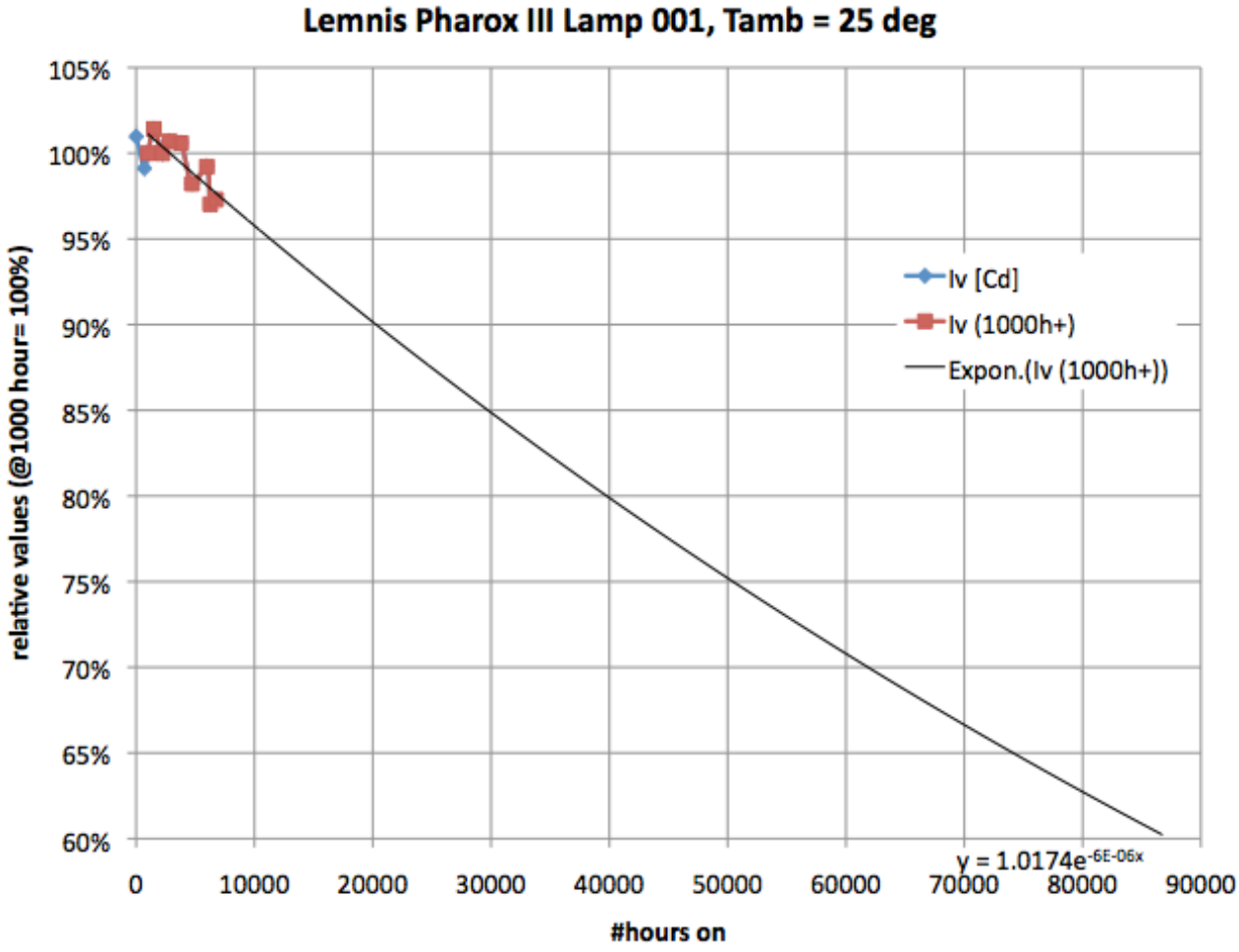

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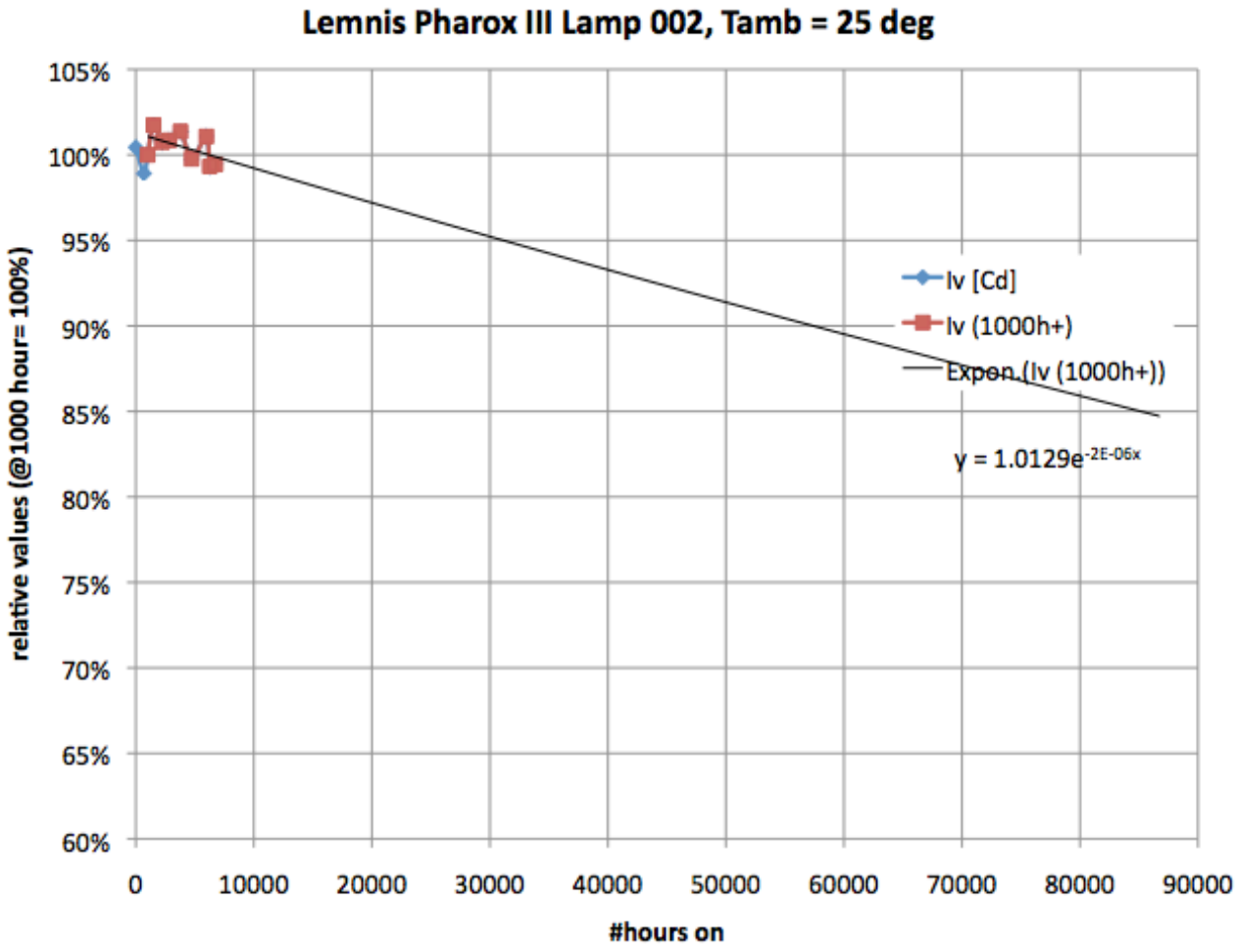

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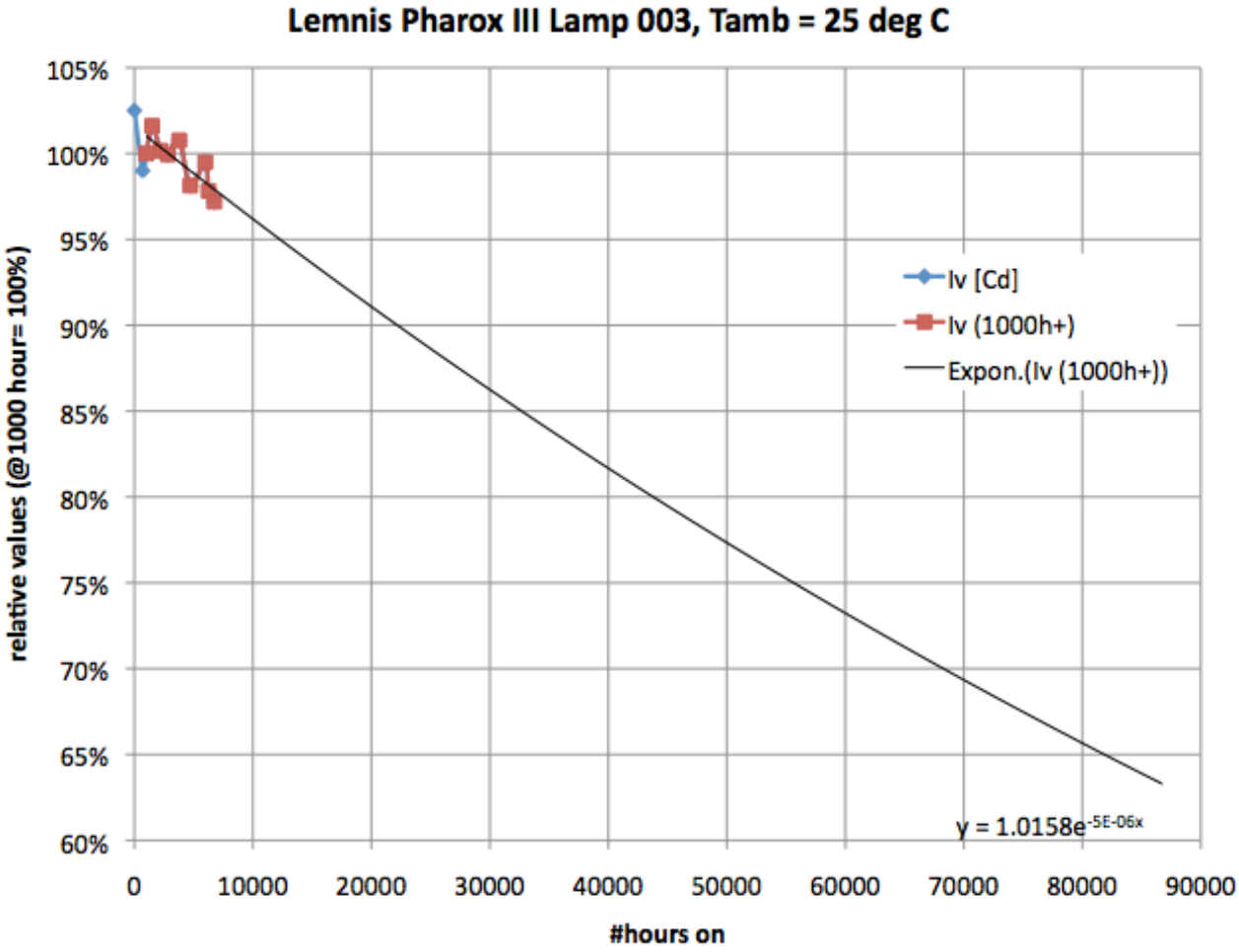

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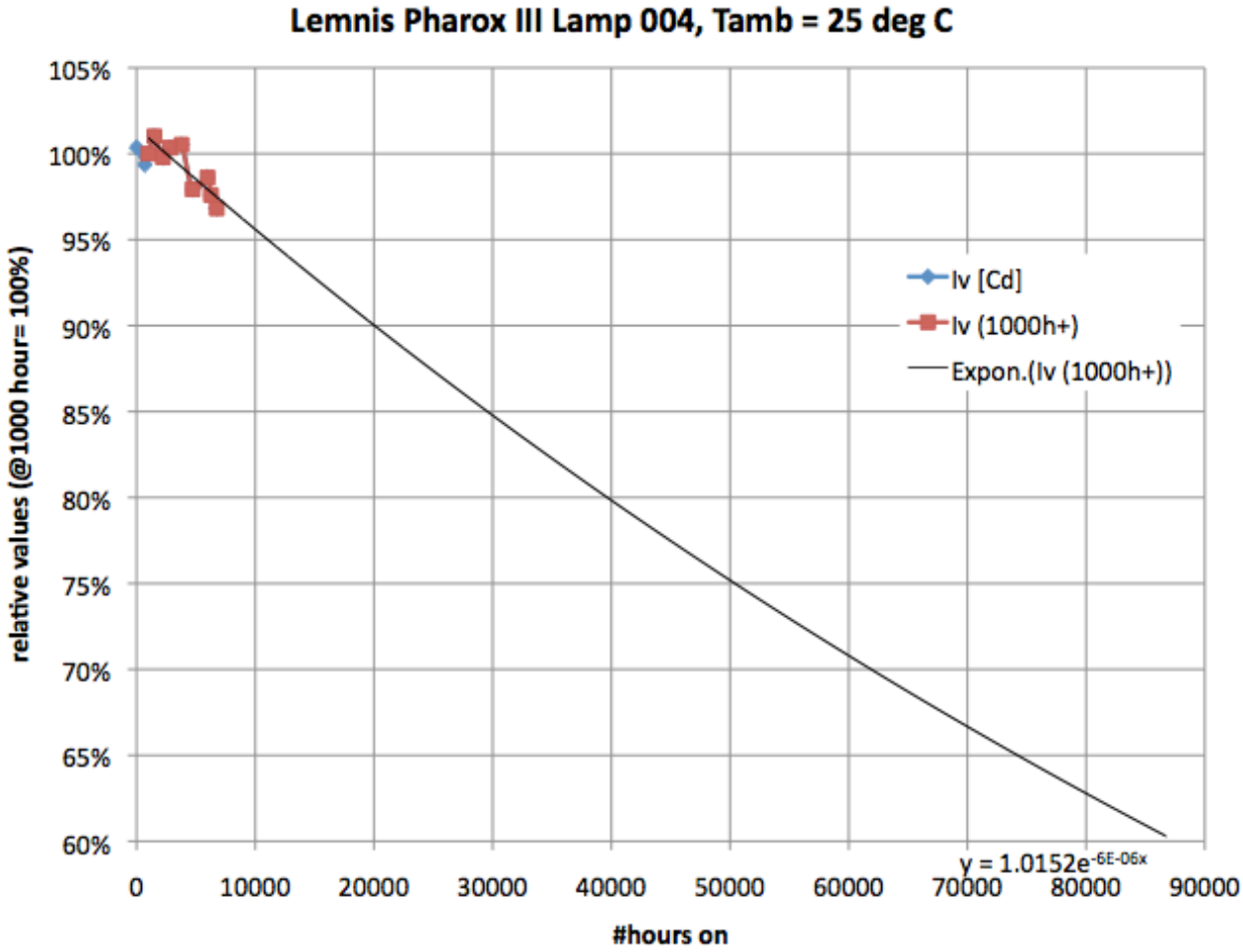

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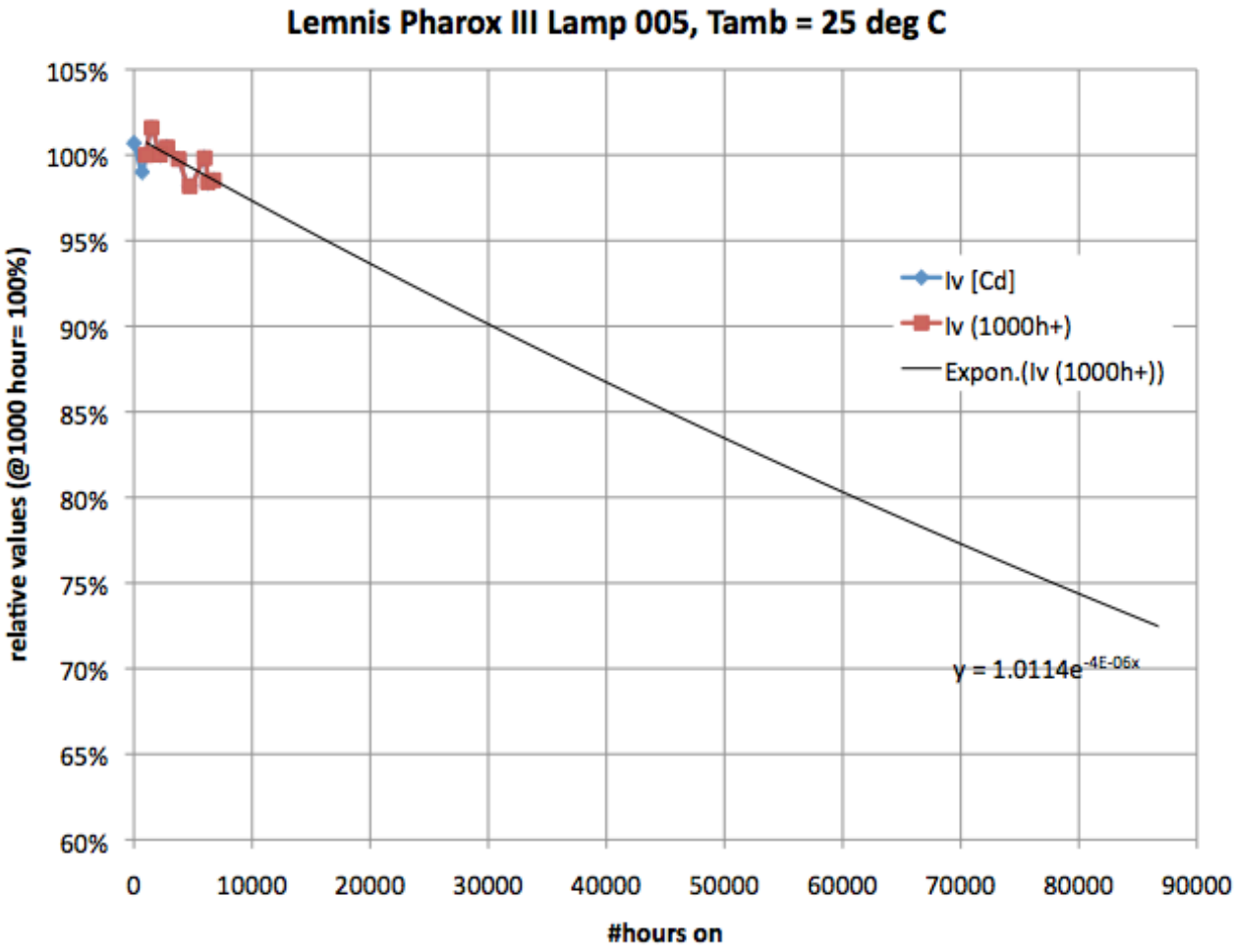

The changes of parameters of each lamp separately.

There is some variation in the speed of decrease however all lamps have a significant lifetime.

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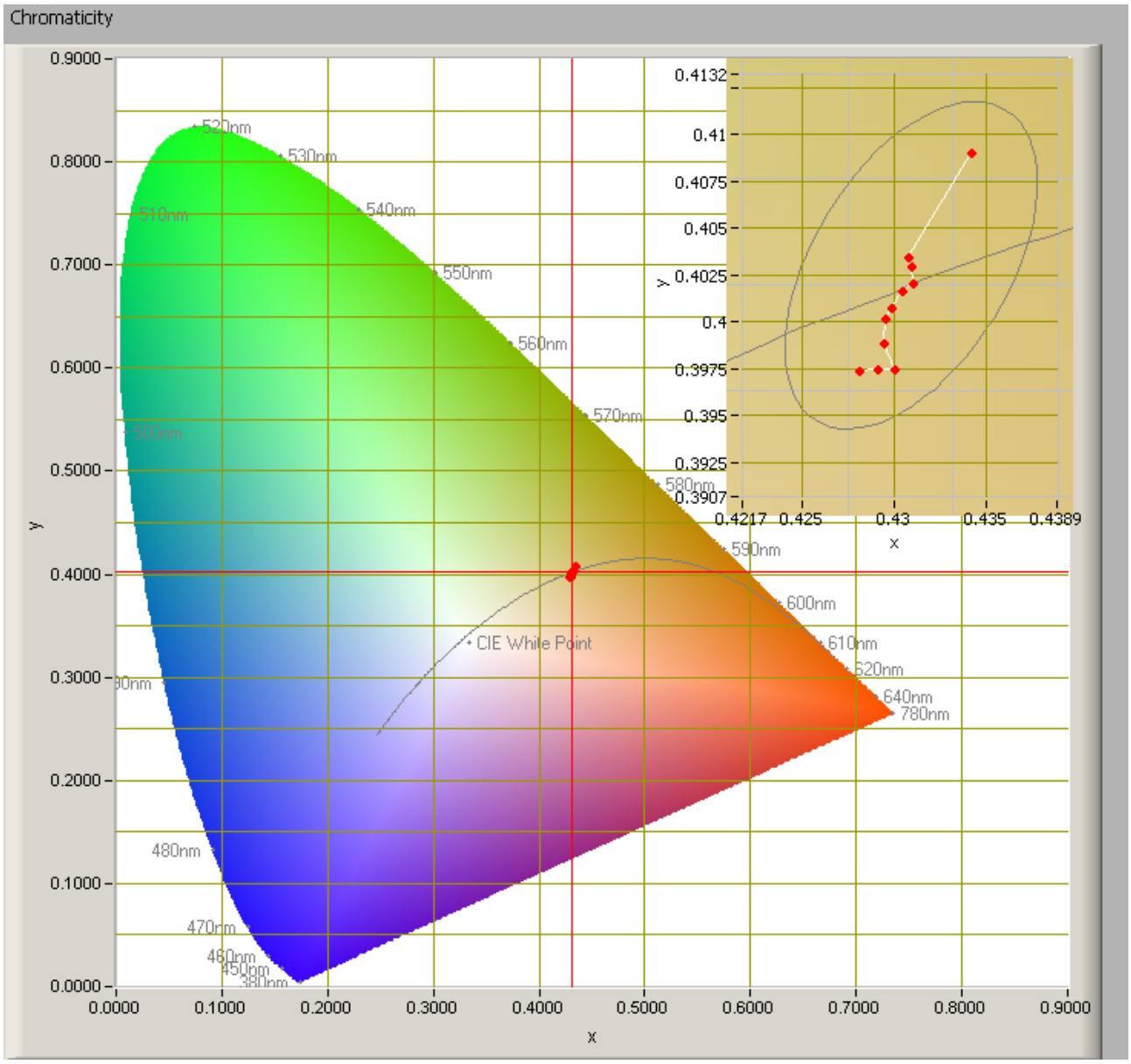
Color variation

The variation in color point (chromaticity coordinates) is measured. Herewith the results of each lamp.



Change of color point of lamp 1.

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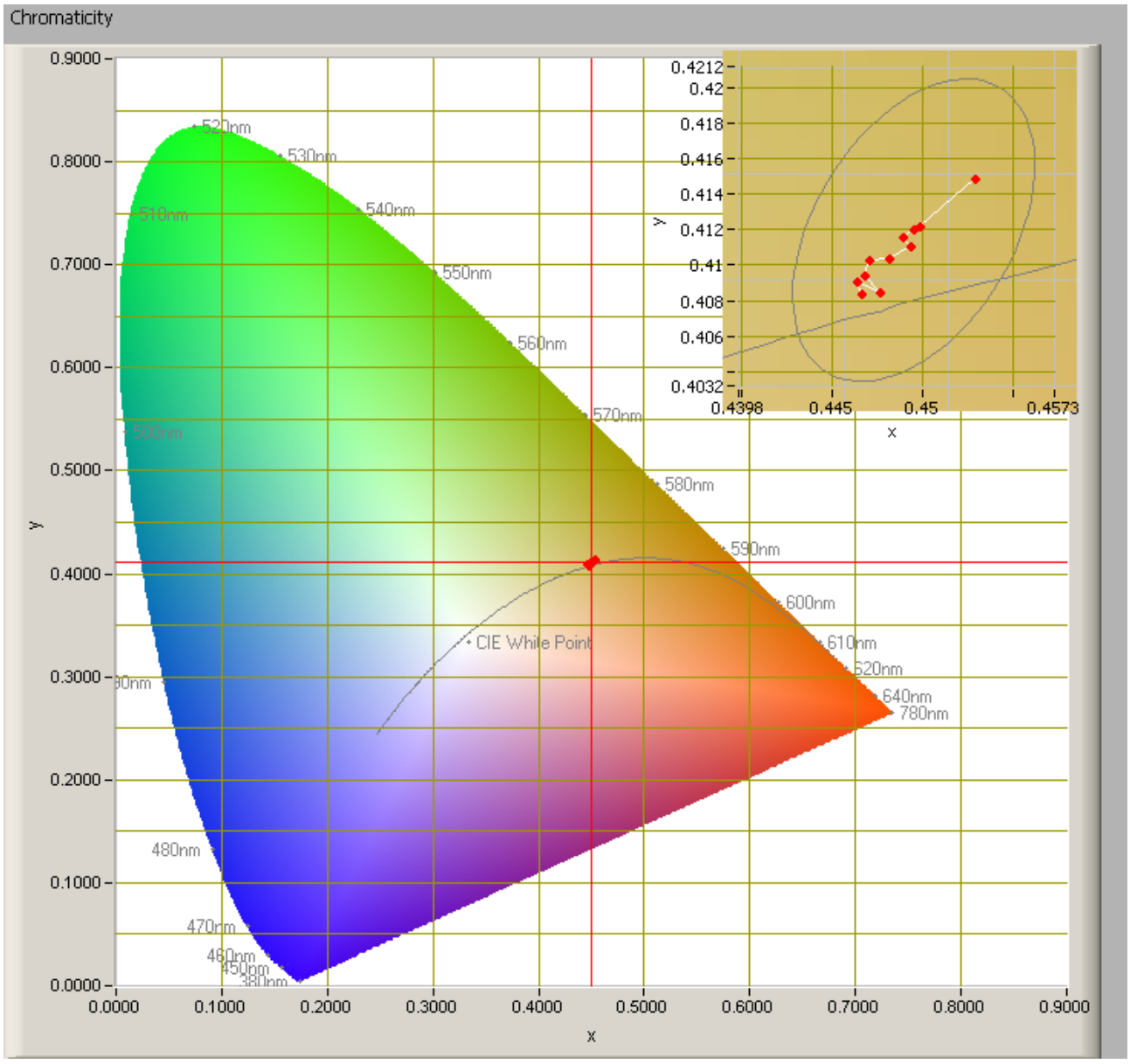

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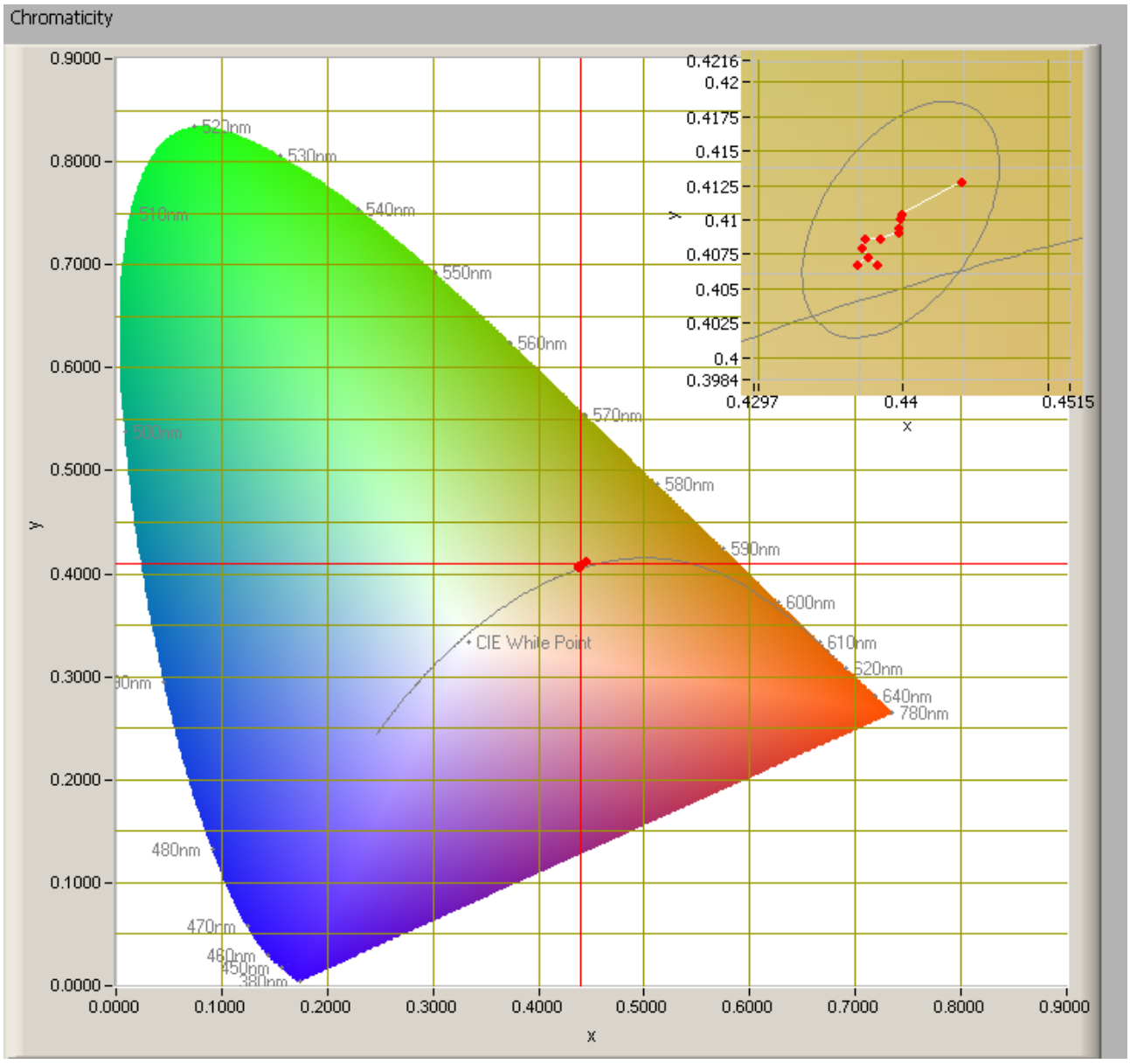

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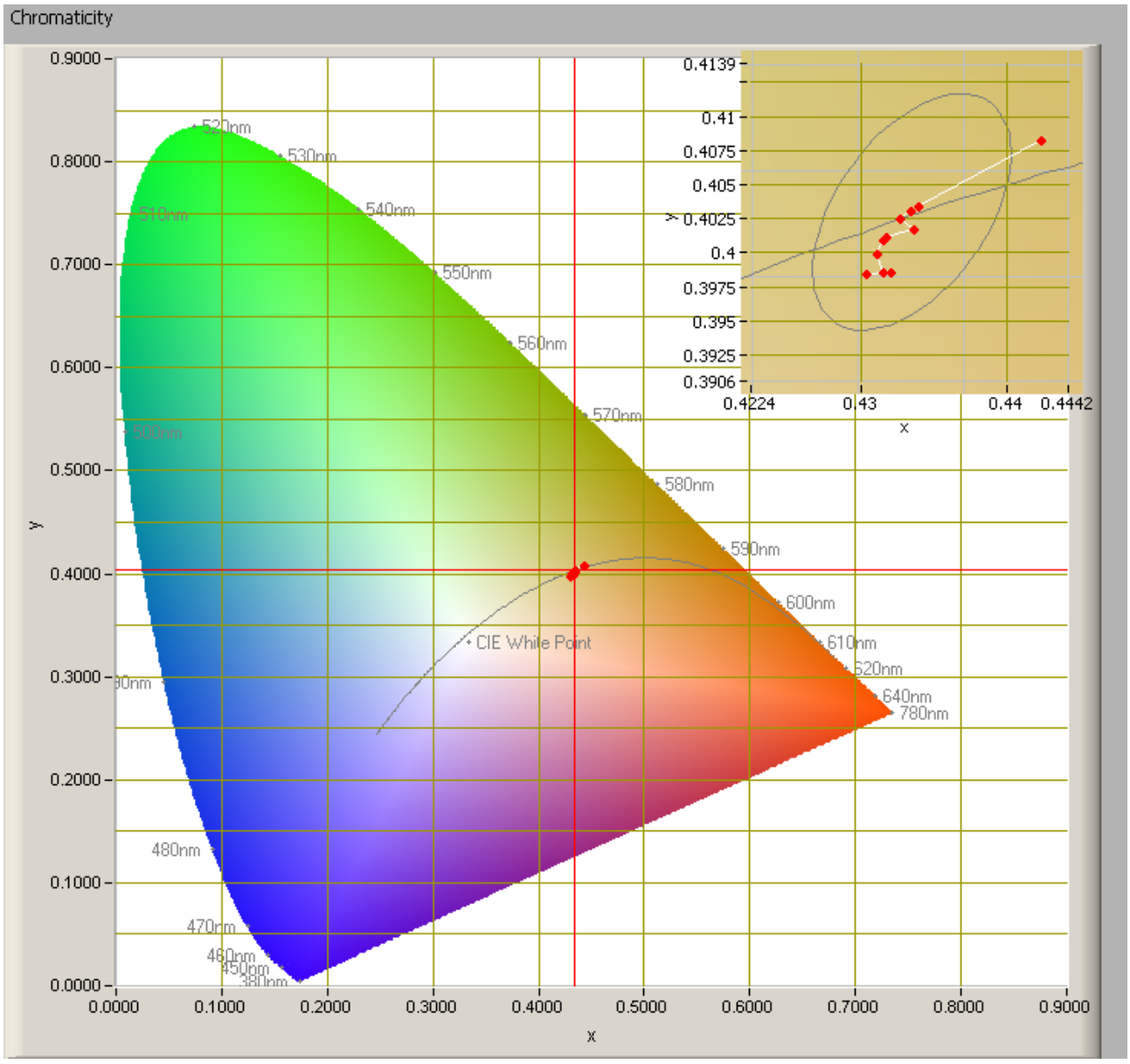

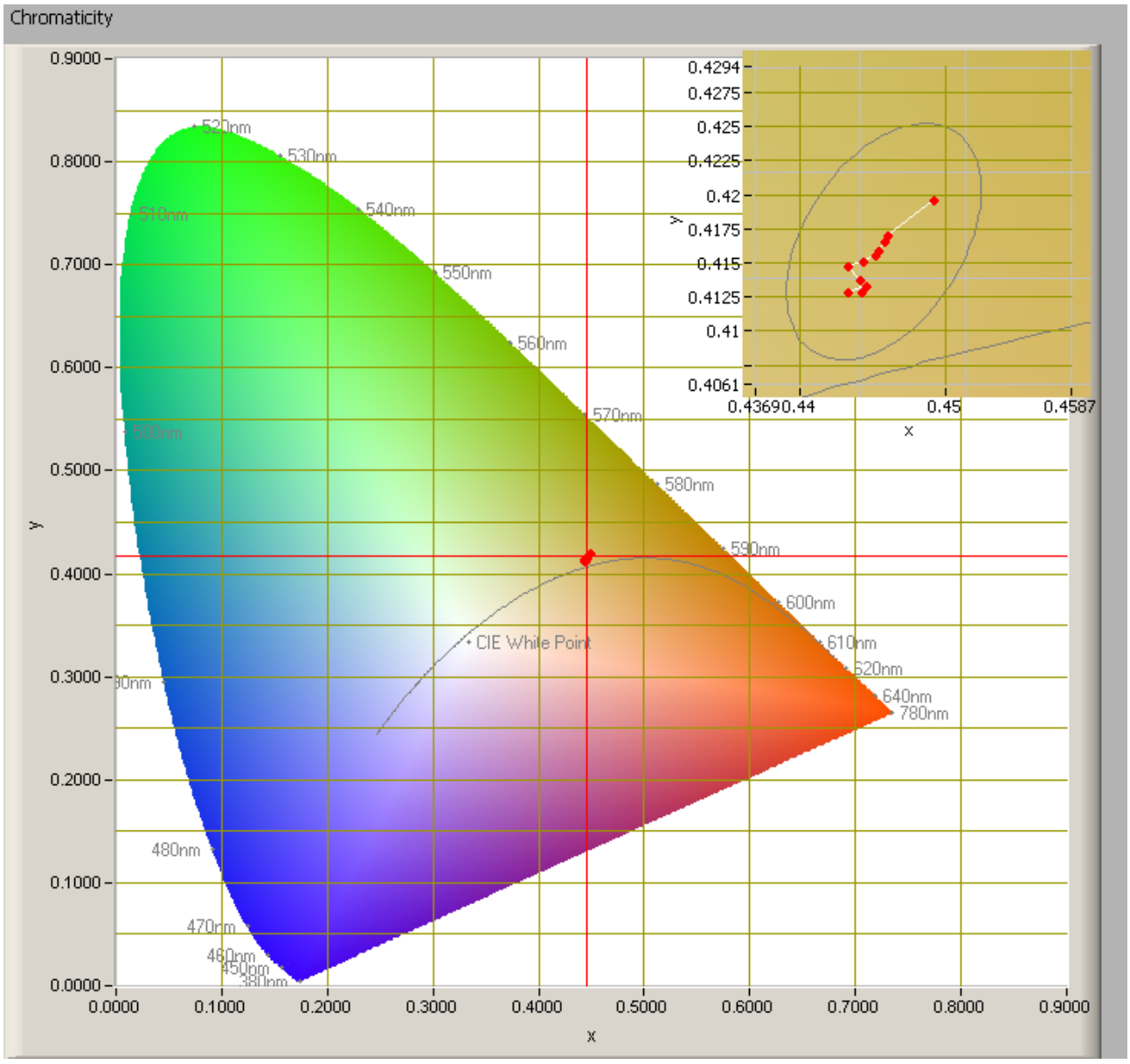

Change of color points of lamps 2, 3, 4 and 5.

The color coordinates in the centre of the ellips are the points after 1000 hours of burning. All measurement points fall within the ellips that represents the 4 step McAdams ellips.

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