

The Luminance Measurement Method at Real Moving Pictures using a High Speed Camera

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To measure the brightness of a display, we can normally measure the luminance at solid patterns. Most of the end user are watching TV at the moving pictures instead of solid patterns. At this point of view, we will describe the new method to measure the luminance at real moving pictures at this paper.

To measure the luminance of the display at the moving pictures, we have to use a high speed camera to take the light intensity of the display that changes in accordance with the time. The Figure.1 shows the total process of the new method which can measure the luminance at the real moving pictures. First we have to measure the luminance of the red, green and blue greyscales by the spectroradiometer to calibrate the high speed camera. And we have to measure same patterns and real moving pictures by the high speed camera too. Now we can calibrate the high speed camera to convert the image level to the luminance value using measurement results of both the spectroradiometer and the high speed camera. The calibration algorithm refers to the transformation the matrix^{1), 2)}. Here the luminance look up table is calculated using that algorithm. Finally we can obtain the total average luminance of the real moving pictures. For this step, we have to use the Luminance Analysis Software Tool (LAST). The LAST is a calculation tool that can convert the image level to the luminance value in real time.

<u>Process</u>	<u>Equipment</u>	<u>Activity</u>
Measure the red, green, blue greyscales	Spectroradiometer	<ul style="list-style-type: none"> Measure each luminance of the red, green and blue greyscales by a spectroradiometer.
Measure same color patterns and moving pictures	High Speed Camera	<ul style="list-style-type: none"> Measure same color patterns and real moving pictures by the high speed camera.
Luminance calibration	Luminance Analysis Software Tool	<ul style="list-style-type: none"> Set the region of interest of the high speed camera using full white screen. Calibrate the high speed camera to convert the image level to the luminance value.
Analysis the total average Luminance	Luminance Analysis Software Tool	<ul style="list-style-type: none"> Obtain the total average luminance of the real moving pictures using the luminance look up table.

Fig. 1. Total process of the luminance measurement method at the real moving pictures

There are various methods to measure the luminance of the display. For the point of the end user we can develop a new necessary method. The process introduced in this paper will be one of the methods that we can use quantitative value of luminance at the real moving pictures.

References

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