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DAYLIGHT ADAPTIVE LIGHT BOX SPECIALIZED FOR DAY AND NIGHT APPLICATION WITH SWITCHABLE GLASS OR FILM

HP INC

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Title:

Daylight Adaptive Light Box Specialized for Day and Night Application with Switchable Glass or Film

Descriptions:

Day and night application are a specialty application in the signage and display market.

The typical Day and Night application has similar image content in both day view (with frontlit) and night view (with backlit), that looks consistent both during the day and at night.



Figure 1. Typical day and night application

It can generate some special effects as well to produce dynamic prints that look different and/or with changing elements when backlit (eye catchers).



Figure 2. Day and Night Application with special effects

For day and night with special effects, the non-identical images are printed on two sides or printing two color layers on one side of the media with a white layer in the middle which is usually referred as sandwich mode. Usually front layer is lighter and back layer is darker with the media being opaque to block the image during the day hours. With backlit light turning on, the all layers block partially the backlit light and form the image in the eyes of observer in front of the light box. However, when the back light is turned on, the opaque media is still reflecting partially the light within the ambient environment. So dark color cannot reach ideal optical density requirements. This publication is intended to disclose an idea of making an adaptive light box to get the optimal saturation with the switchable substrate (glass or film).

The light box includes one backlit light source inside, and a switchable substrate (glass or film) printed double sided is mounted in the front of light box. The switchable substrate is printed double sided day and night. By default, the switchable substrate is opaque. The backlit light and switchable glass is connected with a light sensor on the top of the light box. When the signal from the light sensor is lower than the threshold which is

determined by the ambient condition (usually daylight), both backlit light will turn on and switchable substrate will become transparent. The observer in front the light box will see two layers at the same time with switchable glass being fully transparent. This can reach ideal color saturation with high quality.

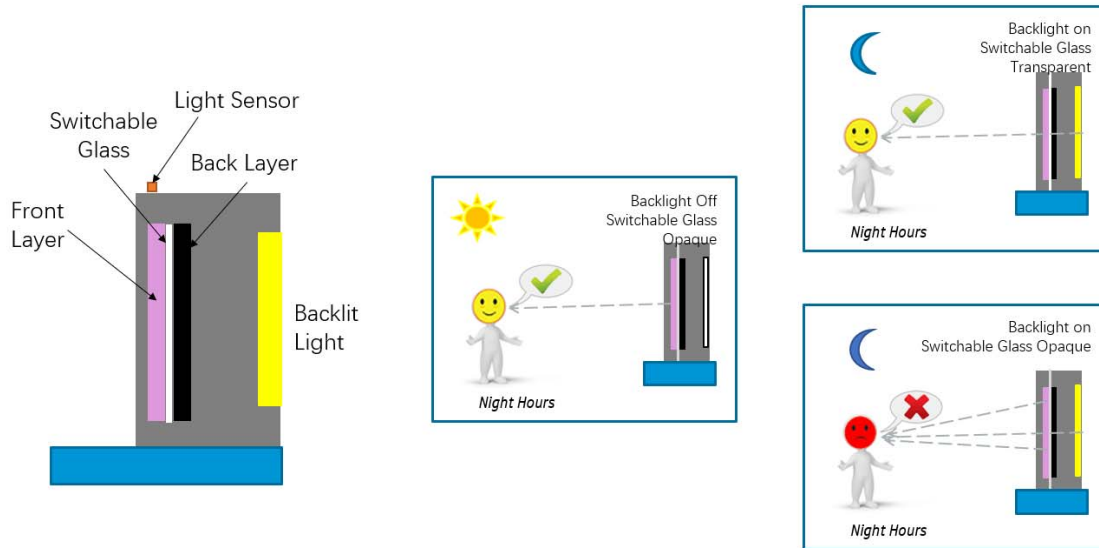


Figure 3. The schematics about how the lightbox works.

With the proto built, it proves that the adaptive light box can provide better color saturation within night effect.



Figure 4. Day Effect



Figure 5. Night Effect with normal light box



Figure 6. Night effect with light box proto of this publication

Disclosed by Li Qian from HP Inc.