

Re: Use of SITELINE digital display at 1404 Mabury Road, San Jose, CA

To whom it may concern,

Media Resources Inc. has been engaged by Clear Channel Outdoor to review and assess the lighting impact of the proposed digital billboard installation at 1404 Mabury Road. This document will describe the brightness management features of our digital billboards as well as provide details on the VISIONiQ SITELINE principles of operation.

Background on Media Resources Digital Display Ambient-Aware Brightness Controls

During dusk, dawn, or cloudy days, the operation of the digital display according to ambient light readings is the ideal way to maintain a glare-free, light-trespass free image. Media Resources digital billboards are all equipped with factory-mounted dual photocell sensors that are redundant and capable of reading ambient brightness even if one unit suffers a hardware failure. The ambient brightness to output brightness response curves have been carefully developed into a standard to provide good readability on the display while keeping in line with the brightness of the overall visual context.

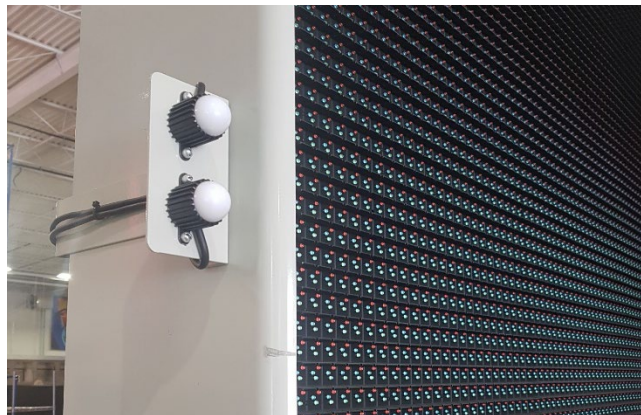


Figure 1. Media Resources standard - dual ambient brightness measuring photocells for hardware redundancy

During night-time, brightness control becomes critical as the digital billboards must be operated at a small percentage of its maximum brightness in order to avoid glare or light trespass. Media Resources endeavors to have the most comprehensive system of safeties and traceability for night-time brightness management. The proposed digital billboards are well equipped with modern brightness controls. Besides the redundant photocells above, a number of secondary fail-safes are also implemented including a communications watchdog (automatic reduction to night-time brightness in the event of a communication loss), and fallback to a location/season aware time-based schedule in the event of catastrophic photocell system failure. With these safety features in place, it becomes extremely unlikely for the digital billboard to operate at high brightness levels at night.

Additionally, the Media Resources Network Operations Centre can monitor brightness and recall brightness history for traceability. See Figure 2 and Figure 3 below on our internal control system for configuring brightness and recalling brightness history.

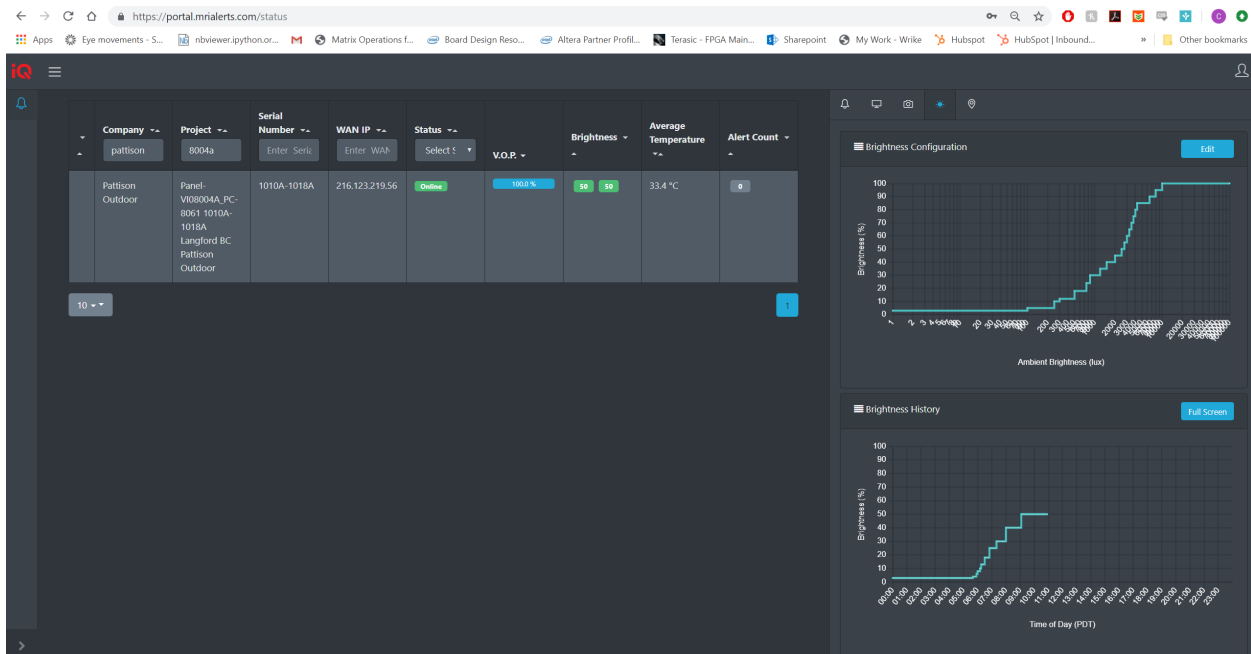


Figure 2. Media Resources web portal showing brightness configuration and history of the current day

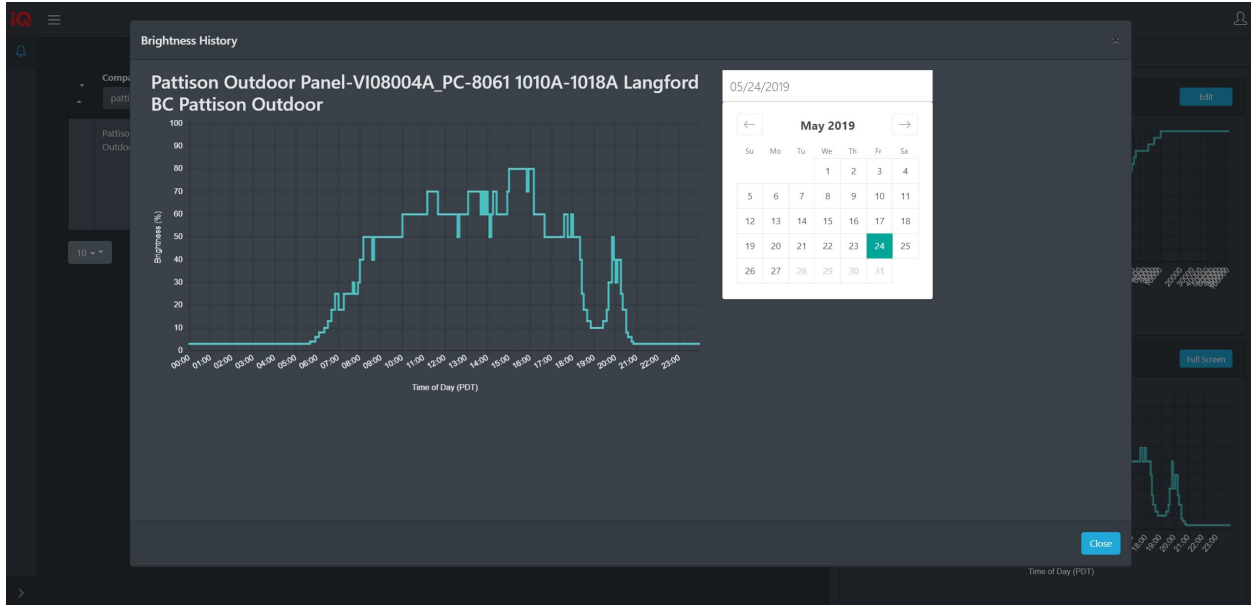


Figure 3. Media Resources web portal showing brightness history of any selected previous date. Brightness history data is logged indefinitely on Media Resources servers.

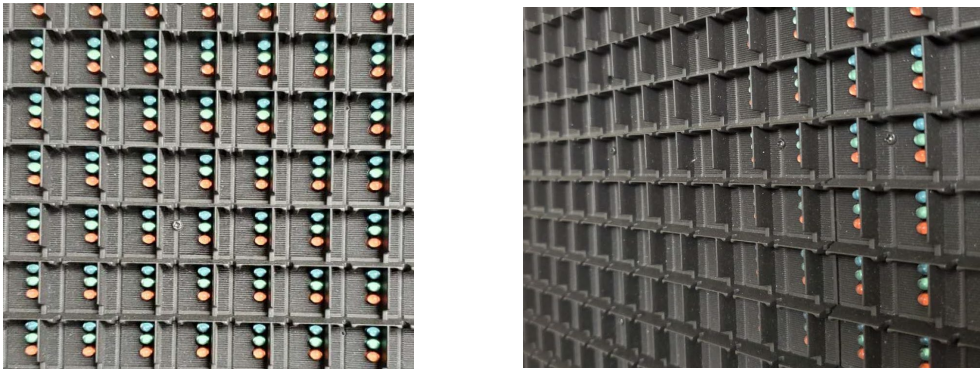
SITELINE and Site Specific Considerations

Media Resources Inc. invented the SITELINE product specifically to address the issues surrounding individual areas where light emission into nearby areas is undesirable.

The SITELINE system employs a patent-pending mechanical baffle system similar to luminaire baffles to eliminate all projection of light from the Light Emitting Diodes (LEDs) into a “protected region”. As a result, the protection is physical (See Figure 4 and 5) – reliable, permanent, and not the outcome of any programming or settings.

As can easily be seen in the figures below, the mechanical baffles/louvers (made of matte-finished black polymer) do not have the effect of any optical focusing or re-direction of light, and thus do not increase the light emission from the LEDs in any direction. They serve strictly as carefully configured mechanical baffles which absorb the light from the LEDs and prevent its passage in the protected direction. A specified NITS value of the display is the maximum output in any direction and is therefore the upper bound on luminance. Any statement suggesting that the SITELINE system can increase brightness above the NITS value of the display is incorrect.

For a video reference of the effectiveness of the Media Resources SITELINE product, please see <https://vimeo.com/365082755>.



Figures 4 and 5. Close up photographs of SITELINE module face viewed from front (left) and from side (right). Note the red, green and blue diode lenses are directly visible from front direction but are obscured behind baffles viewed from the side.

Media Resources commits to the effectiveness of this light restriction technology when deployed 1404 Mabury Road. We have calculated the expected illuminance impact to surrounding areas of concern, shown in Figure 6, along with a table showing fc values at various distances and angles from the face of the display. Media Resources guarantees that the display will operate within 20% of illuminance impact calculated below. If approved and constructed, we can provide on-site lighting measurements to confirm correct installation and light restriction performance.

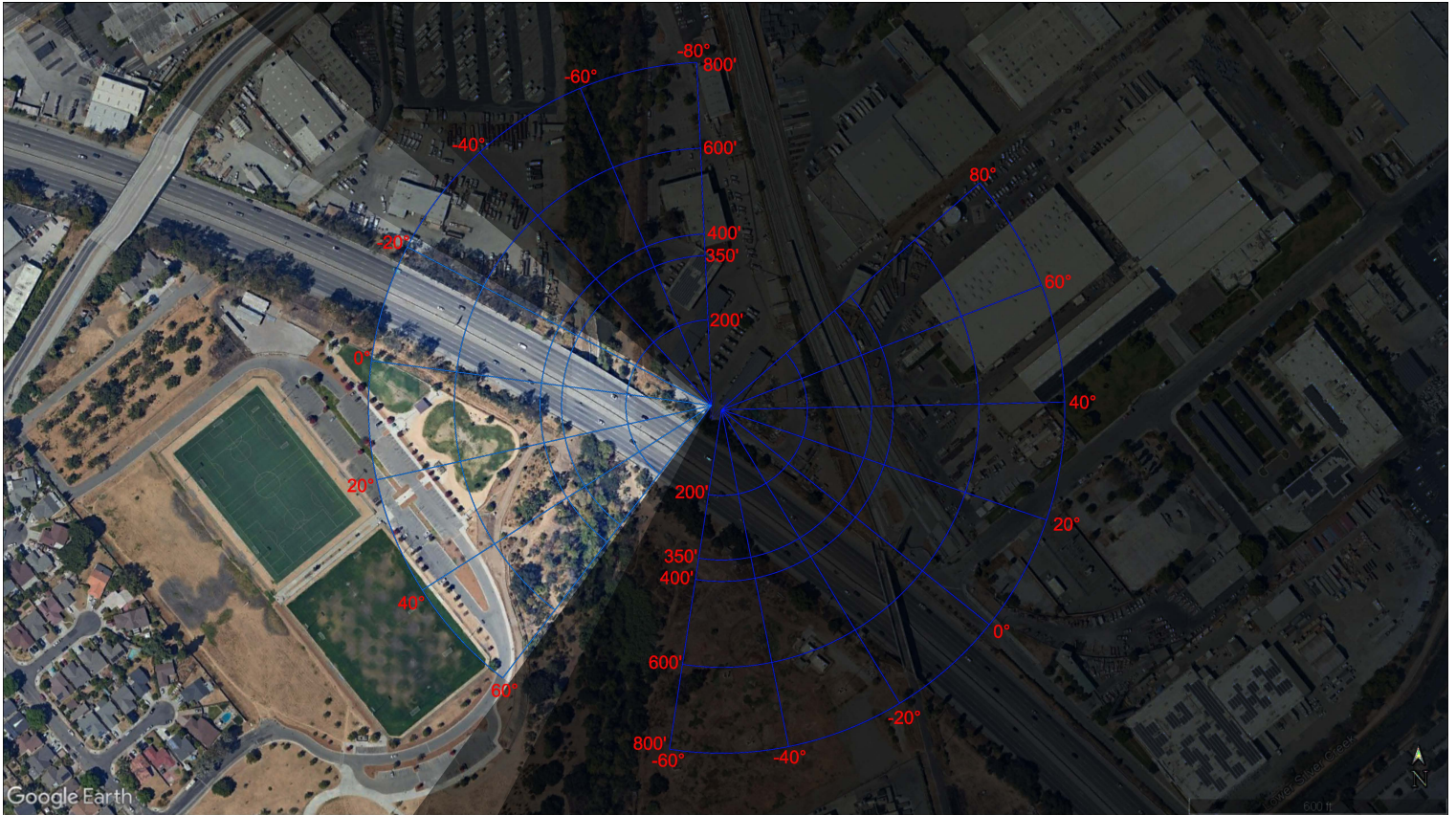


Figure 6. Site satellite photo overlay of distances and angles from proposed digital billboard site, corresponding to calculated illuminance figures in fc provided in Table 1.

Site Calculations - 300NITS Left-Blocking									
Measurement Angle									
Distance (ft)	-80°	-60°	-40°	-20°	0°	20°	40°	60°	80°
200'	0.001fc	0.004fc	0.009fc	0.514fc	0.637fc	0.612fc	0.462fc	0.209fc	0.001fc
350'	0.000fc	0.001fc	0.003fc	0.187fc	0.222fc	0.211fc	0.157fc	0.070fc	0.000fc
400'	0.000fc	0.001fc	0.002fc	0.146fc	0.171fc	0.163fc	0.121fc	0.053fc	0.000fc
600'	0.000fc	0.000fc	0.001fc	0.067fc	0.078fc	0.073fc	0.054fc	0.024fc	0.000fc
800'	0.000fc	0.000fc	0.001fc	0.038fc	0.044fc	0.041fc	0.030fc	0.013fc	0.000fc
1000'	0.000fc	0.000fc	0.000fc	0.025fc	0.028fc	0.027fc	0.020fc	0.009fc	0.000fc

Table 1. Site calculations based on MRI VIQ3 Sitaline Left Blocking.



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We are always committed to the responsible application of LED digital technology and are happy to engage with regulatory stakeholders at any time. Please feel free to contact us if you have any questions.

Sincerely,

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