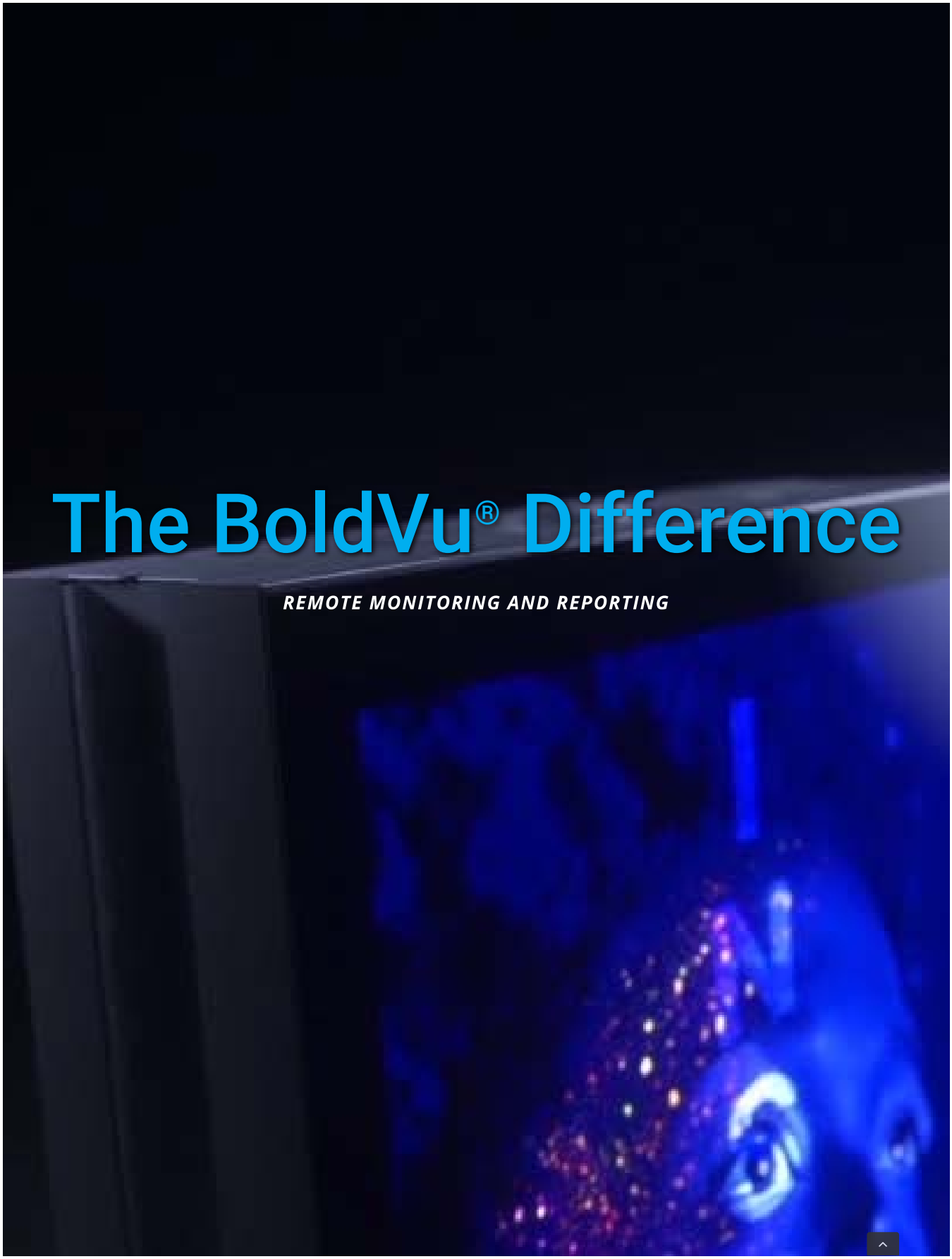
SEC et al. v. MRI
SEC Exhibit 1048.001
IPR2023-00255



SEC et al. v. MRI
SEC Exhibit 1048.002
IPR2023-00255

BrightVu®

10 year visual performance.

BoldVu® displays deliver unparalleled visual performance in outdoor environments. With luminance ratings up to 5000 nits, their high-efficiency LED backlight and obsessively engineered optical stack achieve incredibly bright imagery in the face of intense sunlight – and will do so day-in and day-out for 10 full years. So bring on the sun, BoldVu's got it managed.

SEC et al. v. MRI
SEC Exhibit 1048.003
IPR2023-00255

CoolVu®

Bring the heat.

Nothing will destroy a display faster than inadequate thermal management. CoolVu® is BoldVu's multi-patented thermal management technology that extracts and expels heat from inside the BoldVu®, without exposing display electronics to ambient air or environmental contaminants, like dust, dirt and moisture and without the use of air filters – which means typically no periodic maintenance required. With CoolVu®, BoldVu® displays can operate in environments up to 122°F (50°C) without any degradation in visual performance.

up to
122° F / 50° C
temperature tolerance

certified
IP66
dust & water resistance

requires
ZERO
air filters

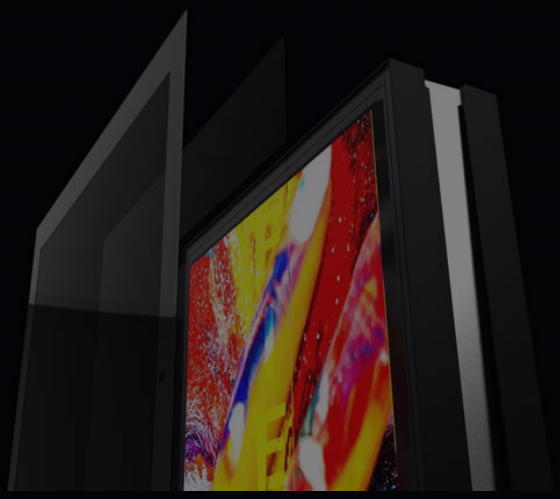
ToughVu®

Built for impact.

BoldVu® displays are designed to live in a world of turbulence. ToughVu® cover glass shields delicate electronic components from the effects of adverse weather and vandalism. And with its low diffuse reflection, low haze, and anisotropy and bi-refringence qualities, ToughVu® glass ensures that digital imagery shines with brilliance and delivers maximum contrast, color accuracy, color saturation, and viewing angles–even with wearing polarized sunglasses.

As an added layer of intelligence, BoldVu® displays are equipped with a MEMS sensor which detects and reports on shock and impact events, so in the event of attempted vandalism, you'll be in the know.

up to
13.5 mm / 0.5 in.
cover glass thickness



SEC et al. v. MRI
SEC Exhibit 1048.004
IPR2023-00255

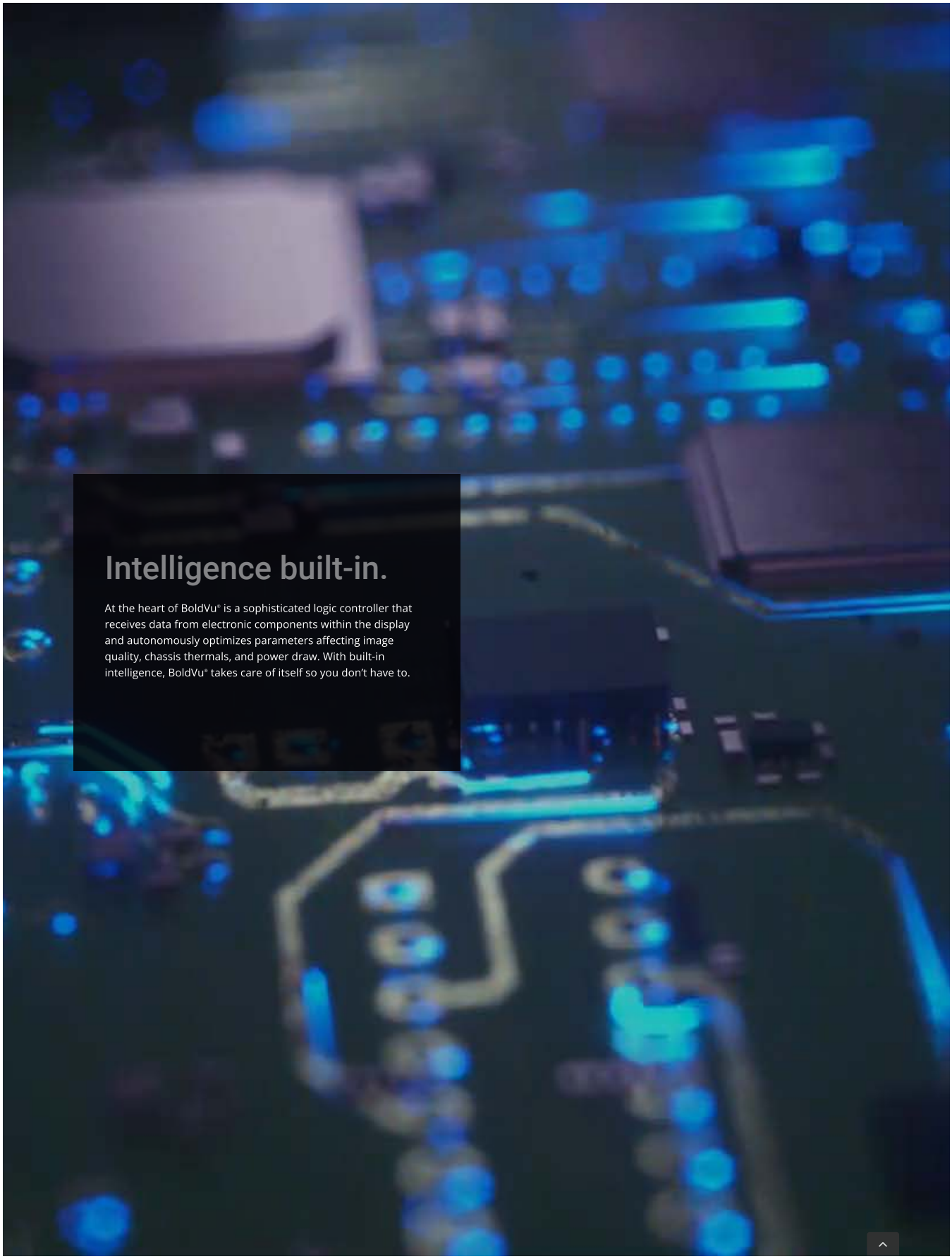
BestVu®

Unparalleled contrast and color accuracy.

The world is full of spectacular color, and BoldVu® ensures that every one of them is accurately reproduced. The meticulously engineered optical stack achieves ultra-bright whites and super deep blacks so that every color in-between appears as vibrant as you could hope for. A billion colors never looked so good.

up to	up to	greater than
5000 nits	500,000:1	85% (NTSC)
luminance in white	dynamic contrast	color saturation

SEC et al. v. MRI
SEC Exhibit 1048.005
IPR2023-00255



Intelligence built-in.

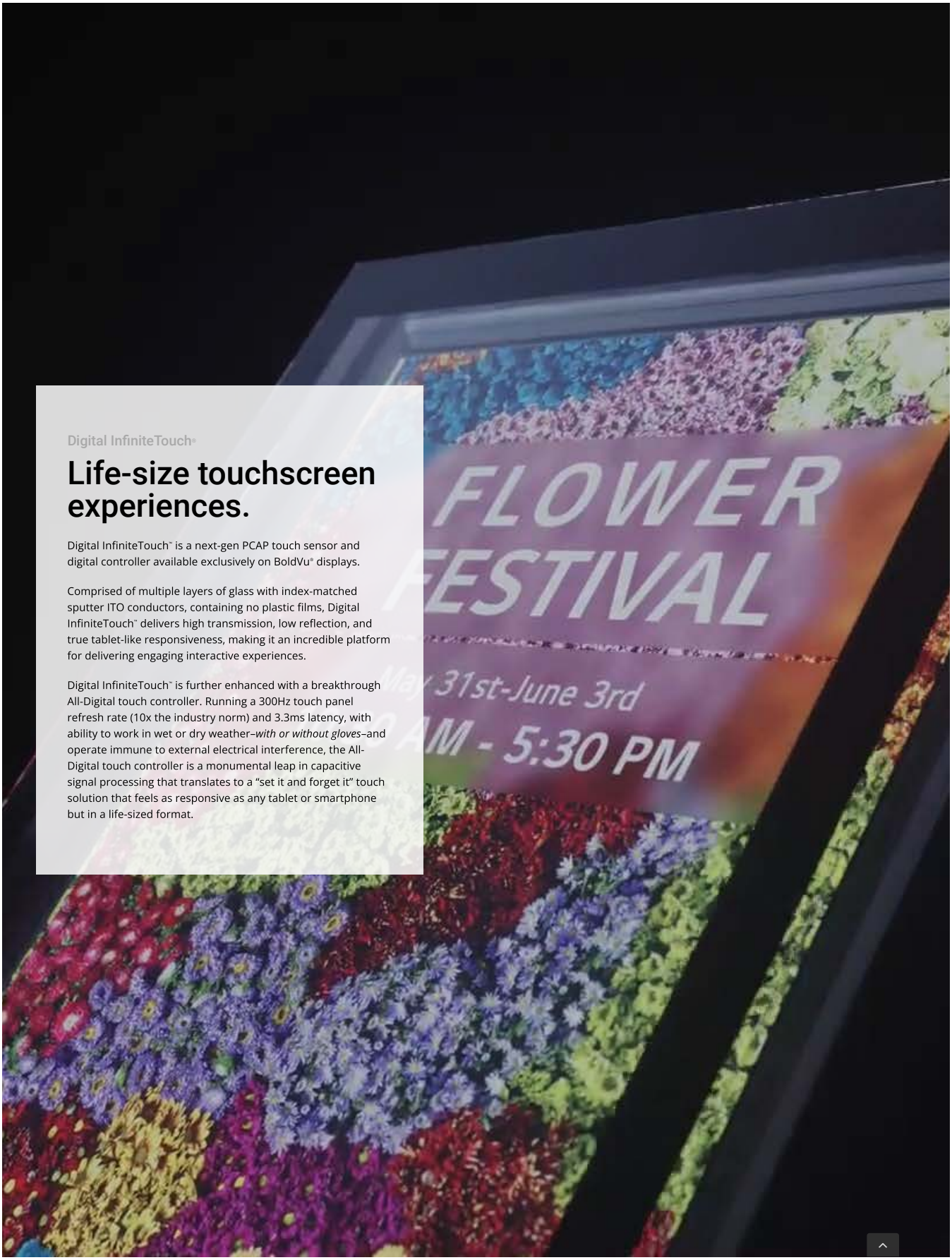
At the heart of BoldVu® is a sophisticated logic controller that receives data from electronic components within the display and autonomously optimizes parameters affecting image quality, chassis thermals, and power draw. With built-in intelligence, BoldVu® takes care of itself so you don't have to.

SEC et al. v. MRI
SEC Exhibit 1048.006
IPR2023-00255

Delivering campaign confidence.

With an embedded media player and a 13-megapixel camera capable of 4K video at 30fps, BoldVu® makes delivering amazing, interactive campaigns easier than ever. Output gorgeous graphics, measure audience engagement[1] via the USB camera, and translate insights into more effective campaigns.

SEC et al. v. MRI
SEC Exhibit 1048.007
IPR2023-00255



Digital InfiniteTouch®

Life-size touchscreen experiences.

Digital InfiniteTouch™ is a next-gen PCAP touch sensor and digital controller available exclusively on BoldVu® displays.

Comprised of multiple layers of glass with index-matched sputter ITO conductors, containing no plastic films, Digital InfiniteTouch™ delivers high transmission, low reflection, and true tablet-like responsiveness, making it an incredible platform for delivering engaging interactive experiences.

Digital InfiniteTouch™ is further enhanced with a breakthrough All-Digital touch controller. Running a 300Hz touch panel refresh rate (10x the industry norm) and 3.3ms latency, with ability to work in wet or dry weather–*with or without gloves*–and operate immune to external electrical interference, the All-Digital touch controller is a monumental leap in capacitive signal processing that translates to a "set it and forget it" touch solution that feels as responsive as any tablet or smartphone but in a life-sized format.

SEC et al. v. MRI
SEC Exhibit 1048.008
IPR2023-00255

BoldVu® Smart Point

A Data Center Hidden in Plain Sight

The Internet of Things (IoT) is changing the way we live, work, and how cities and venues are able to offer digital services to the citizens and visitors they serve. As the IoT continues to grow the need for communications and data processing infrastructure grows with them.

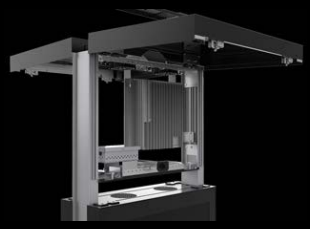
BoldVu® has a sealed, cooled, and powered electronics chassis designed to house network appliances, sensors, and multi-access edge compute (MEC) resources that power the IoT. From air quality monitoring and audience analytics to wireless signal propagation and edge data processing, BoldVu® is a data center hidden in plain sight.

Use BoldVu® to house, power, cool, and manage:

- 1U and 2U Edge Compute Servers
- Routing / Switching Appliances
- Wireless Access Points
- Environmental Sensors
- USB / IP Cameras and Video Recorders

View the film

SEC et al. v. MRI
SEC Exhibit 1048.009
IPR2023-00255

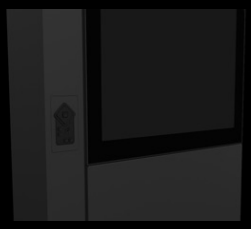


Optional Feature

BoldVu® Comms Cap.

An optional structure affixed atop BoldVu®, the Comms Cap is an additional housing for IoT and connectivity devices designed to extend functionality beyond the edges of the digital screen.

- Small cell radios
- Access points
- Cameras
- Environmental sensors



Optional Feature

BoldVu® Side Post.

When additional device integrations may be required, the Side Post option provides a housing with I/O pass-through to BoldVu's electronics chassis. The Side Post can be used to integrate multiple peripherals like:

- Navigation Pads
- Emergency Call Stations
- Speaker/Mic/Headphone
- Payment Terminals

Optional Feature

BoldVu® Solar.

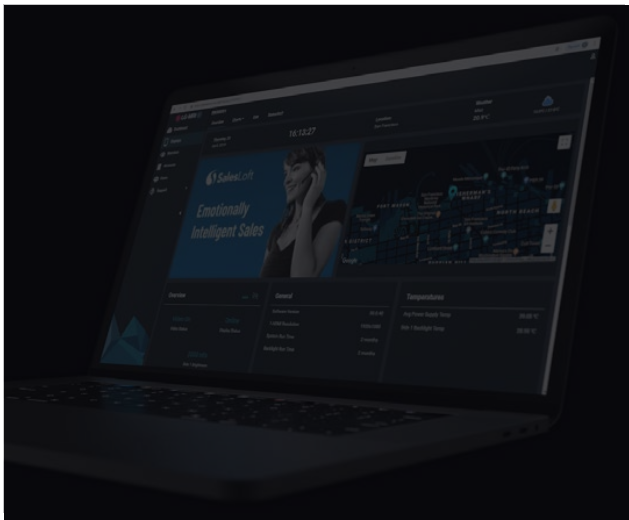
BoldVu® is designed for integrating solar panels with configurations for reducing or eliminating reliance on grid power to drive the display. With BoldVu® Solar you can make strides toward your corporate social responsibility goals, while reducing operating costs and potentially leveraging tax incentives for your green investments.

SmartVu®Portal

Better data. Better performance.

When you place a display out in the world, you never know what to expect. BoldVu® displays self-monitor and report on over 150 operating parameters and settings to the SmartVu® Portal. Via the secure web interface you can see how displays are performing, adjust what they're

SEC et al. v. MRI
SEC Exhibit 1048.010
IPR2023-00255



doing, and troubleshoot errant behavior, all from anywhere you can access the internet.

Discover SmartVu® Service »

Outdoor Configurations

BoldVu® LT Semi-Outdoor

850 Nits Daytime Luminance

BoldVu® LT Semi-Outdoor displays are designed for placement in areas protected from direct sun exposure, like in shopping malls and subway stations where its 850 nit operating luminance is bright but not overbearing.

BoldVu® Outdoor

3500 Nits Daytime Luminance

BoldVu® outdoor displays are intended for deployment in areas out in the open and exposed to the elements. With a daytime operating luminance of 3500 nits BoldVu® is an excellent fit for a wide array of outdoor venues.

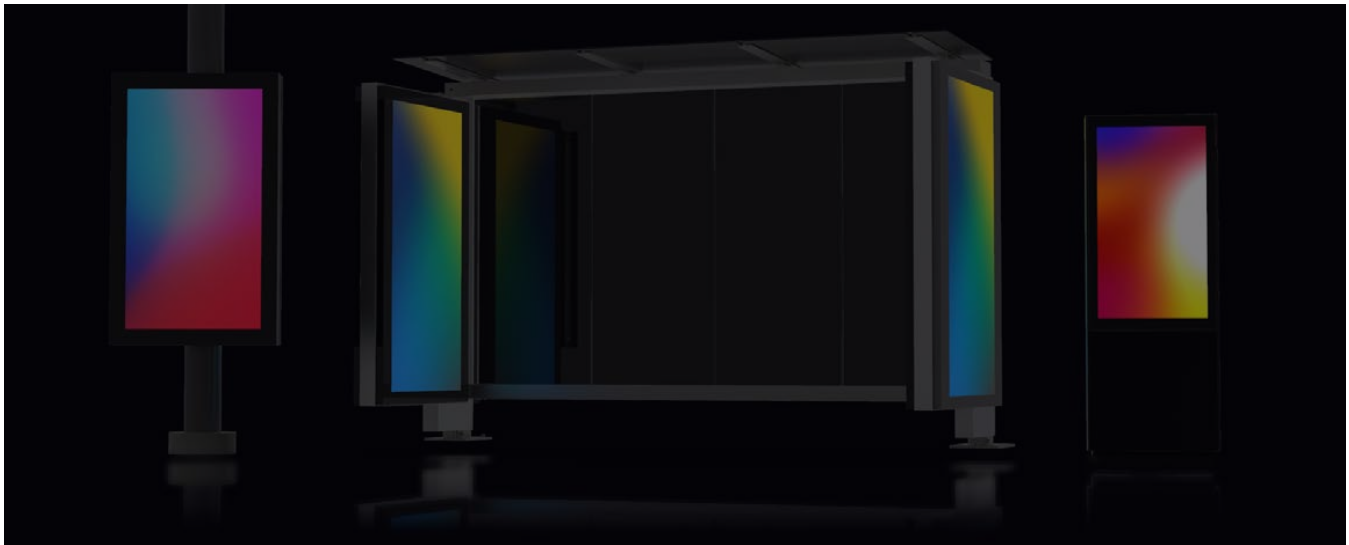
BoldVu® XT Extreme Outdoor

5000 Nits Daytime Luminance

BoldVu® XT displays are for outdoor venues with big skies and ultra-bright sunlight like stadiums and raceways. When the sunglasses come out, the 5000 nit daytime luminance of BoldVu® XT still shines bright.

Mounting Styles

SEC et al. v. MRI
SEC Exhibit 1048.011
IPR2023-00255



UMD
Universal Mount Display

Mounts on a wall or from overhead / underneath

FSD
Free-Standing Display

Mounts directly to the ground

UMD
Universal Mount Display for Bus Shelters

Custom designed and fully sealed, to be mounted into a new or existing structure

BoldVu® At a Glance

Unsurpassed Image Quality
With brightness up to 5000 nits, ultra-low reflectivity, autonomous image optimization via dynamic dimming backlight, BoldVu® delivers image quality that can't be beat.

Extreme Outdoor Durability
With an all steel, aluminum, and laminated glass structure, BoldVu® is built to withstand harsh and unforgiving environments, strongly resisting both involuntary and willful damage.

Superior Thermal Management
The CoolVu® thermal management system operates without air filters or coolants, requiring zero regular maintenance, while ensuring on-spec performance across temperature extremes (-40°C ~ +50°C / -40° F ~ +122° F).

10-Year Performance
BoldVu® is engineered to deliver on-spec luminance, contrast, and color saturation for 10 full years in its installed environment.

Intelligent Self-Optimization
Factoring in available power, ambient and internal temperatures, geo-location, and on-screen video content, BoldVu® autonomously configures operational settings to maintain desired performance.

IoT Empowered Architecture
A highly-configurable electronics chassis with volume, power, and cooling for integrating peripheral devices, BoldVu® is more than digital signage – it's a data center on the sidewalk.

Power Efficient Operation

Super Simple Deployment

Field Serviceable Design

SEC et al. v. MRI
SEC Exhibit 1048.012
IPR2023-00255

A high-efficiency, LED backlight with multiple block dimming zones enables BoldVu® to deliver maximum lumens per watt, which translates to incredibly vivid and bright imagery on less energy than ever before.

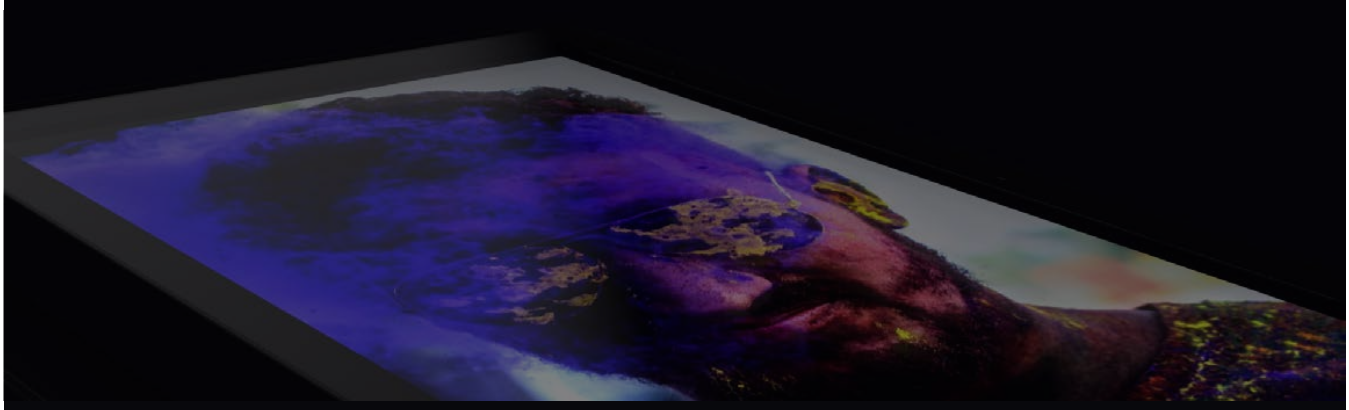
With full product development, engineering, fabrication, assembly, and configuration under one roof, BoldVu® is a turnkey solution that makes deployment as easy as bolting to the ground, connecting power, and standing back in awe.

BoldVu® is built for as many components to be field replaceable as possible so in the event of part failure or vandalism, displays can be serviced in their installed position and back online with minimal downtime.

Learn more

BoldVu® displays are built to order and subject to minimum order quantities.

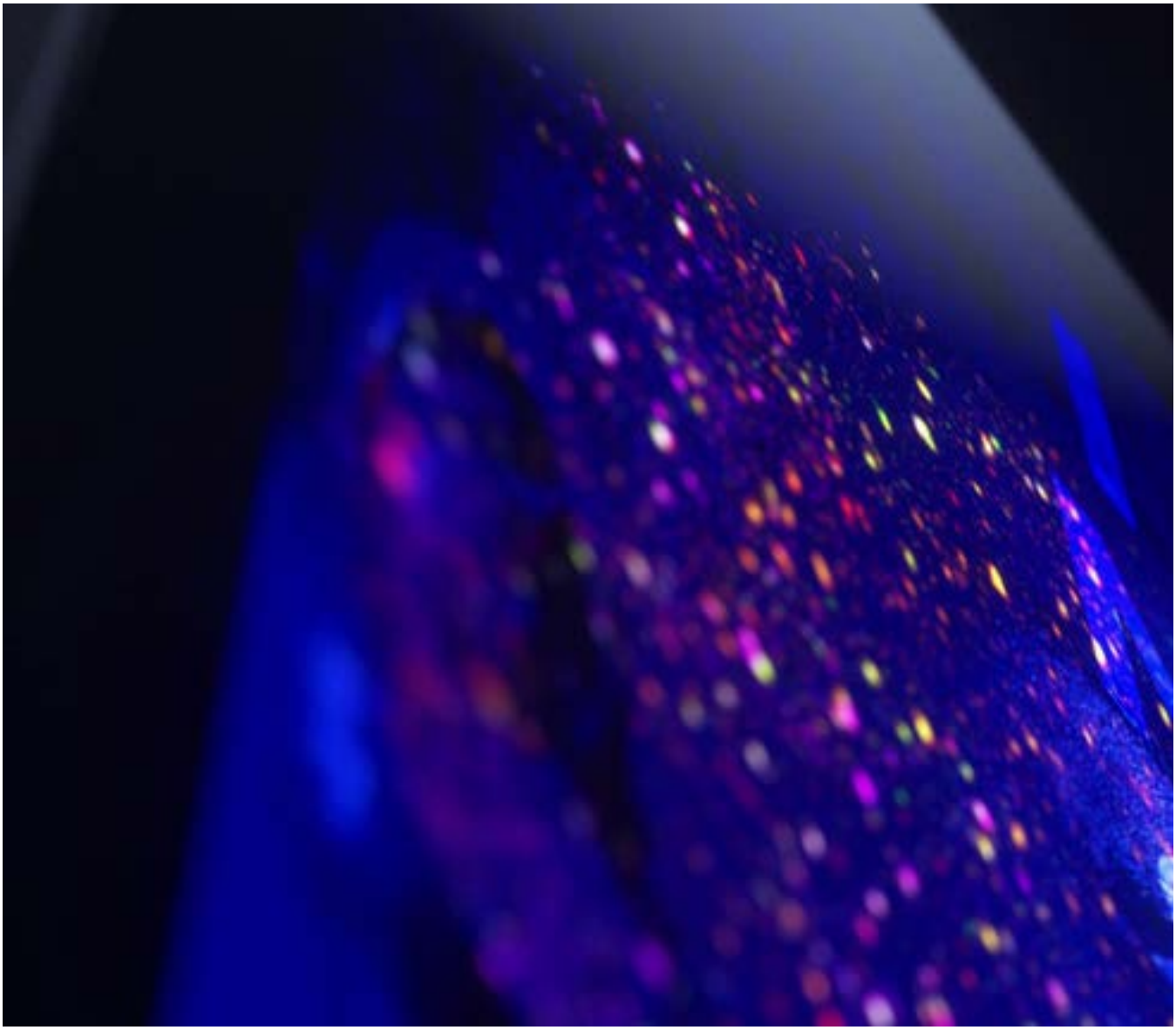
MAKE AN INQUIRY



[1] *Visual performance guarantee contingent upon maintaining an active SmartVu® services contract.*
[2] *Intel, the Intel logo, and other Intel names and brands are the sole property of Intel Corporation or its subsidiaries in the US and/or other countries.*
[3] *Third-party analytics software required.*
[4] *Power consumption based on full luminance with a white display field, averaged over 10 years of 24/7 use. All figures subject to change without notice.*

SEC et al. v. MRI
SEC Exhibit 1048.013
IPR2023-00255

SEC et al. v. MRI
SEC Exhibit 1048.014
IPR2023-00255



SEC et al. v. MRI
SEC Exhibit 1048.015
IPR2023-00255

10 year visual performance.

BoldVu® displays deliver unparalleled visual performance in outdoor environments. With luminance ratings up to 5000 nits, their high-efficiency LED backlight and obsessively engineered optical stack achieve incredibly bright imagery in the face of intense sunlight – and will do so day-in and day-out for 10 full years. So bring on the sun, BoldVu's got it managed.

Bring the heat.

Nothing will destroy a display faster than inadequate thermal management. CoolVu® is BoldVu's multi-patented thermal management technology that extracts and expels heat from inside the BoldVu, without exposing display electronics to ambient air or environmental contaminants, like dust, dirt and moisture. With CoolVu®, BoldVu® displays can operate in environments up to 122°F (55°C) without any degradation in visual performance.

up to

certified
IP66

requires
ZERO

SEC et al. v. MRI
SEC Exhibit 1048.016
IPR2023-00255

122° F / 50° C
temperature tolerance

dust & water resistance

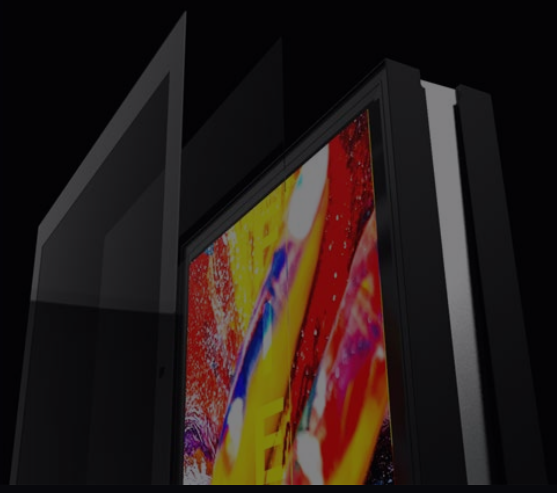
air filters

Built for impact.

BoldVu® displays are designed to live in a world of turbulence. ToughVu® cover glass shields delicate electronic components from the effects of adverse weather and vandalism. And with its low diffuse reflection, low haze, and anisotropy and bi-refringence qualities, ToughVu® glass ensures that digital imagery shines with brilliance and delivers maximum contrast, color accuracy, color saturation, and viewing angles.

As an added layer of intelligence, BoldVu® displays are equipped with a MEMS sensor which detects and reports on shock and impact events, so in the event of attempted vandalism, you'll be in the know.

up to
13.5 mm / 0.5 in.
cover glass thickness

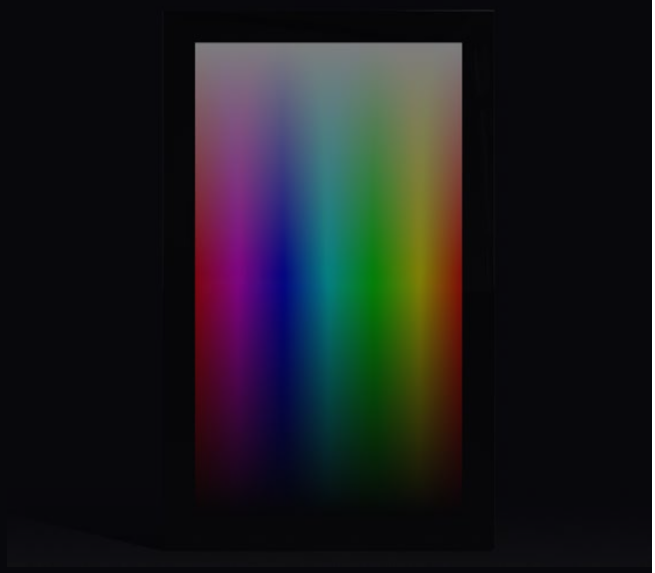


SEC et al. v. MRI
SEC Exhibit 1048.017
IPR2023-00255

Unparalleled contrast and color accuracy.

The world is full of spectacular color, and BoldVu® ensures that every one of them is accurately reproduced. The meticulously engineered optical stack achieves ultra-bright whites and super deep blacks so that every color in-between appears as vibrant as you could hope for. A billion colors never looked so good.

up to	up to	greater than
5000 nits	500,000:1	85% (NTSC)
luminance in white	dynamic contrast	color saturation



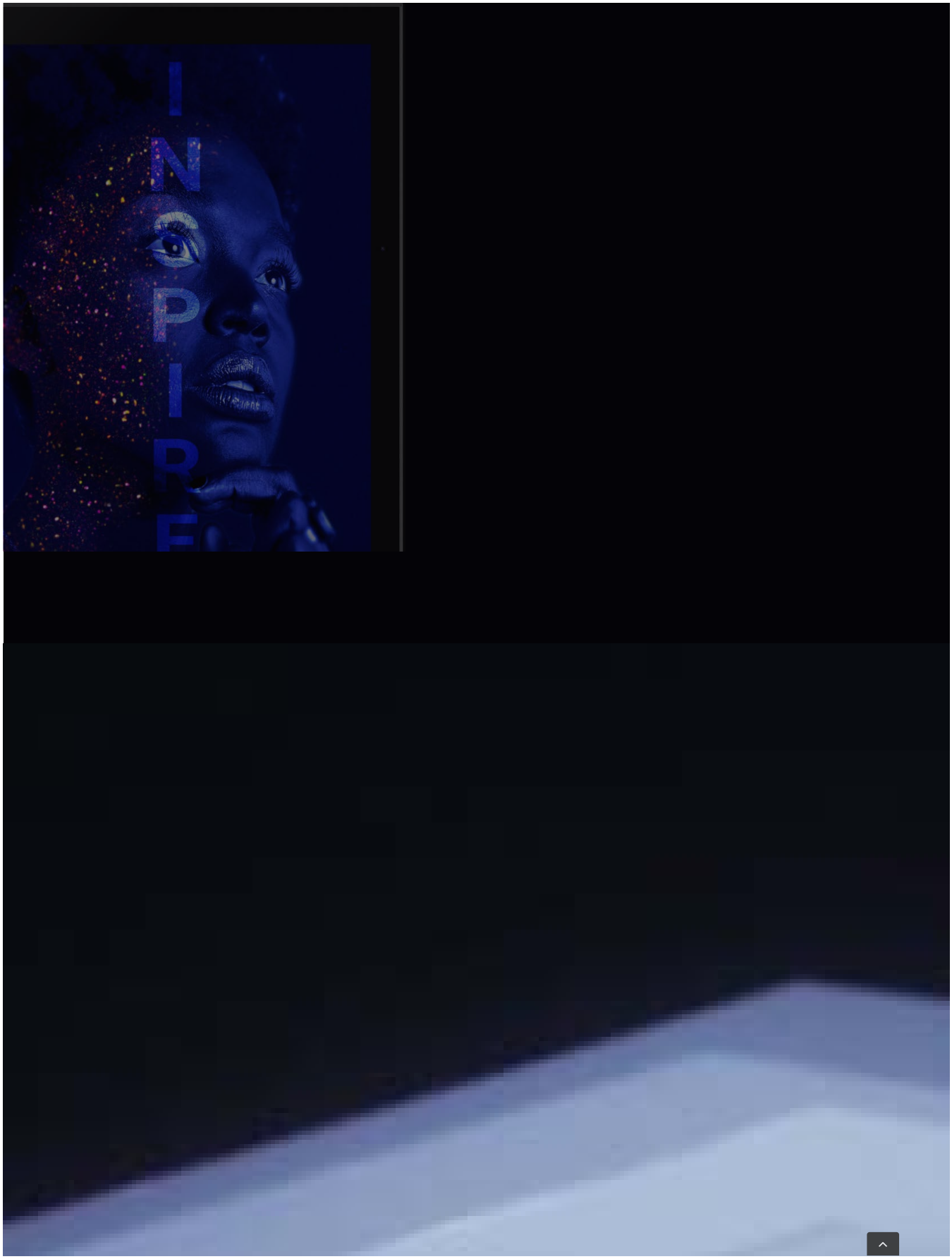
SEC et al. v. MRI
SEC Exhibit 1048.018
IPR2023-00255

SEC et al. v. MRI
SEC Exhibit 1048.019
IPR2023-00255

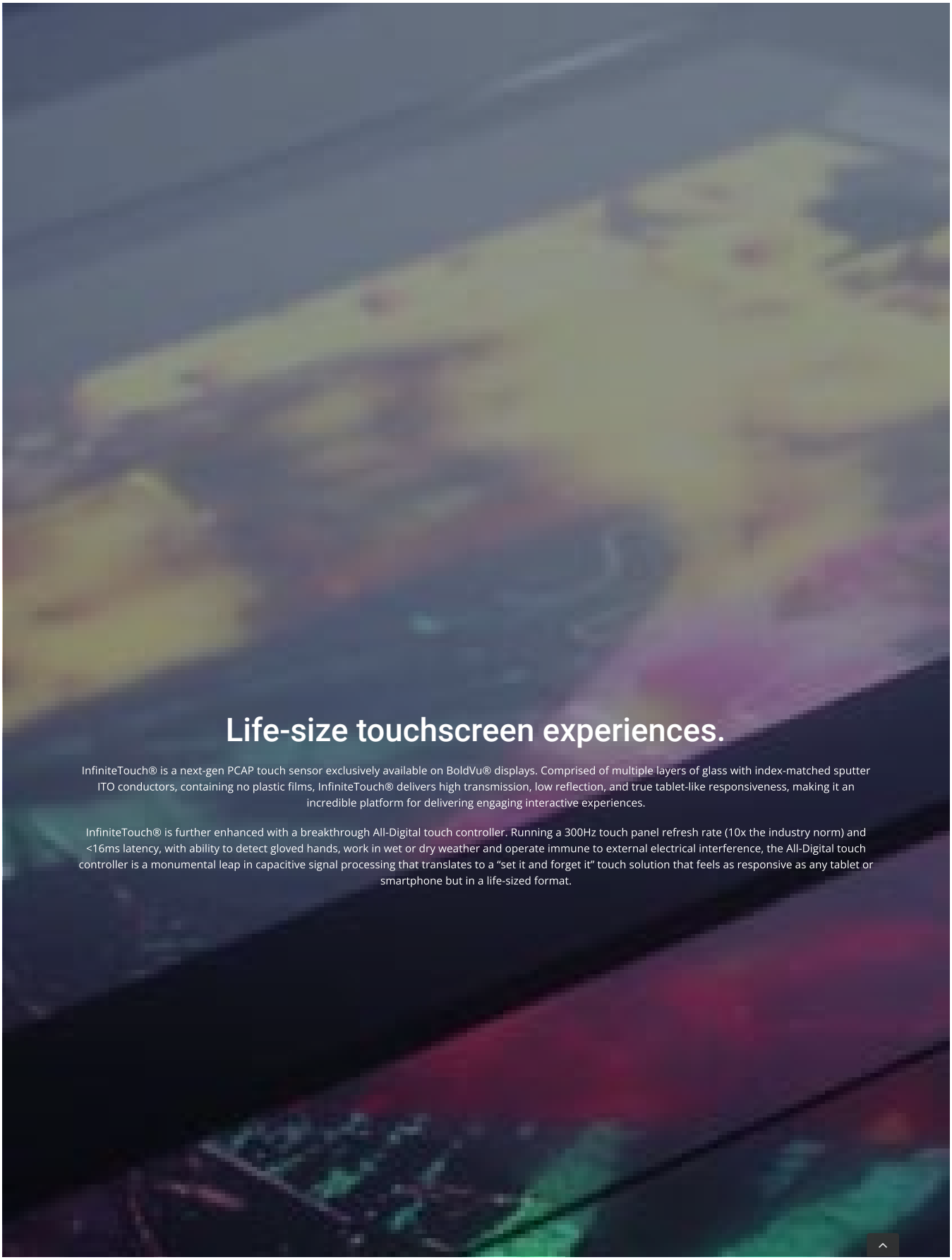
Delivering campaign confidence.

With an embedded media player and a 13-megapixel camera capable of 4K video at 30fps, BoldVu® makes delivering amazing, interactive campaigns easier than ever. Output gorgeous graphics, measure audience engagement[1] via the USB camera, and translate insights into more effective campaigns.

SEC et al. v. MRI
SEC Exhibit 1048.020
IPR2023-00255



SEC et al. v. MRI
SEC Exhibit 1048.021
IPR2023-00255

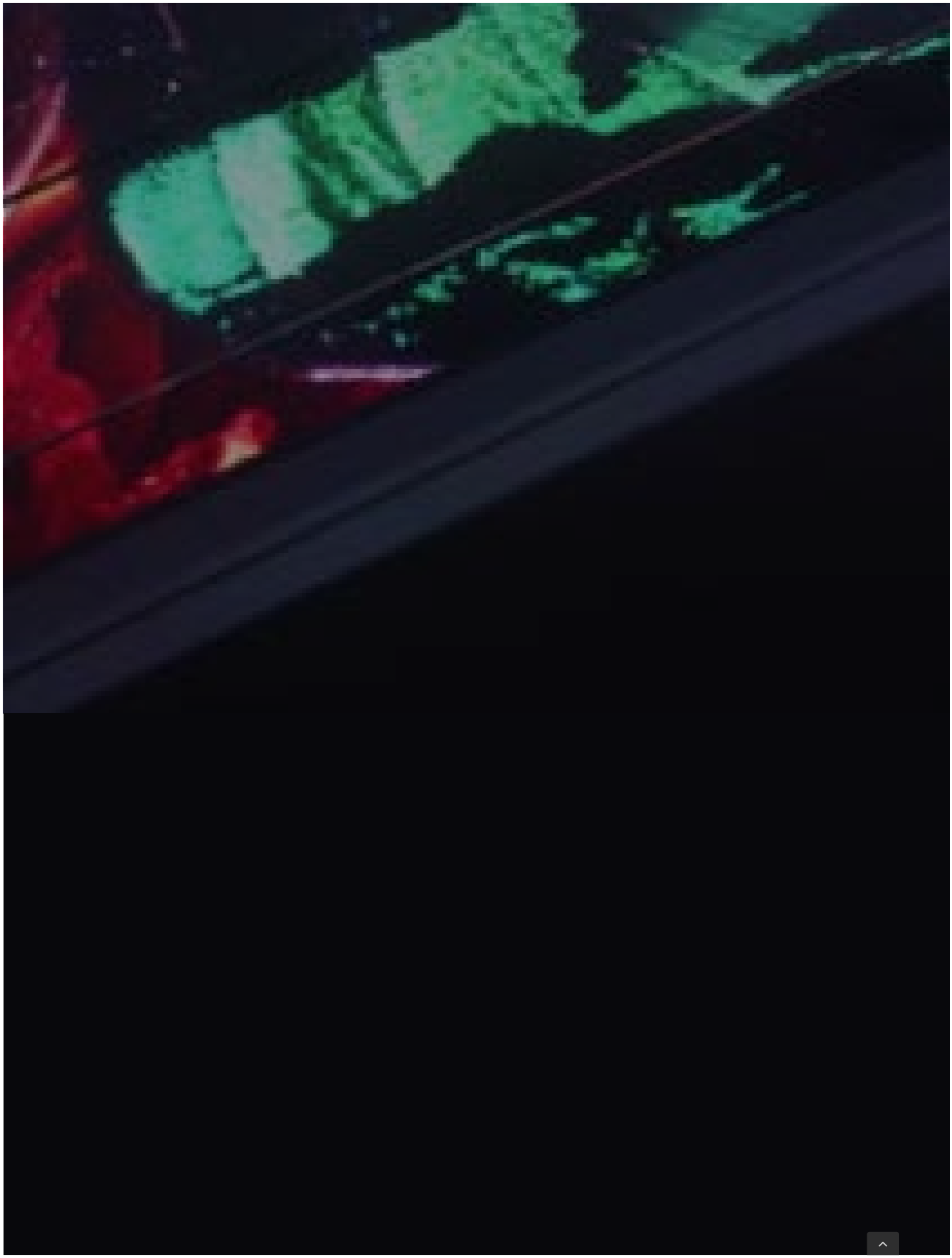


Life-size touchscreen experiences.

InfiniteTouch® is a next-gen PCAP touch sensor exclusively available on BoldVu® displays. Comprised of multiple layers of glass with index-matched sputter ITO conductors, containing no plastic films, InfiniteTouch® delivers high transmission, low reflection, and true tablet-like responsiveness, making it an incredible platform for delivering engaging interactive experiences.

InfiniteTouch® is further enhanced with a breakthrough All-Digital touch controller. Running a 300Hz touch panel refresh rate (10x the industry norm) and <16ms latency, with ability to detect gloved hands, work in wet or dry weather and operate immune to external electrical interference, the All-Digital touch controller is a monumental leap in capacitive signal processing that translates to a “set it and forget it” touch solution that feels as responsive as any tablet or smartphone but in a life-sized format.

SEC et al. v. MRI
SEC Exhibit 1048.022
IPR2023-00255



SEC et al. v. MRI
SEC Exhibit 1048.023
IPR2023-00255

A Data Center Hidden in Plain Sight

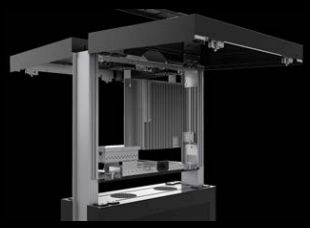
The Internet of Things (IoT) is changing the way we live, work, and how cities and venues are able to offer digital services to the citizens and visitors they serve. As the IoT continues to grow the need for communications and data processing infrastructure grows with them.

BoldVu® has a sealed, cooled, and powered electronics chassis designed to house network appliances, sensors, and multi-access edge compute (MEC) resources that power the IoT. From air quality monitoring and audience analytics to wireless signal propagation and edge data processing, BoldVu® is a data center hidden in plain sight.

Use BoldVu® to house, power, cool, and manage:

- 1U and 2U Edge Compute Servers
- Routing / Switching Appliances
- Wireless Access Points
- Environmental Sensors
- USB / IP Cameras and Video Recorders

View the film

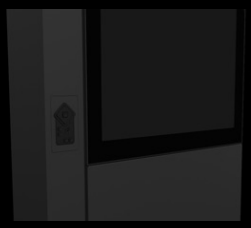


Optional Feature

BoldVu® Comms Cap.

An optional structure affixed atop BoldVu®, the Comms Cap is an additional housing for IoT and connectivity devices designed to extend functionality beyond the edges of the digital screen.

- Small cell radios
- Access points
- Cameras
- Environmental sensors



Optional Feature

BoldVu® Side Post.

When additional device integrations may be required, the Sidecar option provides a housing with I/O pass-through to BoldVu's electronics chassis. The Sidecar can be used to integrate multiple peripherals like:

- Navigation Pads
- Emergency Call Stations
- Speaker/Mic/Headphone
- Payment Terminals

Optional Feature

BoldVu® Solar.

BoldVu® is designed for integrating solar panels with configurations for reducing or eliminating reliance on grid power to drive the display. With BoldVu® Solar you can make strides toward your corporate social responsibility goals, while reducing operating costs and potentially leveraging tax incentives for your green investments.

SEC et al. v. MRI
SEC Exhibit 1048.024
IPR2023-00255

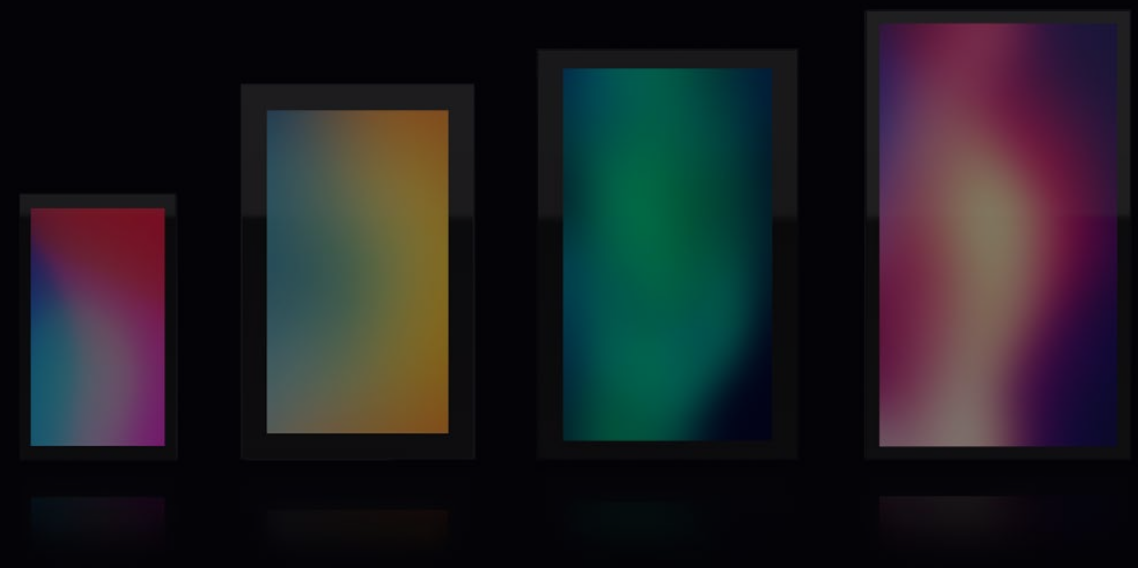
Better data. Better performance.

When you place a display out in the world, you never know what to expect. BoldVu® displays self-monitor and report on over 150 operating parameters and settings to the SmartVu® Portal. Via the secure web interface you can see how displays are performing, adjust what they're doing, and troubleshoot errant behavior, all from anywhere you can access the internet.

Discover SmartVu® Service »

SEC et al. v. MRI
SEC Exhibit 1048.025
IPR2023-00255

Meet the family.



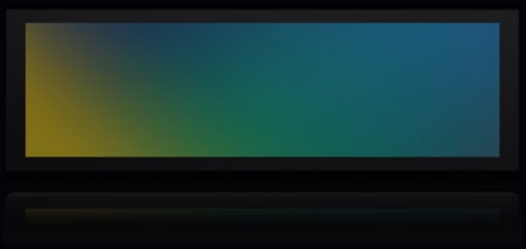
55 in.
Full HD Resolution (1920 x 1080)
47.6″ x 26.8″ active image area

75 in.
Ultra HD Resolution (3840 x 2160)
64.9″ x 36.5″ active image area

86 in.
Ultra HD Resolution (3840 x 2160)
74.6″ x 42″ active image area

98 in.
Ultra HD Resolution (3840 x 2160)
85″ x 47.8″ active image area

88 in. Stretch
Ultra HD Resolution (3840 x 1080)
84.6″ x 23.6″ active image area



SEC et al. v. MRI
SEC Exhibit 1048.026
IPR2023-00255

Outdoor Configurations

BoldVu® LT Semi-Outdoor

850 Nits Daytime Luminance

BoldVu® LT Semi-Outdoor displays are designed for placement in areas protected from direct sun exposure, like in shopping malls and subway stations where its 850 nit operating luminance is bright but not overbearing.

BoldVu® Outdoor

3500 Nits Daytime Luminance

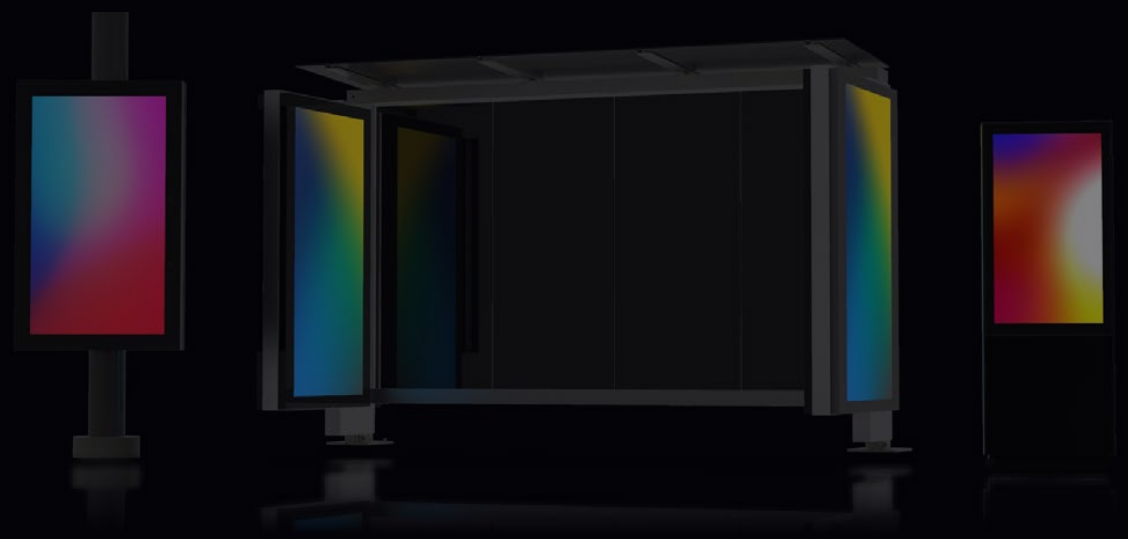
BoldVu® outdoor displays are intended for deployment in areas out in the open and exposed to the elements. With a daytime operating luminance of 3500 nits BoldVu® is an excellent fit for a wide array of outdoor venues.

BoldVu® XT Extreme Outdoor

5000 Nits Daytime Luminance

BoldVu® XT displays are for outdoor venues with big skies and ultra-bright sunlight like stadiums and raceways. When the sunglasses come out, the 5000 nit daytime luminance of BoldVu® XT still shines bright.

Mounting Styles



UMD

Universal Mount Display

Mounts in or to anything, on any side

FSD

Free-Standing Display

Kit for mounting to solid ground

SEC et al. v. MRI
SEC Exhibit 1048.027
IPR2023-00255

BoldVu® At a Glance

Unsurpassed Image Quality

With brightness up to 5000 nits, ultra-low reflectivity, autonomous image optimization via dynamic dimming backlight, BoldVu® delivers image quality that can't be beat.

Extreme Outdoor Durability

With an all steel, aluminum, and laminated glass structure, BoldVu® is built to withstand harsh and unforgiving environments, strongly resisting both involuntary and willful damage.

Superior Thermal Management

The CoolVu® thermal management system operates without air filters or coolants, requiring zero regular maintenance, while ensuring on-spec performance across temperature extremes (-40°C ~ +50°C / -40° F ~ +122° F).

10-Year Performance

BoldVu® is engineered to deliver on-spec luminance, contrast, and color saturation for 10 full years in its installed environment.

Intelligent Self-Optimization

Factoring in available power, ambient and internal temperatures, geo-location, and on-screen video content, BoldVu® autonomously configures operational settings to maintain desired performance.

IoT Empowered Architecture

A highly-configurable electronics chassis with volume, power, and cooling for integrating peripheral devices, BoldVu® is more than digital signage – it's a data center on the sidewalk.

Power Efficient Operation

A high-efficiency, LED backlight with multiple block dimming zones enables BoldVu® to deliver maximum lumens per watt, which translates to incredibly vivid and bright imagery on less energy than ever before.

Super Simple Deployment

With full product development, engineering, fabrication, assembly, and configuration under one roof, BoldVu® is a turnkey solution that makes deployment as easy as bolting to the ground, connecting power, and standing back in awe.

Field Serviceable Design

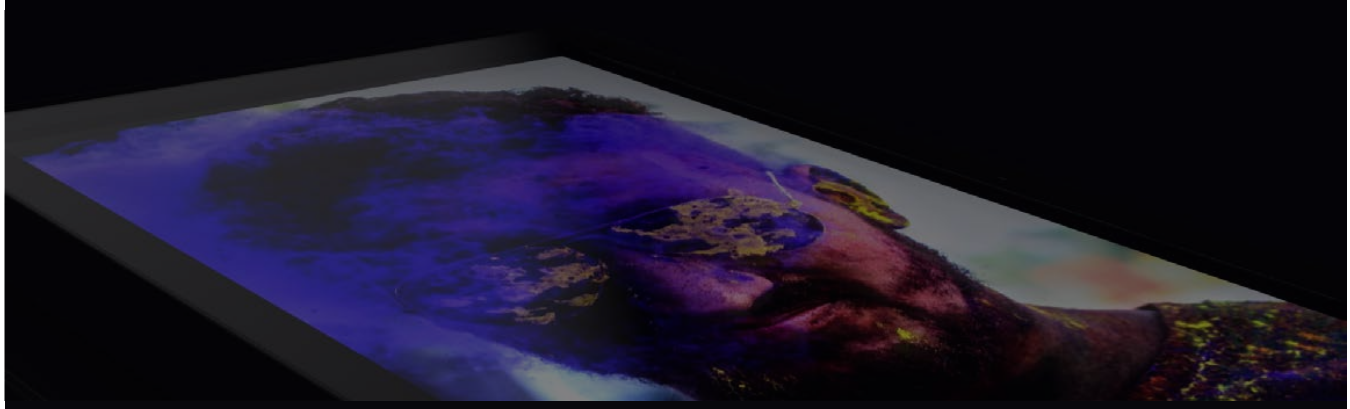
BoldVu® is built for as many components to be field replaceable as possible so in the event of part failure or vandalism, displays can be serviced in their installed position and back online with minimal downtime.

SEC et al. v. MRI
SEC Exhibit 1048.028
IPR2023-00255

Learn more

BoldVu® displays are built to order and subject to minimum order quantities.

MAKE AN INQUIRY



[1] *Visual performance guarantee contingent upon maintaining an active SmartVu® services contract.*
[2] *Intel, the Intel logo, and other Intel names and brands are the sole property of Intel Corporation or its subsidiaries in the US and/or other countries.*
[3] *Third-party analytics software required.*
[4] *Power consumption based on full luminance with a white display field, averaged over 10 years of 24/7 use. All figures subject to change without notice.*

Headquarters
LG-MRI
6415 Shiloh Road East
Alpharetta, GA 30005

Newsletter

SEC et al. v. MRI
SEC Exhibit 1048.029
IPR2023-00255

770-255-7138

Email address

Sign up

Copyright © 2023 LG-MRI, LLC. All rights reserved. | Privacy Statement | Patents | BoldVu® is a registered trademark of Manufacturing Resources International, Inc. (MRI). BoldVu® is also used under license by LG-MRI LLC, a joint venture entity between LG Electronics U.S.A., Inc., and MRI; and, by Precision Systems Integration, LLC, affiliated with MRI.
The information provided on this website is for general informational purposes only. All information is provided in good faith, however, Manufacturing Resources International, Inc. and its affiliates make no representation or warranty of any kind, express or implied, regarding the accuracy, adequacy, validity, reliability, availability or completeness of any information appearing on this website. All information is subject to change or updates without notice.

SEC et al. v. MRI
SEC Exhibit 1048.030
IPR2023-00255