



**Radiant Zemax**  
SEE THE DIFFERENCE

# Improving OLED Display Yield and Appearance with Imaging Colorimetry

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# Radiant Zemax, LLC



“... the worldwide leader in imaging systems for light and color measurement.”



# Quantifying Human Visual Perception

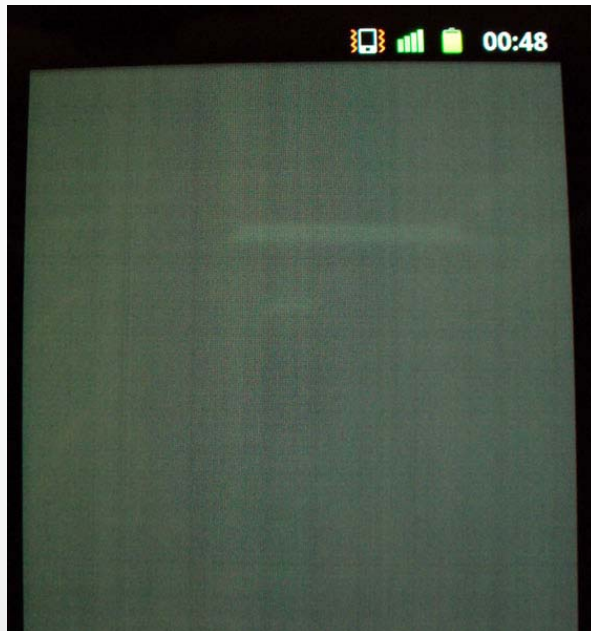
Radiant Zemax imaging colorimeters replicate and quantify human visual perception of **brightness**, **color**, and *scatter*



# OLED Challenge

OLED is a promising new technology

- Thinner, lighter, flexible
- Wider FOV, brighter, faster refresh
- Lower power consumption



However there are significant technical challenges

- Lifetime, Stability over time
- Image Quality – Ex: Line Mura
- Scaling to Large Formats

# Radiant Zemax Solutions provide...



- **Detection** - Imaging colorimeters capture high resolution 2D spatial measurements of luminance and color. Purpose-built analysis software **analyzes** measurement data **and quantifies defects based on human visual perception**.
- **Correction** – Large format OLED displays can contain electronics that enable pixel level correction. With properly measured and calculated correction coefficients, OLED **display quality can be significantly improved**.

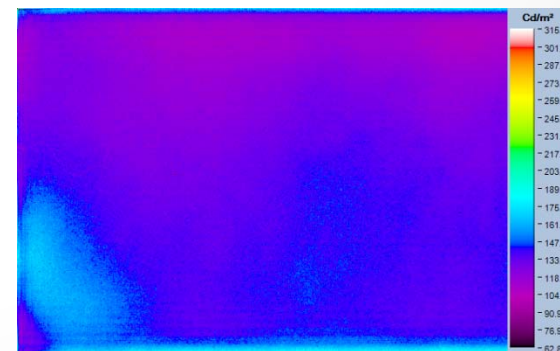
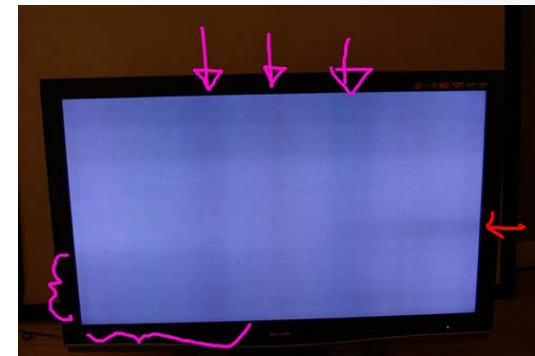
“Radiant Zemax engineering services can customize solutions for your OLED test and measurement needs”





# Detection: Purpose built solutions optimized for LCD/OLED displays

- Gross defects, like this one, can be identified even with simple human inspectors.
- Subtle or small defects are often missed by human inspectors and non-specialized optical inspection equipment. (This is a real image)
- This same display, measured with ProMetric G and analyzed with TrueTest, can easily identify the Non-Uniformity (as well as other defects such as Mura or Pixel Defects)



# Correction: LED Screen Correction re-engineered for OLED displays



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- OLED screen correction will be dependent on manufacturer specific implementation. Radiant Zemax is the leader in LED screen correction and can help you apply these techniques to your large format OLED display.
- These images show results of using PM-1433 with VisionCAL to generate RGB correction coefficients.
- Proper application of correction, improves uniformity, increases color accuracy, and helps hide defects.



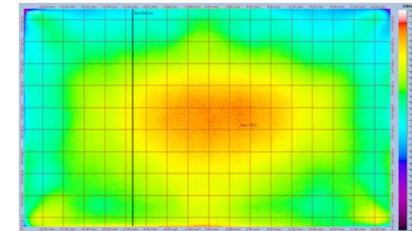
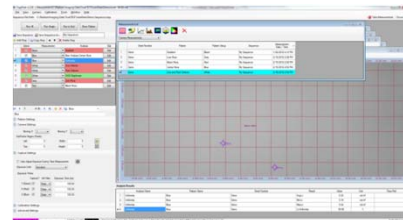
# OLED Test Solutions



High-Performance  
Imaging Colorimeter



Purpose-Built  
Application Software



Engineering Services





# OLED display test summary



Radiant Zemax

- Radiant Zemax is a world leader in FPD and lighting test solutions. With our experience, we can help solve your OLED specific measurement needs.
- Radiant Zemax has OLED test solutions today that leverage our deep knowledge of LCD and LED measurement solutions.
- Stop by booth #844 to learn about OLED test, pick up OLED whitepaper and see FPD test solutions in action.



## THANK YOU