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Diffuse Reflectance Measurements with the DRS100

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DRS100, 1 meter diffuse reflectance sphere

- Diffuse reflectance properties of mobile displays
- Tablet size and smaller test objects



Key requirements

- Robust measurement
 - Measurements must be reproducible
 - with this apparatus, or
 - by other labs using similar apparatuses

✓ Hemispherical illumination is the most uniform and reproducible method



Key requirements

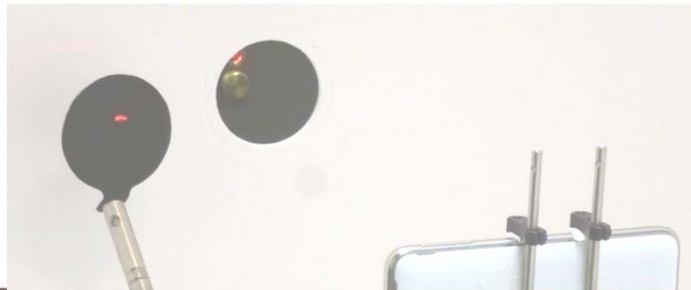
- Cover all measurement geometries
- Reconfigurable
 - Many test articles
 - Other experiments

- ✓Angles from 5 to >80 degrees at 1 degree resolution
- ✓Adjust sample stage using standard optical posts and mounts
- ✓Measure flux

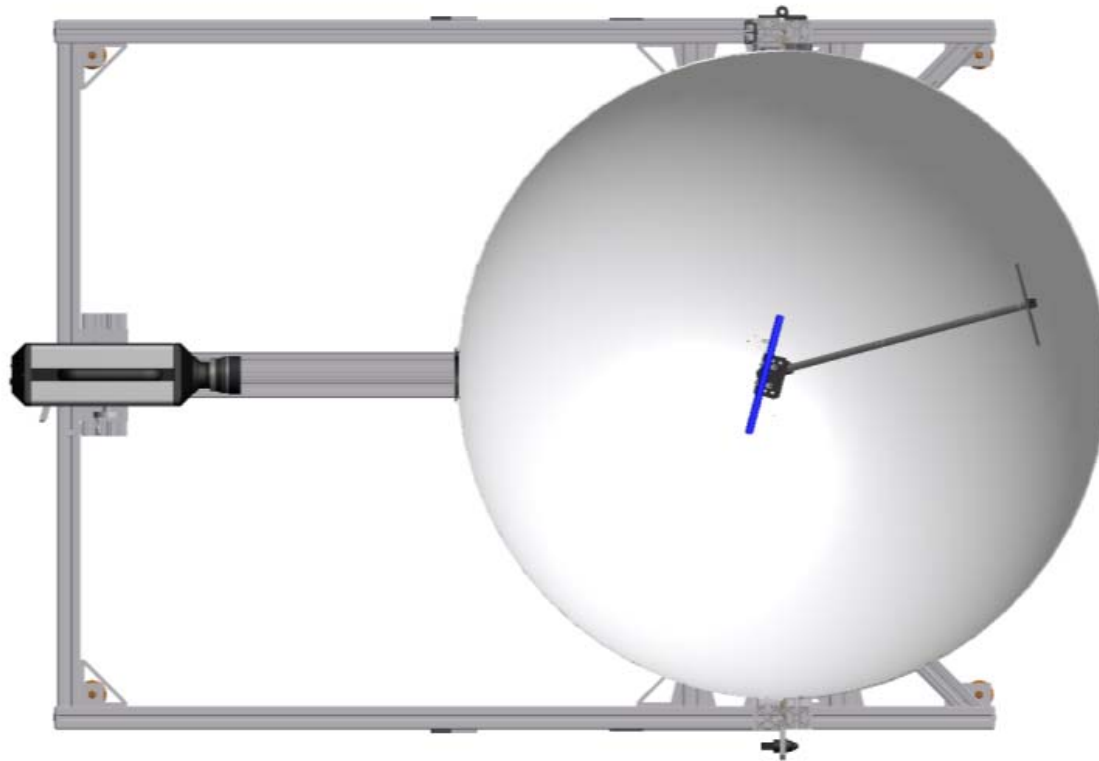


Key requirements

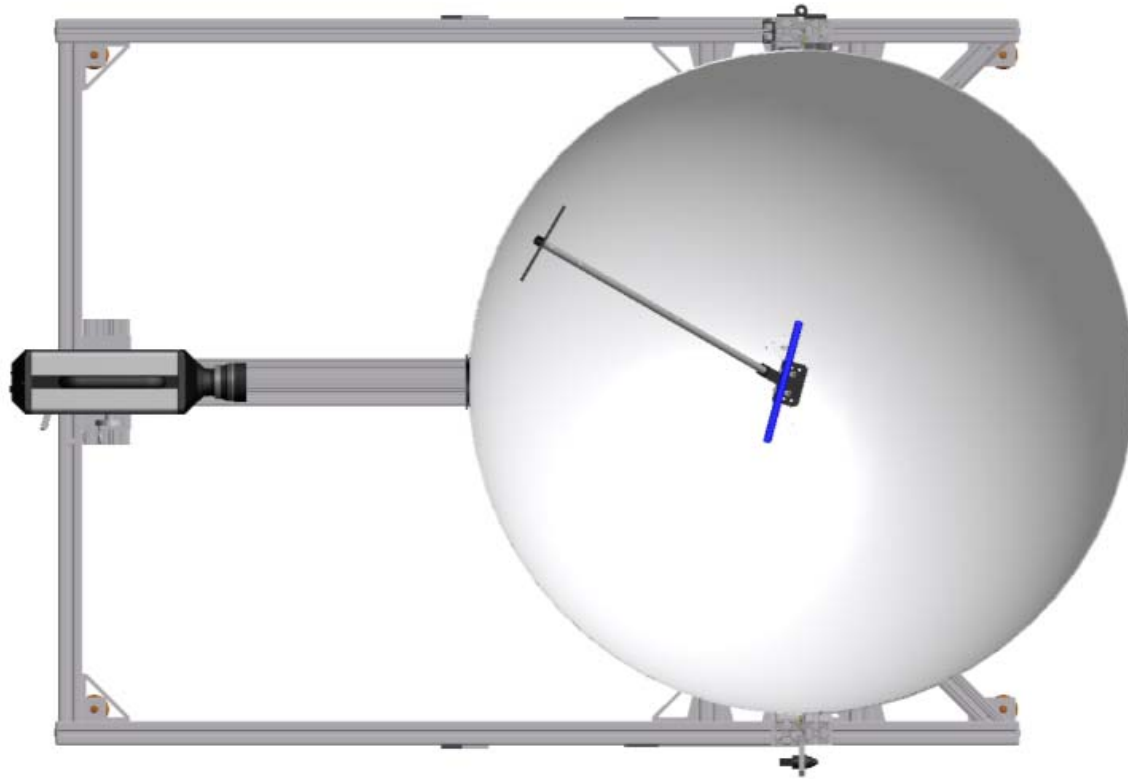
- Specular included or excluded
 - IDMS 11.2 and 11.3
 - Different sizes of traps
- Trap rotates on an arm in the plane of the measurement
- Traps from 20 to 80 mm \varnothing included
 - 1% diffuse reflectance trap
 - Custom options



15°, specular included



15°, specular excluded



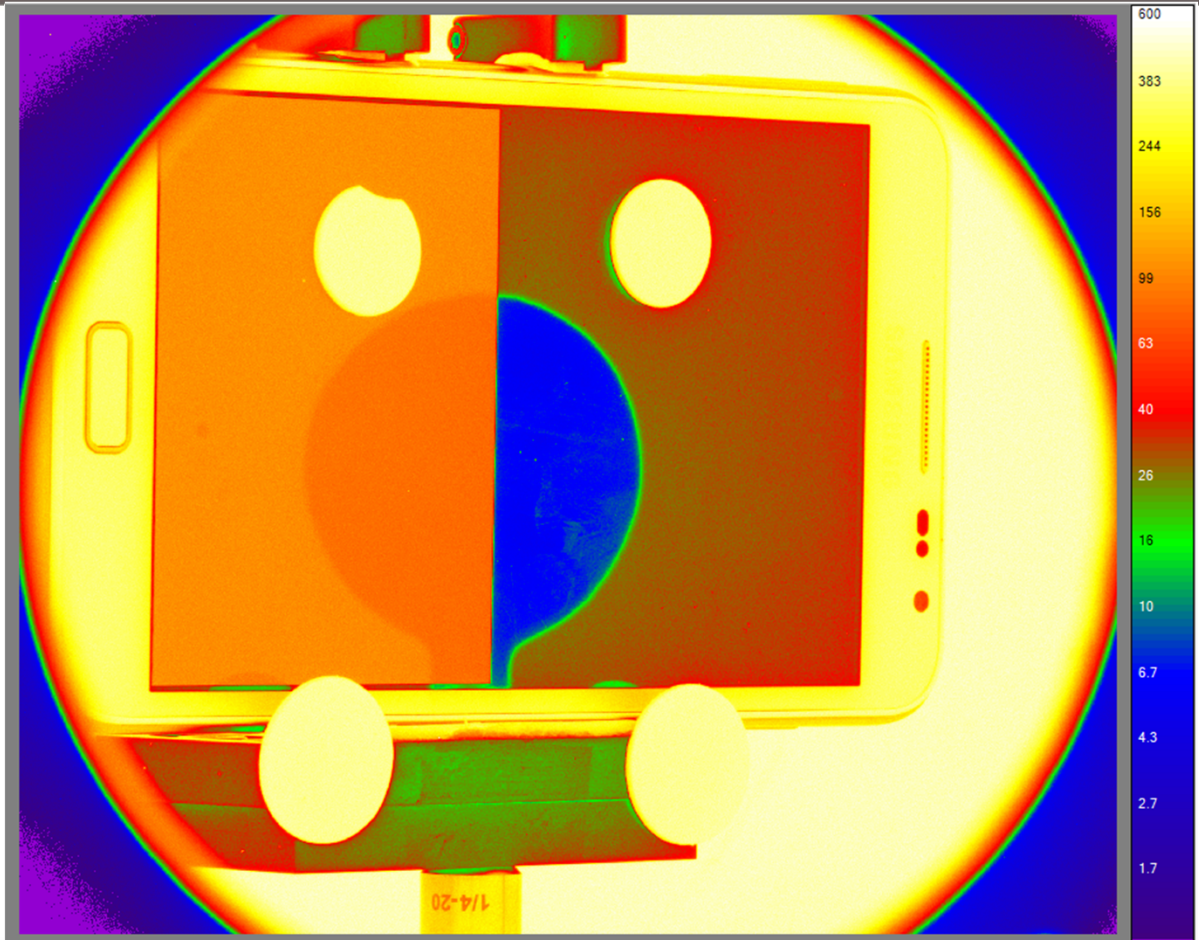
8°, specular excluded, large display

Removeable aperture on right hemisphere allows measurement of large panels at 8° to optical axis

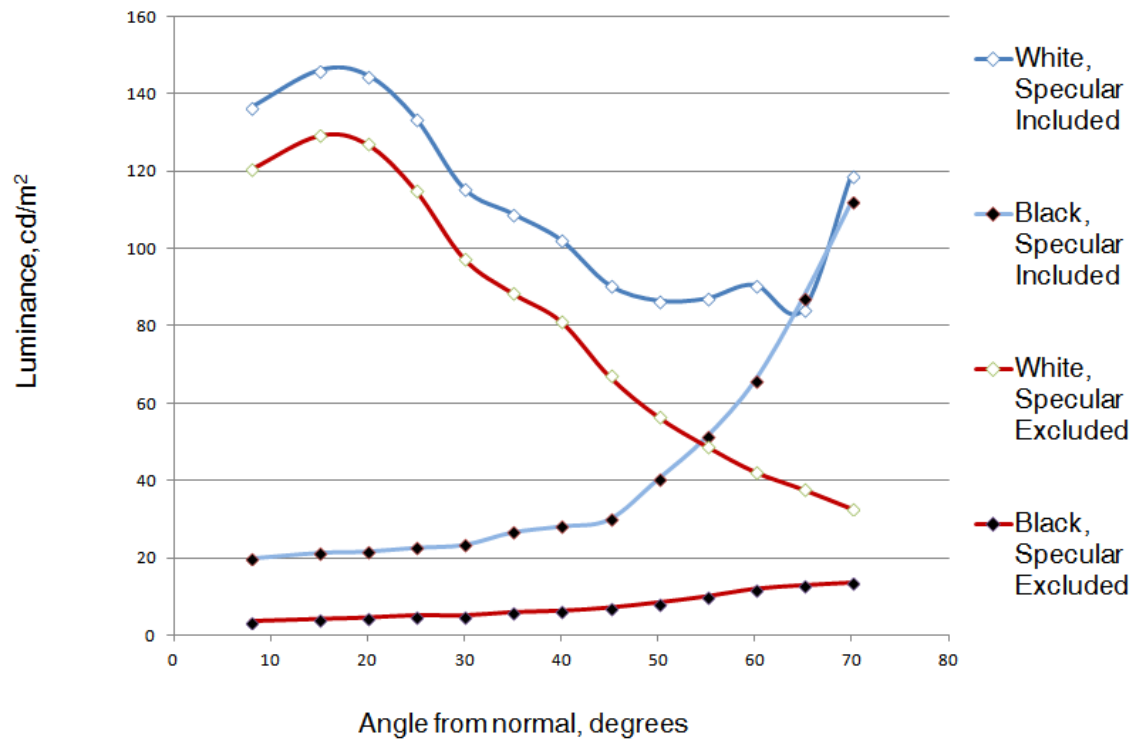


Display at 40 degrees

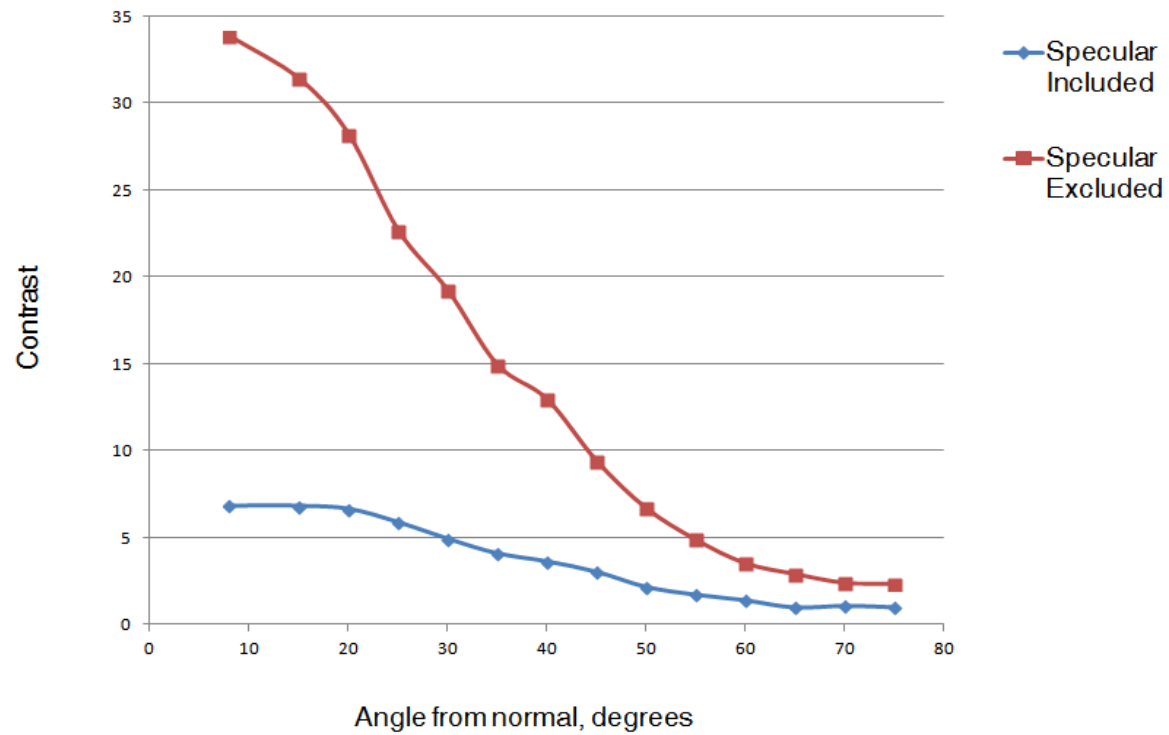
- <math><1.7</math> to $\sim 600\text{ cd/m}^2</math>$
- Bipartite field
 - Right = black
 - Left = white
- Specular image of trap
- Smudges
- PTFE Plaques



Luminance vs. Angle

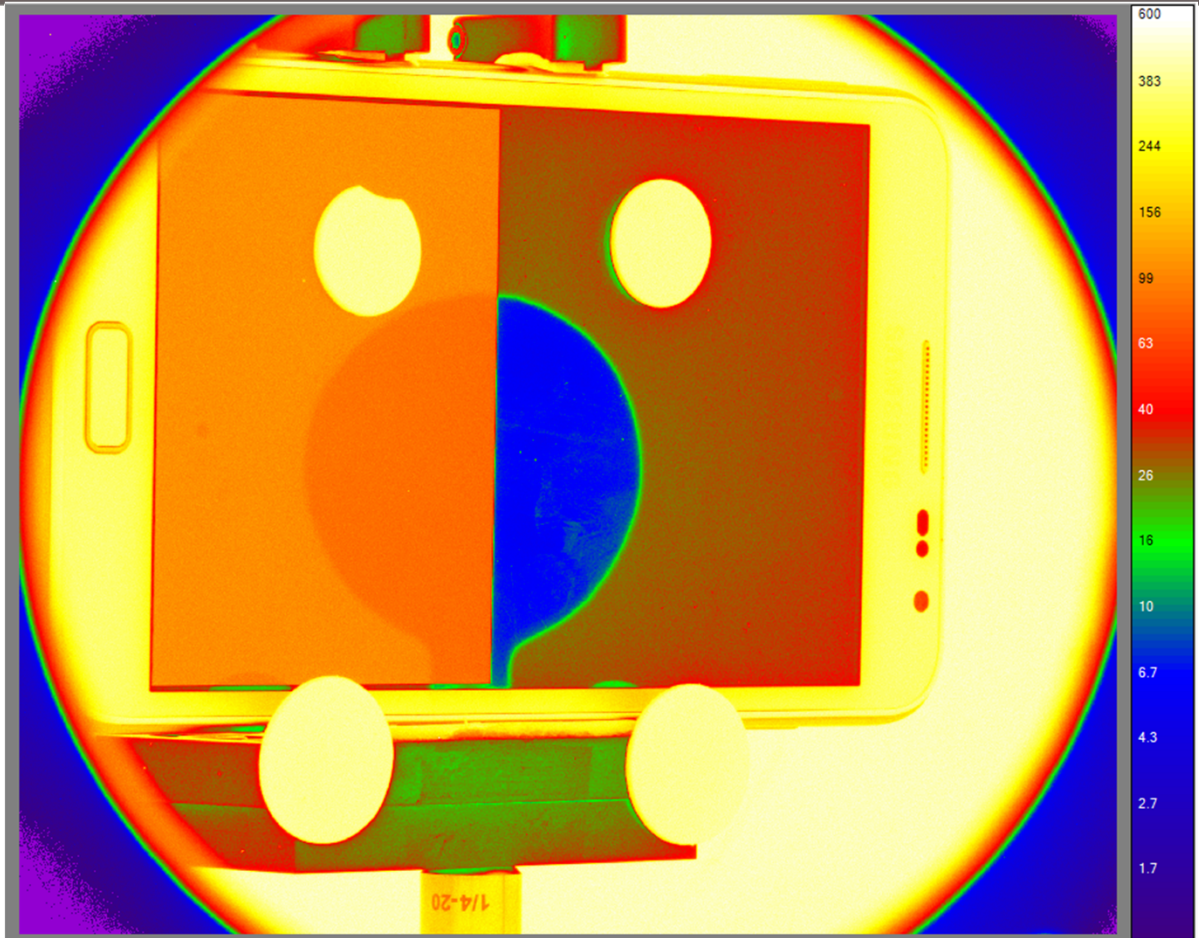


Contrast vs. Angle



Imaging photometry advantages

- measure both black and white states simultaneously
- measure a reference reflector(s) to monitor the illumination of the display
- provide a visual record superimposed with the photometric, colorimetric or hyperspectral information



Thank you



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Come see us at Booth 910