

How Close Can You Go?

Minimum Eye-to-Screen Distance for EyeLink 1000 Plus

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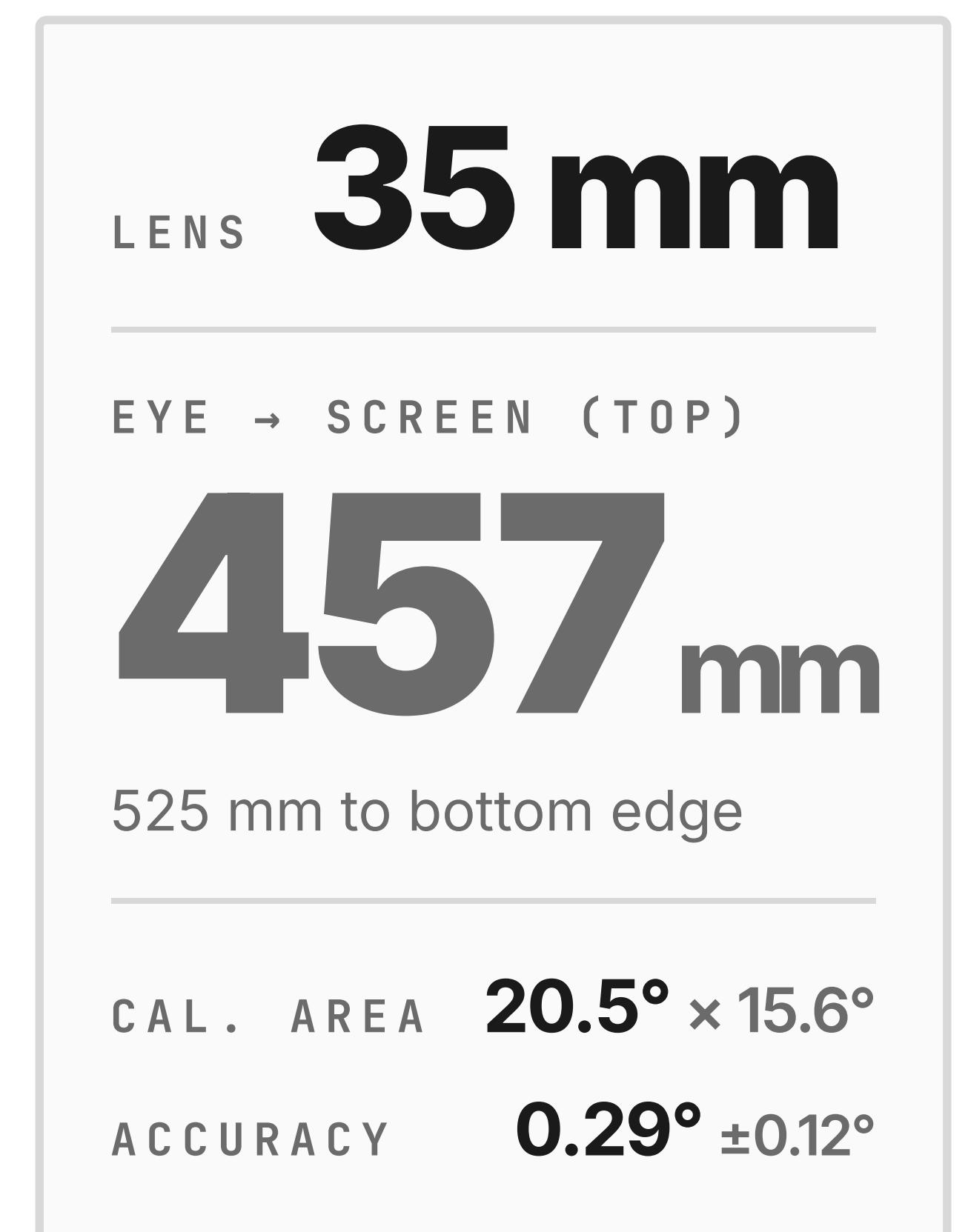
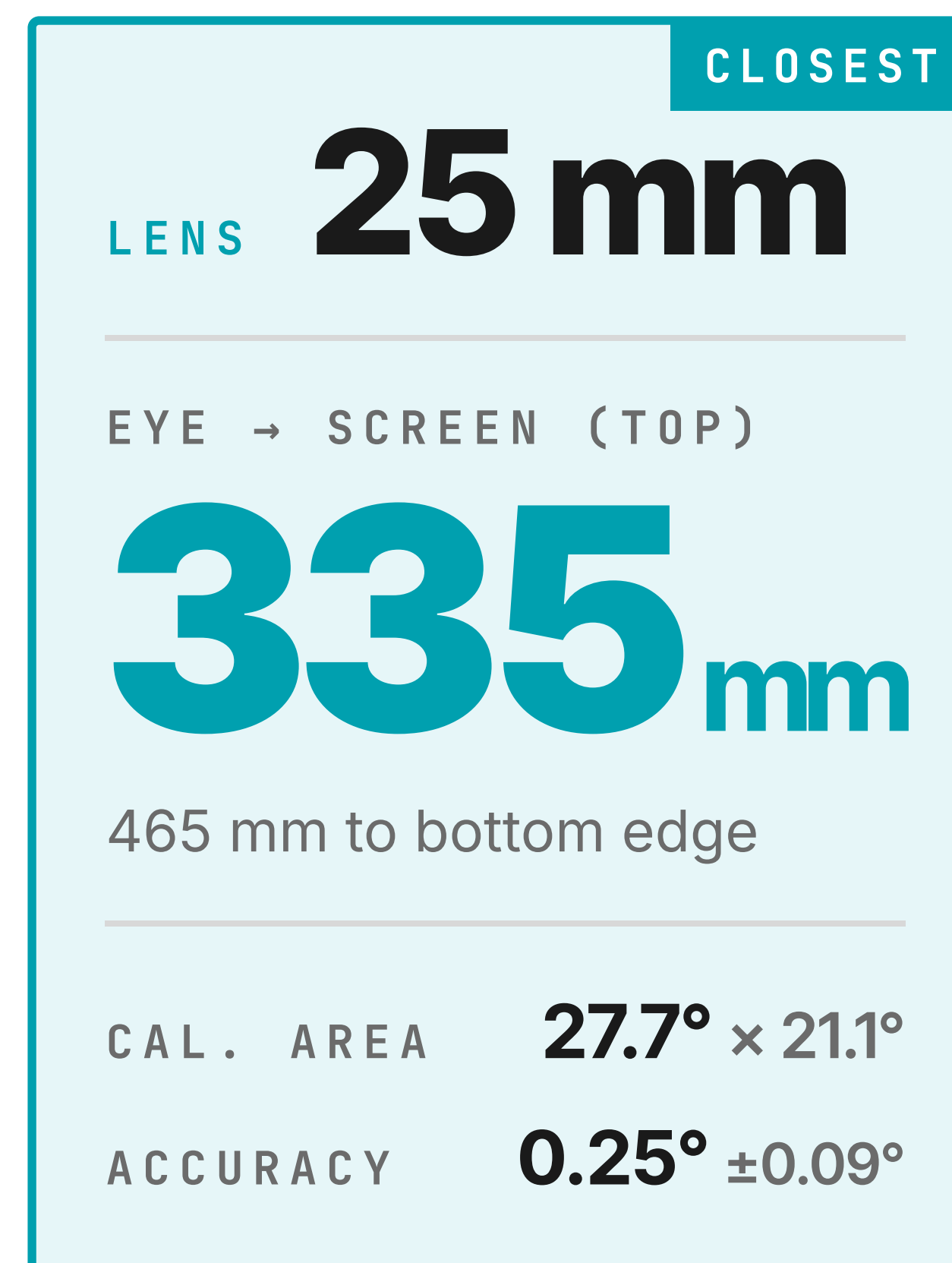
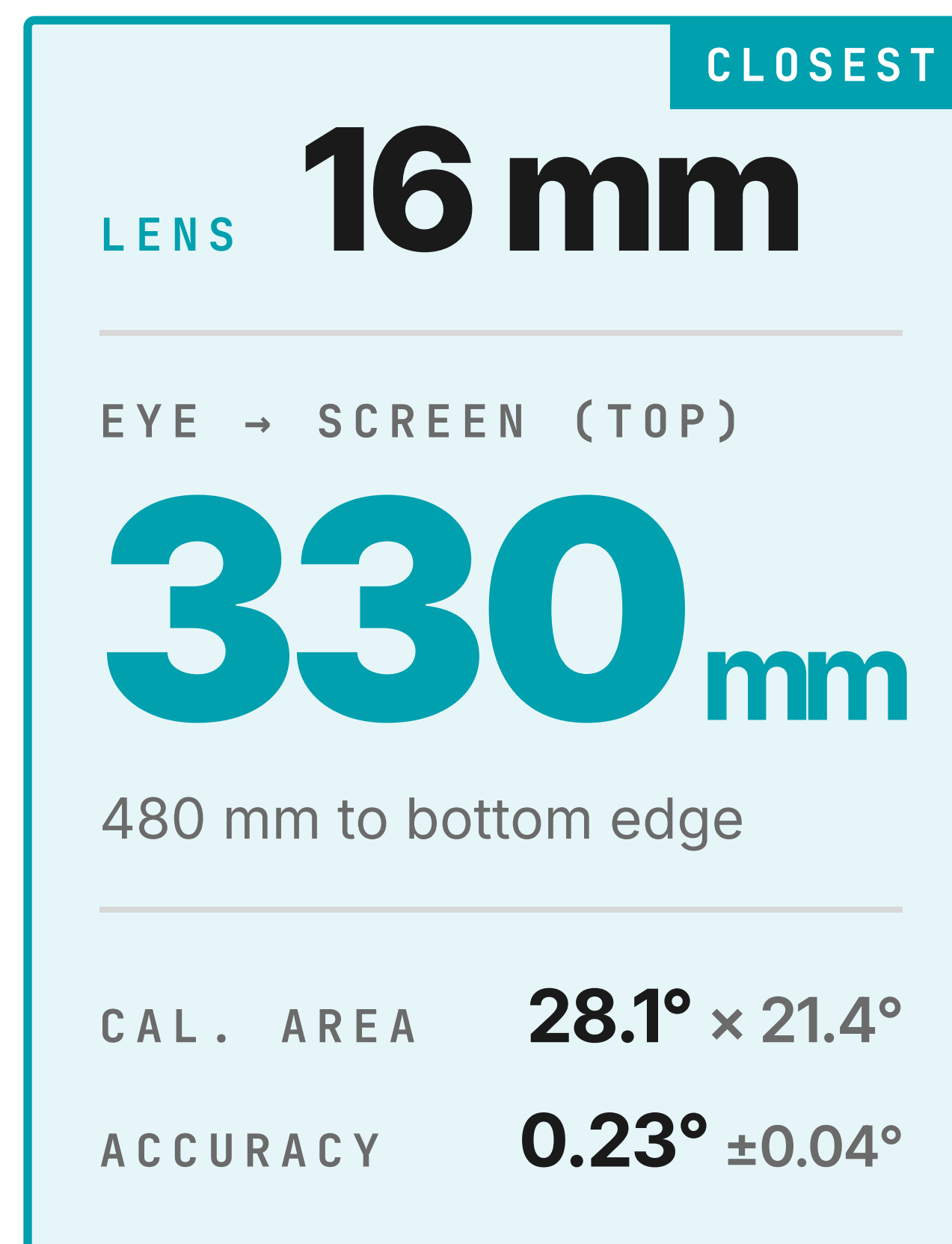
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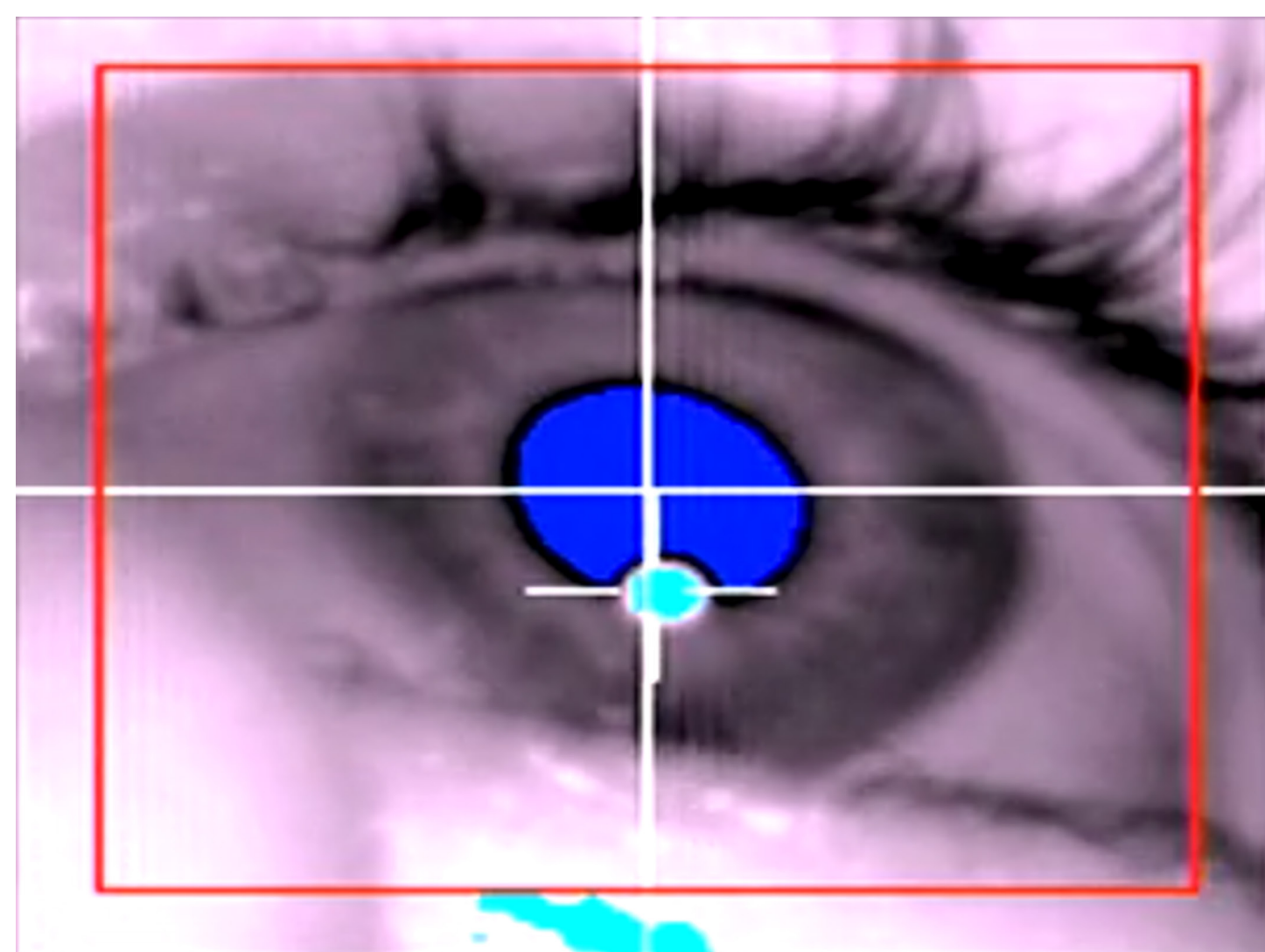
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What is the minimum eye tracker and screen distance to the participant that still allows successful calibration?

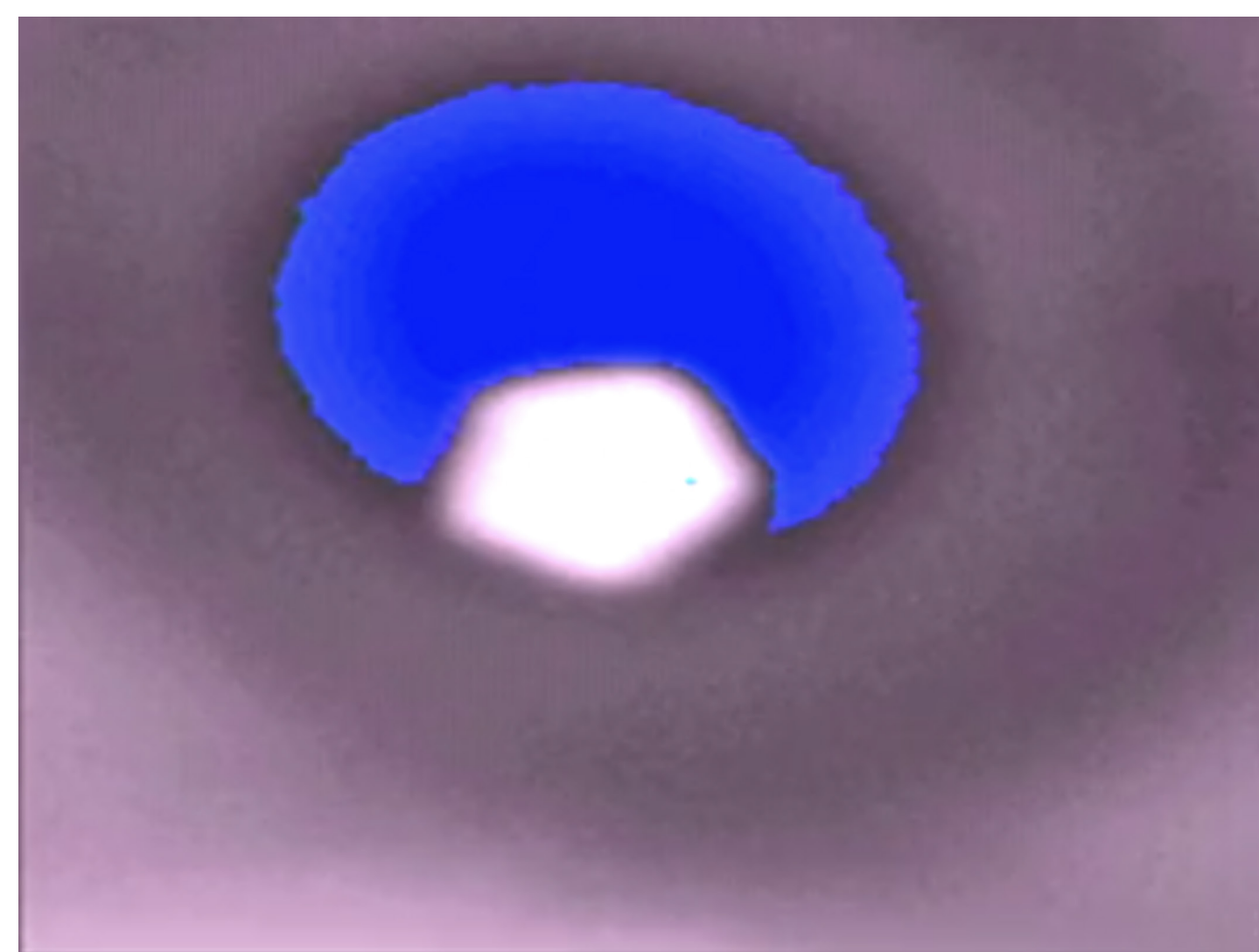
Near-vision, visual-field, and surgical-microscopy paradigms need viewing distances of 20-40 cm. SR Research recommends 50-55 cm with a 35 mm lens. No documentation exists for how close you can actually go.



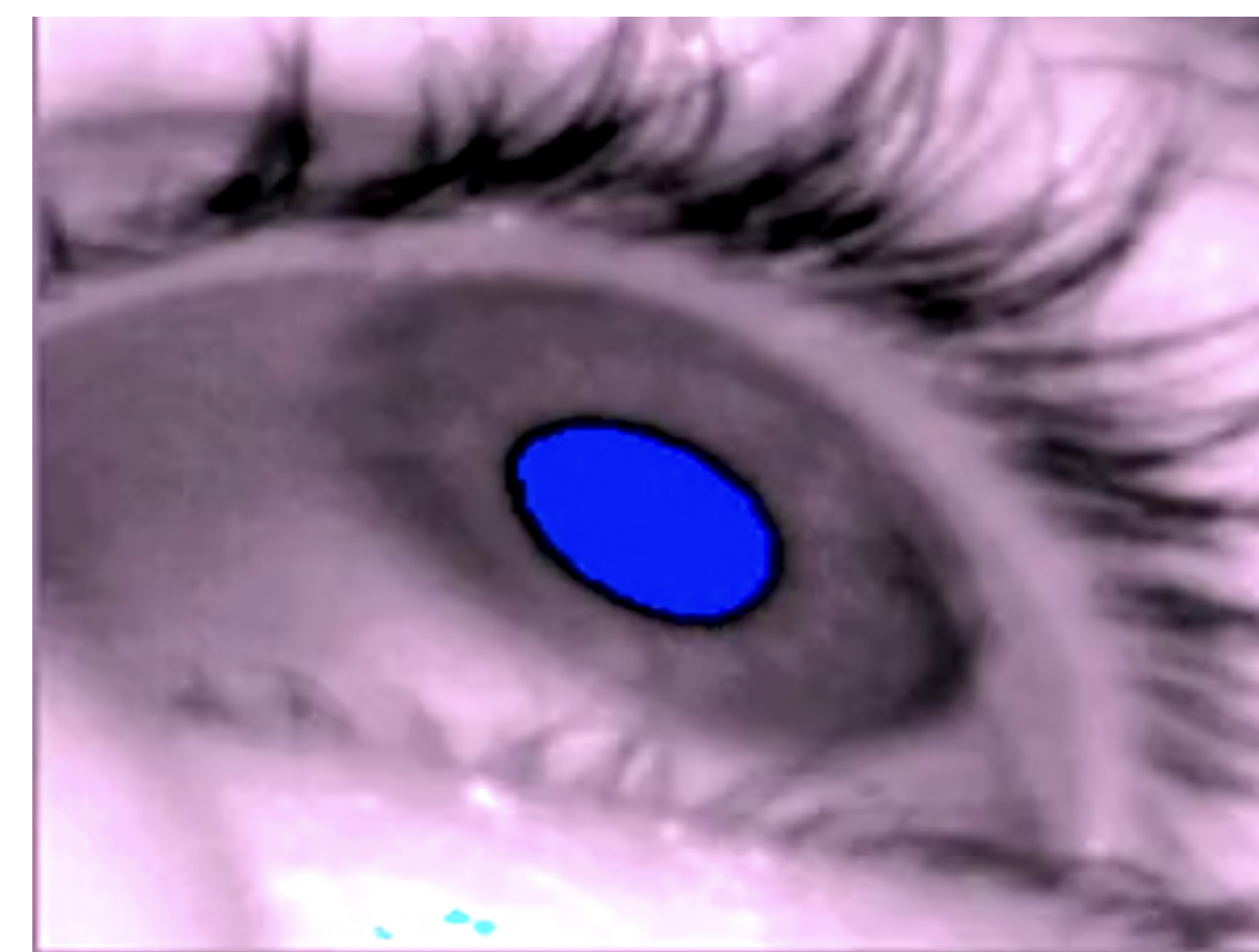
What can go wrong at close range



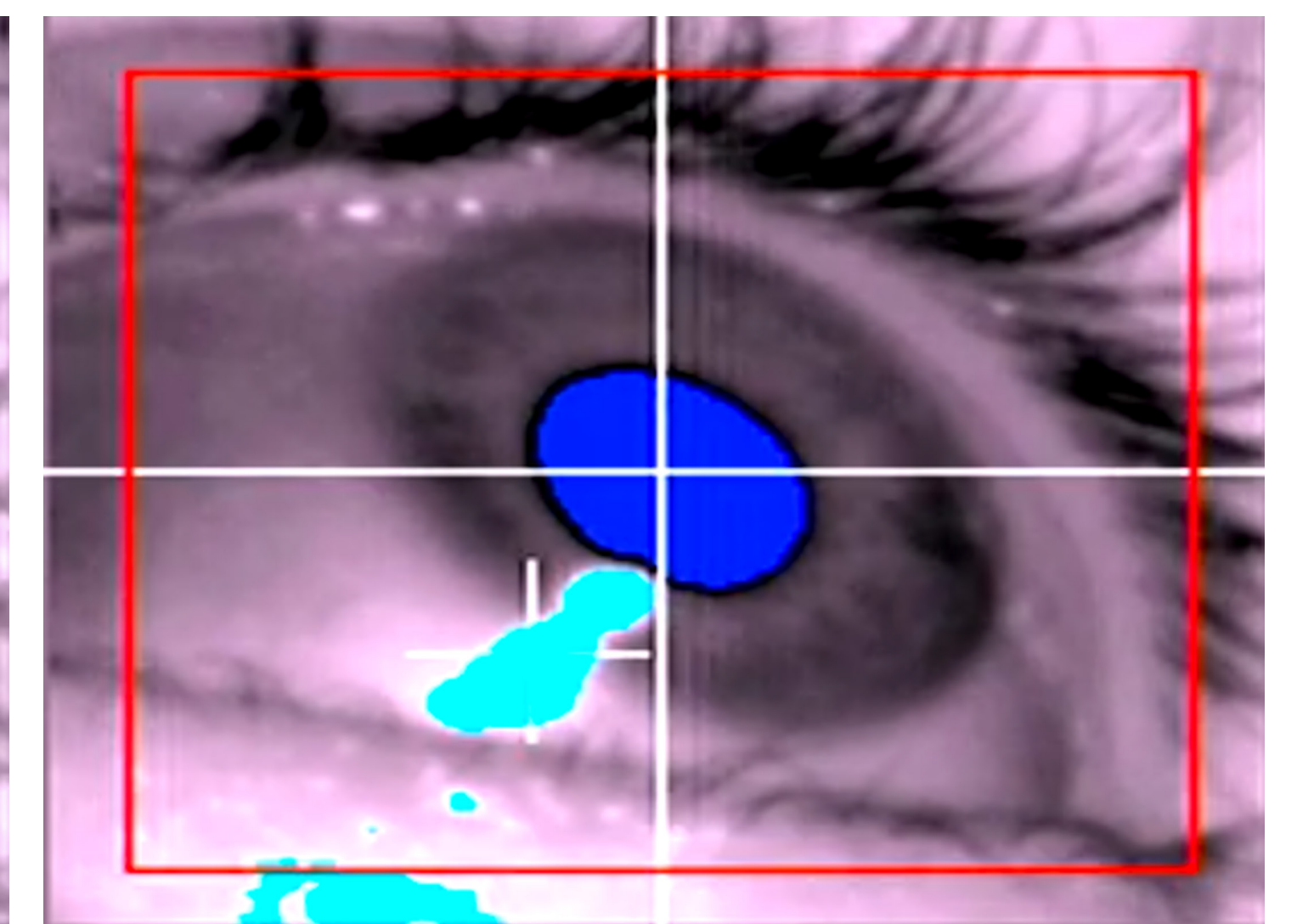
a **Good image**
Clear corneal reflection · pupil fully visible



b **Out of focus**
Lens cannot focus on the eye at close range



c **CR loss**
Corneal reflection lost at extreme gaze angles



d **Contaminated CR**
Primary CR merges with spurious reflections

Method

4 participants · EyeLink 1000 Plus, head-restricted binocular · 9-point calibration · 376 × 301 mm monitor (1280 × 1024) · dark room · Three lens focal lengths tested: **16 mm, 25 mm, 35 mm**.

- **Stock hardware only** — no custom mounts or external IR illuminators
- **≥ 15° visual angle** in each dimension required for the calibrated screen area
- Calibration area proportion reduced to (0.44, 0.415) from default (0.88, 0.83) to avoid CR loss at wide gaze angles
- Distance reduced iteratively until any failure mode appeared, then backed off

Acknowledgments

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Trade-offs

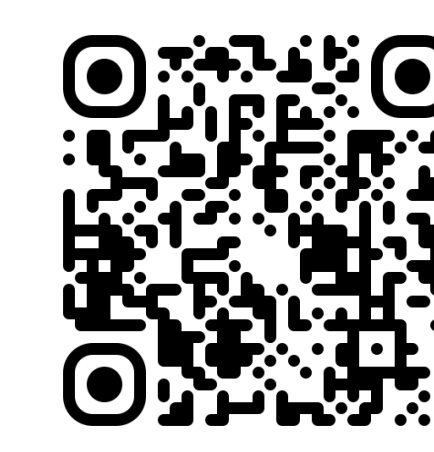
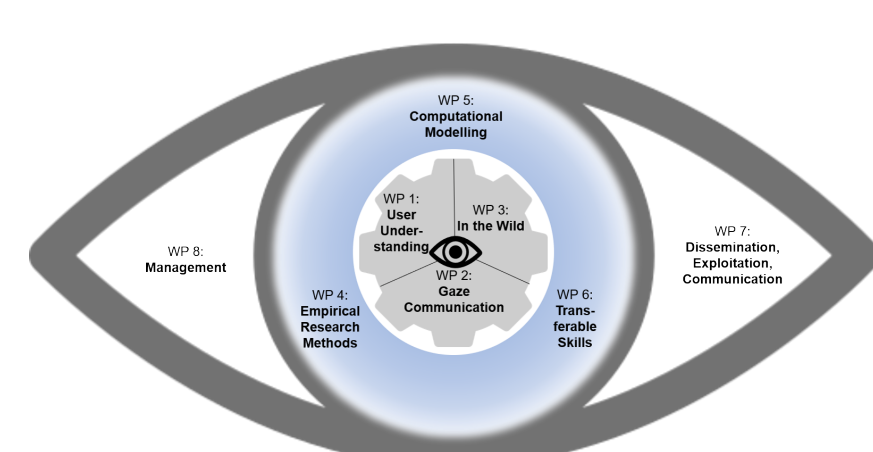
- **Trackable area is reduced** from the default (0.88, 0.83) → (0.44, 0.415) giving a ~165 × 125 mm usable patch for all three lenses.
- **Monitor sits lower** than the eye tracker; the camera physically occludes the bottom of the screen — plan stimulus layout accordingly
- **Reducing the calibration area** requires programmatic control (e.g. PyeLink) or editing INI files on the Host PC

Takeaway

You can get the participant's eye to ~33 cm from the screen with stock EyeLink hardware at sub-0.30° accuracy, at the cost of a smaller usable stimulus area.



Funded by the European Union



Data, code and more into



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