

# Color Uniformity Analysis Report

Report Generated: 2025-11-10 15:33:50  
Generated By: Olufemi Balogun  
Company: Photonics QC Lab

## Measurement Information

Parameter	Value
Device Serial	WAVEGUIDE-DEFECT-001
Operator	Olufemi Balogun
Instrument	Minolta CS-2000
Instrument Serial	Cs2000-12345
Calibration Date	2025-10-15
Temperature	23.5 °C
Humidity	45.0 %
Ambient Light	0.3 lux

## QC Test Results

Overall Result: FAIL

### Uniformity Metrics

Metric	Value	Specification	Status
Mean $\Delta E^*00$	1.87	< 3.0	✓
Max $\Delta E^*00$	10.79	< 5.0	✗
Std Dev $\Delta E^*00$	2.09	< 2.0	✗
Median $\Delta E^*00$	1.30	-	-

### ***Color Statistics (CIELAB)***

Component	Mean	Std Dev	Min	Max
L* (Lightness)	100.9	2.6	89.2	104.2
a* (Red-Green)	-0.02	0.16	0.00	0.00
b* (Yellow-Blue)	-0.45	0.26	0.00	0.00

### ***Chromaticity Uniformity (CIE 1931 xy)***

Metric	Value	Specification	Status
Mean xy Deviation	0.0011	< 0.01	✓
Max xy Deviation	0.0024	< 0.01	✓

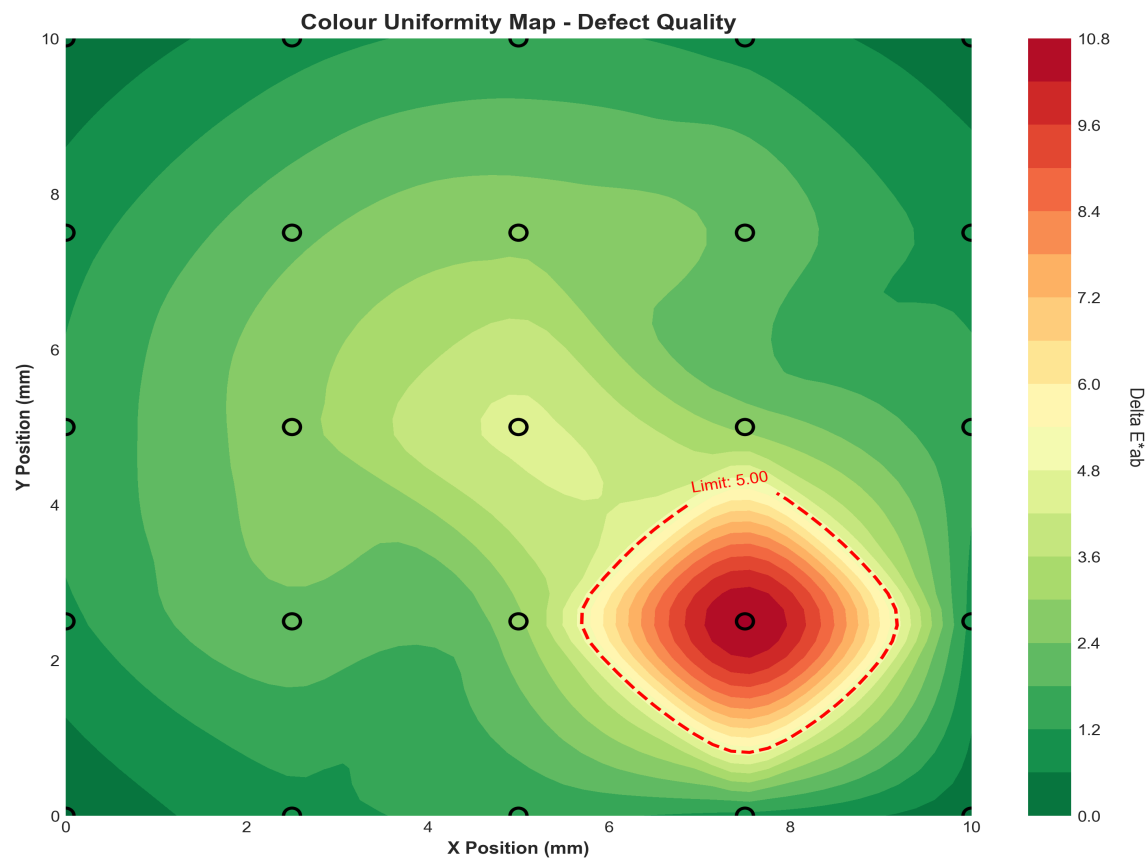
**Worst Position:** (7.5, 2.5) mm with  $\Delta E = 10.79$

### ***Failures***

- Max deltaE (10.79) at position [7.5 2.5] exceeds limit (5.00)
- DeltaE std deviation (2.09) exceeds limit (2.00)

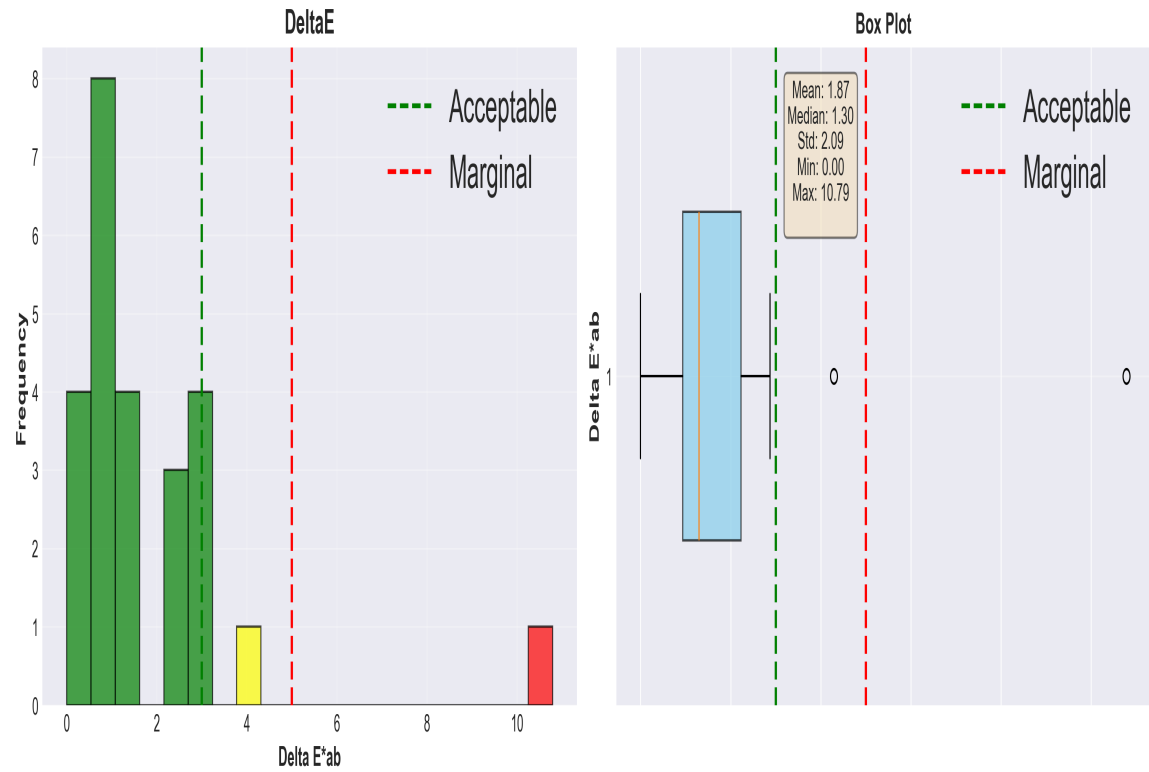
# Uniformity Visualizations

## Uniformity Heatmap

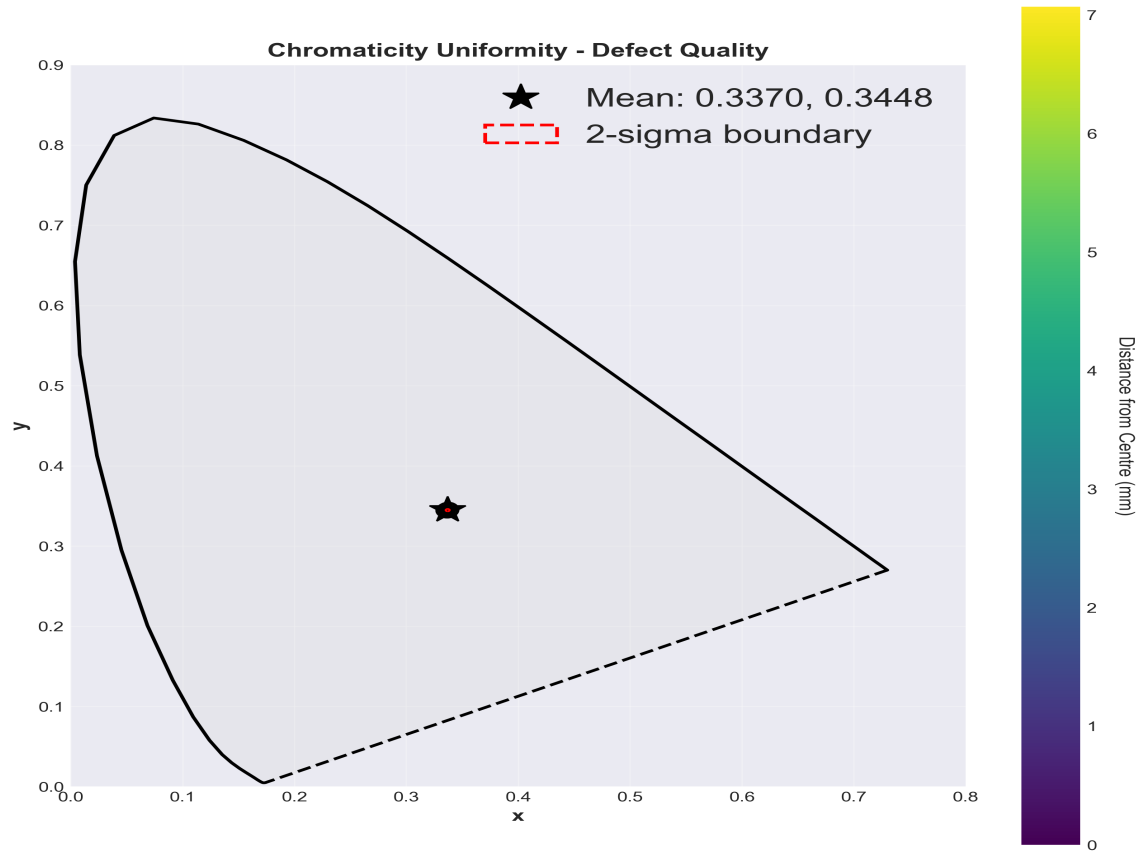


## $\Delta E$ Distribution

DeltaE Distribution - Defect Quality



Chromaticity Diagram



## Notes

Simulated defect quality waveguide for testing

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