

# Color Uniformity Analysis Report

Report Generated: 2025-11-07 16:52:45

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 ΔE*00	1.18	< 3.0	✓
Max ΔE*00	6.49	< 5.0	✗
Std Dev ΔE*00	1.24	< 2.0	✓
Median ΔE*00	0.82	-	-

### **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	✓

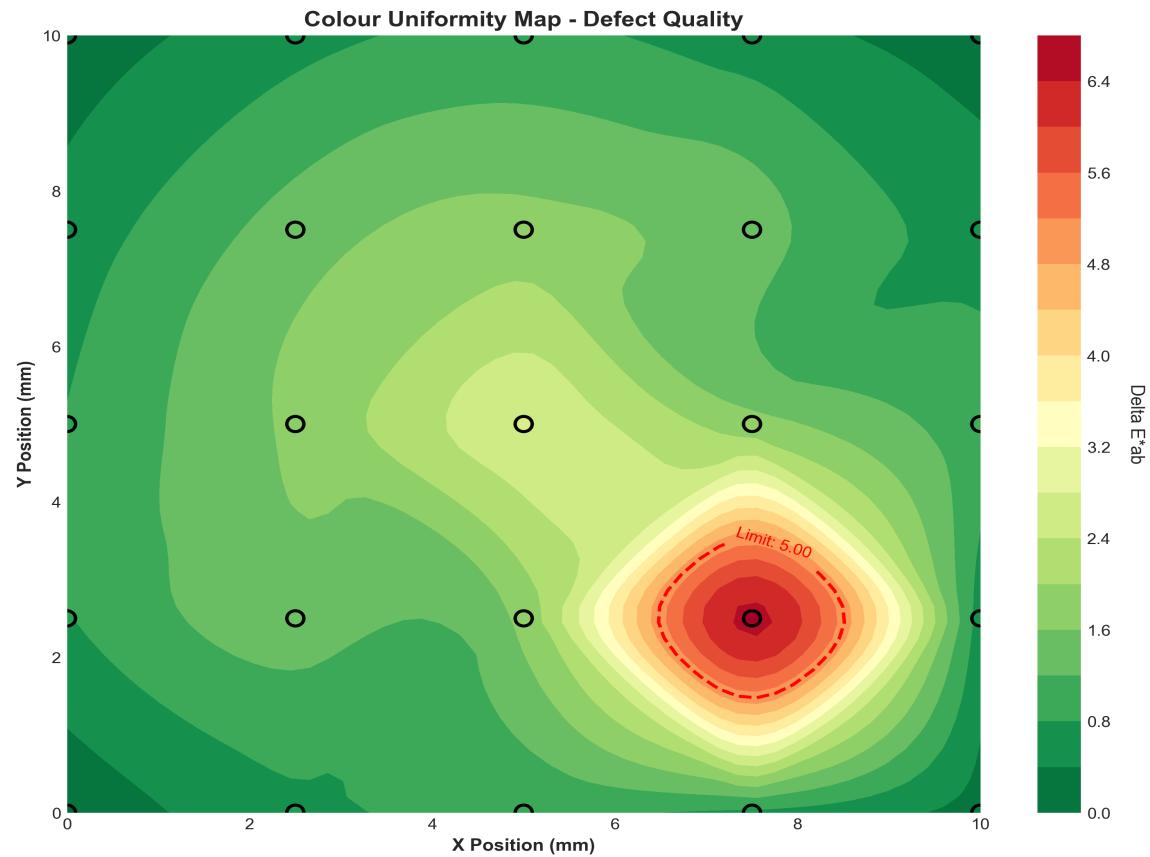
**Worst Position:** (7.5, 2.5) mm with  $\Delta E = 6.49$

### **Failures**

- Max deltaE (6.49) at position [7.5 2.5] exceeds limit (5.00)

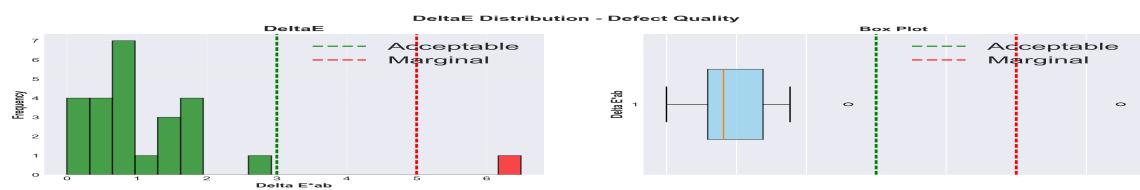
## Uniformity Visualizations

### Uniformity Heatmap

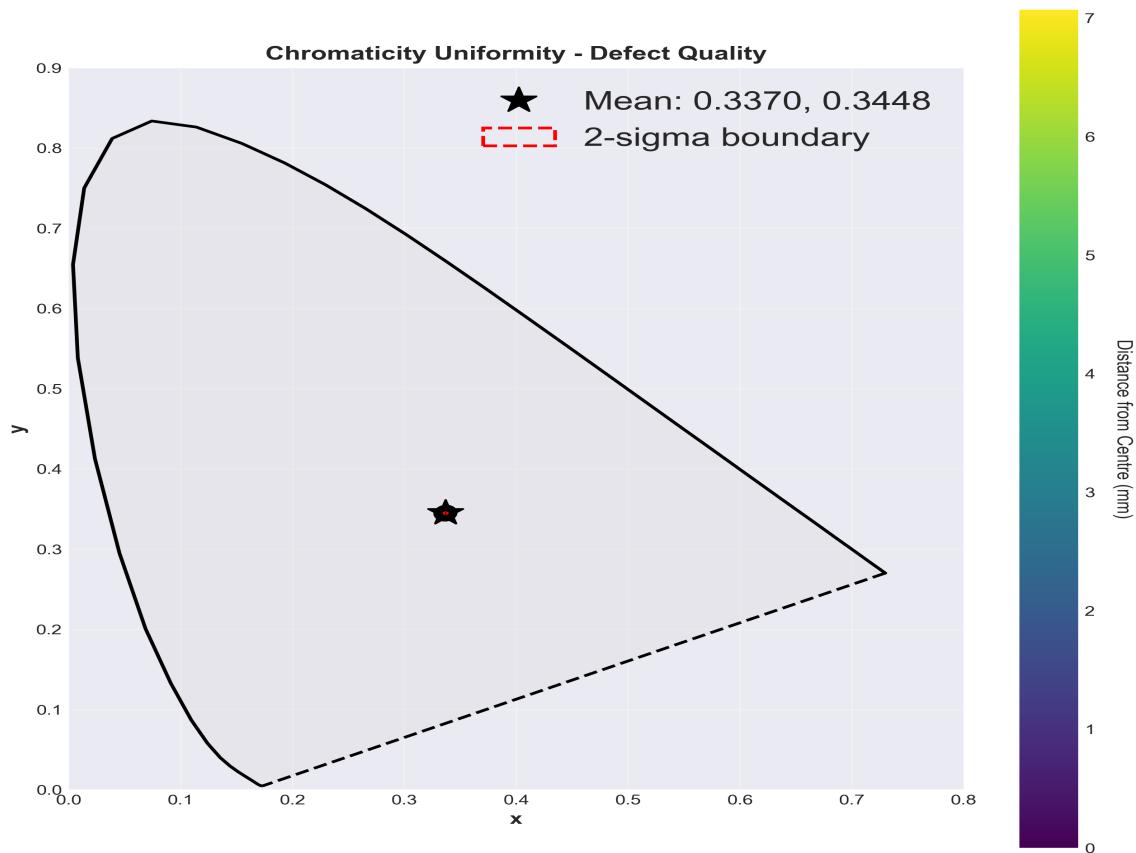


### $\Delta E$ Distribution

Mean: 0.38  
Median: 0.62  
SD: 0.49  
Min: 0.00  
Max: 0.49



## Chromaticity Diagram



## Notes

Simulated defect quality waveguide for testing

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