

Phase 2 Batch 1 Elevated Temperature Life Testing - Lumen Maintenance Final Results 10/1/07

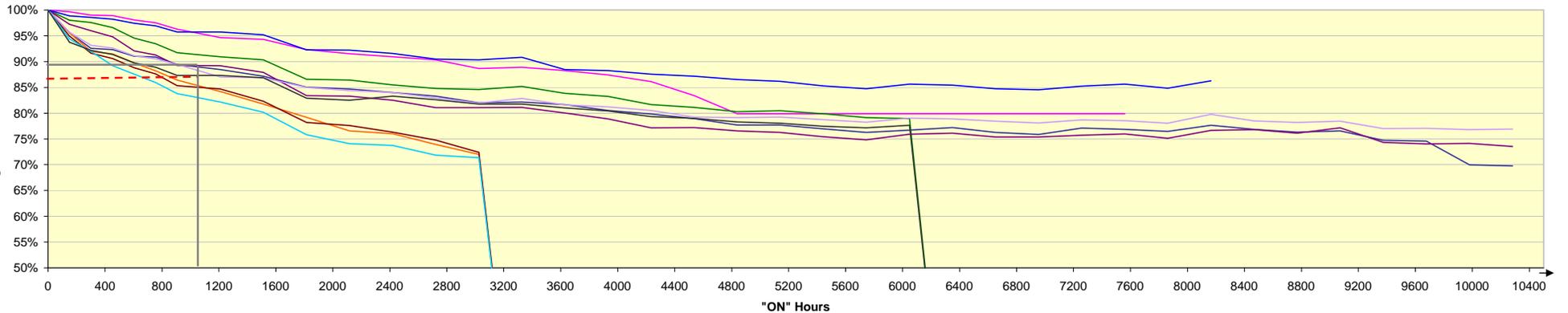
Average Lumen Maintenance

Lamp Model	Rated Life ²	"ON" Hrs																			
		0.0	151.2	302.4	453.6	604.8	756.0	907.2	1000.0 ¹	1209.6	1512.0	1814.4	1814.4	2116.8	2419.2	2721.6	3024.0	3326.4	3628.8	3931.2	4233.6
Model 1	10000	100.0%	95.6%	92.6%	92.3%	91.0%	90.9%	89.5%	89.1%	88.4%	87.1%	85.0%	85.0%	84.7%	84.0%	83.3%	82.0%	82.2%	81.7%	80.5%	79.8% ³
Model 2	8000	100.0%	99.7%	99.0%	98.9%	98.1%	97.5%	96.3%	95.8%	94.6%	94.3%	92.3%	92.3%	91.5%	90.9%	90.4%	88.6%	88.9%	88.2%	87.4%	86.1%
Model 3	6000	100.0%	98.0%	97.6%	96.6%	94.6%	93.5%	91.7%	91.5%	91.0%	90.3%	86.6%	86.6%	86.4%	85.5%	84.8%	84.6%	85.2%	83.9%	83.3%	81.7%
Model 4	8000	100.0%	95.6%	92.0%	91.5%	89.8%	88.2%	86.4%	85.7%	84.2%	81.8%	79.2%	79.2%	76.6%	76.0%	73.9%	72.0%				
Model 5	10000	100.0%	97.2%	96.0%	94.8%	92.1%	91.3%	89.2%	89.2%	89.2%	87.9%	83.4%	83.4%	83.3%	82.5%	81.1%	81.1%	81.1%	80.0%	78.9%	77.1%
Model 6	8000	100.0%	95.0%	91.6%	90.6%	88.8%	87.6%	85.3%	85.1%	84.7%	82.3%	78.2%	78.2%	77.6%	76.3%	74.8%	72.4%				
Model 7	10000	100.0%	95.7%	93.2%	92.6%	91.1%	90.5%	89.4%	88.7%	87.0%	86.8%	85.0%	85.0%	84.4%	84.0%	82.9%	82.0%	82.8%	81.6%	81.2%	80.5%
Model 8	8000	100.0%	98.9%	98.6%	98.2%	97.4%	96.9%	95.7%	95.7%	95.7%	95.2%	92.2%	92.2%	92.2%	91.6%	90.5%	90.3%	90.8%	88.5%	88.2%	87.6%
Model 9	8000	100.0%	94.4%	92.0%	89.2%	87.6%	85.9%	83.8%	83.3%	82.2%	80.2%	75.8%	75.8%	74.1%	73.7%	71.8%	71.4%				
Model 10	6000	100.0%	93.8%	92.2%	91.4%	89.7%	88.9%	87.3%	87.3%	87.3%	86.9%	82.9%	82.9%	82.5%	83.3%	82.6%	81.8%	81.8%	81.0%	80.4%	79.3%

Lamp Model	"ON Hrs"																				
	4536.0	4838.4	5140.8	5443.2	5745.6	6048.0	6350.4	6652.8	6955.2	7257.6	7560.0	7862.4	8164.8	8467.2	8769.6	9072.0	9374.4	9676.8	9979.2	10281.6	10584.0
Model 1	78.9%	77.7%	77.7%	77.0%	76.3%	76.7%	77.2%	76.3%	75.9%	77.1%	76.9%	76.5%	77.7%	76.9%	76.3%	76.6%	74.8%	74.6%	70.0%	69.7%	
Model 2	83.4%	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%										
Model 3	81.1%	80.3%	80.5%	79.9%	79.1%	78.9%															
Model 4																					
Model 5	77.2%	76.5%	76.3%	75.4%	74.8%	75.9%	76.1%	75.4%	75.4%	75.7%	76.0%	75.1%	76.7%	76.8%	76.1%	77.1%	74.3%	74.0%	74.2%	73.6%	
Model 6																					
Model 7	79.2%	79.1%	79.2%	78.7%	78.2%	79.0%	78.9%	78.4%	78.1%	78.7%	78.6%	78.1%	79.8%	78.5%	78.2%	78.5%	77.0%	77.1%	76.8%	76.9%	
Model 8	87.2%	86.5%	86.2%	85.3%	84.7%	85.6%	85.4%	84.7%	84.5%	85.2%	85.6%	84.8%	86.3%								
Model 9																					
Model 10	79.0%	78.3%	78.0%	77.5%	77.2%	77.7%															

- 1,000 Hour Lumen Maintenance - ENERGY STAR® requires that average lumen output measurement of the 10 lamps tested must be greater than 90% of initial (100 hour) lumen output at 1,000 hours (measurement error of 3%). Models in **red** have failed the test.
- Lamp Model - 10 samples per lamp model undergo testing. Percentage shown in table is the average for the model at a specific number of "on" hours.
- 40% Rated Life Lumen Maintenance - ENERGY STAR® requires that the average of 10 samples tested must be greater than 80% of initial (100 hour) rating at 40% of model's rated life (measurement error of 3%). Readings highlighted in blue indicate the model reached 40% of rated life.
- Readings highlighted in grey indicate that the model was removed from testing.
- Readings highlighted in **green** indicate that the model has successfully completed ETLT.

Average Lumen Maintenance



The testing apparatus operates the lamps in an automated cycle of 3 hours "on," 20 minutes "off," for the test duration. Lamps are tested at an ambient temperature of 55°C. Light intensity for each lamp is measured every 2 weeks throughout the ETLT process to evaluate lumen depreciation over time.

