TM-21 Inputs

LM-80 Test Inputs

Instructions

Yellow fields are completed by the user. Fields not used should be left blank. Cyan fields are calculated based on user entries.

First, enter a description of the LED light source tested. Then complete the fields labeled "LM-80 Testing Details". Test duration must be at least 6,000 hours. If only one case temperature data set is to be used (no interpolation), complete only "Tested case temperature 1". For only two case temperature data sets, complete 1 and 2.

Next, further to the right, in the corresponding box(es) for each tested case temperature, enter the test data along with the time (in hours) at which each measurement was taken. Data entered must be normalized then averaged measured data (per TM-21 sections 5.2.1 and 5.2.2).

Enter drive current, *in-situ* temperature data and the percentage of initial lumens to project to in the fields labeled "*In-Situ* Inputs".

Results can be tailored to estimate lumen maintenance at a specific time by entering a value (t) in the yellow field.

A complete TM-21 report will

Description of LED Light Source Tested (manufacturer, model, catalog number)

Model:XPEBBL-xx-xxxx-xxxxx,manufacturer by Cree

LM-80 Testing Details

Total number of units tested per case temperature	20
Number of failures:	0
Number of units measured:	20
Test duration (hours):	8568
Tested drive current (mA):	1000
Tested case temperature 1 (T_c, ºC):	85
Tested case temperature 2 (T_c, ºC):	
Tested case temperature 3 (T_c, ºC):	

Test Data for 85ºC Case Temperature / Tested Case Temperature 2 / Tested Case Temperature 3

Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)
0	100.00%	0	0.00%	0	0.00%
168	99.71%	0	0.00%	0	0.00%
1008	99.21%	0	0.00%	0	0.00%
1512	99.40%	0	0.00%	0	0.00%
2016	99.03%	0	0.00%	0	0.00%
2520	98.95%	0	0.00%	0	0.00%
3024	98.69%	0	0.00%	0	0.00%
3528	98.47%	0	0.00%	0	0.00%
4032	98.11%	0	0.00%	0	0.00%
4536	98.00%				
5040	97.85%				
5544	97.48%				
6048	97.60%				
6552	98.29%				
7056	97.96%				
7560	97.95%				
8064	97.80%				
8568	97.73%				

In-Situ Inputs

Drive current for each LED package/array/module (mA):	700
In-situ case temperature (T_c, ºC):	58.4
Percentage of initial lumens to project to (e.g. for L_{70}, enter 70):	70

Results

Time (t) at which to estimate lumen maintenance (hours):	12,000
Lumen maintenance at time (t) (%):	97.73%
Calculated L70 (hours):	1,254,000
Reported L70 (hours):	>51000

TM-21 Report

Table 1: Report at each LM-80 Test Condition

Description of LED Light Source Tested (manufacturer, model, catalog number)	Model:XPEBBL-xx-xxxx-xxxxx,manufacturer by Cree				
Test Condition 1 - 85ºC Case Temp					
Sample size	20	Sample size	-	Sample size	-
Number of failures	0	Number of failures	-	Number of failures	-
DUT drive current used in the test (mA)	1000	DUT drive current used in the test (mA)	-	DUT drive current used in the test (mA)	-
Test duration (hours)	8,568	Test duration (hours)	-	Test duration (hours)	-
Test duration used for projection (hour to hour)	4,032 - 8,568	Test duration used for projection (hour to hour)	-	Test duration used for projection (hour to hour)	-
Tested case temperature (ºC)	85	Tested case temperature (ºC)	-	Tested case temperature (ºC)	-
α	2.686E-07	α	-	α	-
B	0.980	B	-	B	-
Calculated L70(9k) (hours)	1,254,000	Calculated L70(9k) (hours)	-	Calculated L70(9k) (hours)	-
Reported L70(9k) (hours)	>51000	Reported L70(9k) (hours)	-	Reported L70(9k) (hours)	-

Table 2: Interpolation Report (projection based on *in-situ* temperature entered)

$T_{s,1}$ (ºC)	85.00
$T_{s,1}$ (K)	358.15
α_1	2.686E-07
B_1	0.980
$T_{s,2}$ (ºC)	-
$T_{s,2}$ (K)	-
α_2	-
B_2	-
E_a/k_b	-
A	-
B_0	0.980
$T_{s,i}$ (ºC)	58.40
$T_{s,i}$ (K)	331.55
α_i	2.686E-07
Projected L70(9k) at 58.4ºC	1,254,000
Reported L70(9k) at 58.4ºC (hours)	>51000

Report Generated By: Bowen Pang	Notes: CREE
Company: DIMON Technoloy Limted	
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