





# ANSI/IES LM-80-15

## 10000 Hours Measurement and Test Report

<b>Applicant's name</b> ..... :	SHENZHEN JUFEI OPTOELECTRONICS CO.,LTD.
Address..... :	No.4 E Ling Industrial Park, E Gong Ling Community, Pinghu Subdistrict, Longgang District, Shenzhen ,China
Brand Name .....	JUFEI
<b>Report No.</b> .....	BTR66.181.18.0010.18
Tested by (printed name and signature) .....	David Zhang
Title..... :	<b>Test Engineer</b> <span style="float: right;"></span>
Approved by (printed name and signature) .....	Steven Huo
Title..... :	<b>Approved Signatory</b> <span style="float: right;"></span>
<b>Testing Laboratory Name</b> .....	BEST Test Service Shenzhen Co., Ltd.
Address .....	1 <sup>st</sup> Floor, 1 <sup>st</sup> Building, Weitai Industrial Park, Yingrenshi, Shiyan, Baoan, Shenzhen, China
Accreditation .....	Tel:+86-755-28236006, Email: service@bestcert.cn DLC/Lighting Facts/UL/ETL/ELI/CEC/EPA/DOE NVLAP Testing Lab Code: 200770-0
<b>Test specification</b>	
Standard .....	ANSI/IES LM-80-15
Test procedure .....	ANSI/IES LM-80-15 Test Procedure
Non-standard test method .....	No
<b>Deviations</b> .....	<b>N/A</b>
<b>Test Report Form No.</b>	BEST_ ANSI/IES LM-80-15
TRF originator..... :	BEST Test Service Shenzhen Co., Ltd. Mr Tseng
Master TRF .....	BEST_ ANSI/IES LM-80-15.doc

Note:

The laboratory has not been responsible for the sampling stage (e.g. the sample has been provided by the customer), the results relate only to the items tested.

This report is not valid as a BEST Test Report unless signed by an approved BEST Test Service Shenzhen Co., Ltd. This report shall not be reproduced except in full without approval of BEST TEST SERVICE SHENZHEN CO., LTD can provide assurance that parts of a report are not taken out of context. The test report only allows to be revised within the retention period unless further standard or the requirement was noticed. This report is for the exclusive use of BEST's Client and is provided pursuant to the agreement between BEST and its Client. BEST's responsibility and Liability are limited to the terms and conditions of the agreement. BEST assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the BEST name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by BEST. The observations and test results in this report are relevant only to the sample tested. This report by itself does not cover that the material, product, of service is or has ever been under a BEST certification program. National Voluntary Laboratory Accreditation Program (NVLAP) has accredited this laboratory under ISO17025: 2005 for specific laboratory activities as listed in the NVLAP directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation. This report must not be used by the client to claim product endorsement by NVLAP, NIST or any agency of the U.S. Government.

<b>Administrative Information</b>	
Test subcomponent series:	LED
Test subcomponent model number:	01.JT.AJ2835
Report issue date:	Aug 13, 2018
Report revision date(if applicable):	Jan 25, 2019
The date of sampling	Dec 02, 2017
The date of receipt of the test sample / requirement / item(s)	Dec 02, 2017
Testing start date:	Dec 02, 2017
Testing completion date:	Jan 24, 2019
DUT Sampling method:	Provided by the customer
<b>DUT Identification</b>	
DUT manufacturer's name:	SHENZHEN JUFEI OPTOELECTRONICS CO.,LTD.
DUT Identification, e.g., model number:	01.JT.AJ2835
Description of DUT, including if the DUT is an LED package or module:	LED Package
<b>DUT Characteristics</b>	
Total input power(W):	0.9W
Average current density per LED die(mA/mm <sup>2</sup> ):	N/A
Average Power density per LED die(W/mm <sup>2</sup> ):	N/A
Representative CRI(Ra) of the tested sample set: (Indicate whether the reported value is the mean or median value of the sample set, or per unit)	80
Minimum die edge to die edge spacing	N/A
Note: testing was conducted in accordance with the testing method outlined in ANSI/IES LM-80-15.	

TABLE OF CONTENTS

**1 – GENERAL INFORMATION.....4**  
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....4  
1.2 OBJECTIVE .....5  
1.3 TEST FACILITY DESCRIPTION .....5  
1.4 TEST EQUIPMENT LIST .....5

**2 –TEST RESULT .....6**

**3 – TEST METHOD.....7**

**4 – DATA SET 1: 55°C; 100MA .....8**

**5 – DATA SET 2: 85°C; 100MA .....12**

**6 – DATA SET 3: 105°C; 100MA .....16**

**7 – SUMMARY .....20**

**8 – DIAGRAM AND TEMPERATURE MEASURE POINT (TMP).....23**

**9 – EUT PHOTOS.....24**



## 1 – GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

<b>Applicant</b>	:	SHENZHEN JUFEI OPTOELECTRONICS CO.,LTD.
<b>Model Name</b>	:	LED
<b>Test Model Number</b>	:	01.JT.AJ2835
<b>Target CCT</b>	:	2700K
<b>Number of LED Light Source tested</b>	:	See tables.
<b>Description of auxiliary Equipment</b>	:	Labsphere 50cm 2II Integrating Sphere Everfine Spectrometer Keithley 2420 Sourcemeter ESPEC PH301 Temperature Chamber 3 pcs
<b>Operating Cycle</b>	:	Constant current.
<b>Ambient Conditions</b>	:	LED packages are operated in environmental control chambers. The temperature of the ambient air around the LED packages is actively controlled by air flowing through the chamber. T <sub>A</sub> : See tables; RH : < 45%; Air flow : 300 CFM
<b>Case temperature (test point temperature)</b>	:	See Section .
<b>Drive current of the LED light source during lifetime test</b>	:	See tables.
<b>Initial luminous flux and forward voltage at photometric measurement current</b>	:	See tables.
<b>Lumen maintenance data for each individual LED light source along with median value, standard deviation, minimum and maximum lumen maintenance value for all of the LED Light sources</b>	:	See tables.
<b>Observation of LED light source failures including the failure conditions and time of failure.</b>	:	See tables.
<b>LED light source monitoring interval</b>	:	The LED light sources are inspected at regular intervals (12 hours) throughout the 10000 hours test.
<b>Photometric measurement uncertainty</b>	:	+/- 3.1% on flux measurements for LM- 80 testing.
<b>Chromaticity shift reported over the Measurement time</b>	:	See tables.
<b>Stabilization Time</b>	:	0.75 hours
<b>LED Light Source Test interval</b>	:	At regular intervals (1000 hours) throughout the 10000 hours test.
<b>The condition of the item</b>	:	N/A

## 1.2 Objective

The following test report is prepared on behalf of SHENZHEN JUFEI OPTOELECTRONICS CO.,LTD. in accordance with ANSI/IES LM-80-15, used the following American National Standards or illumination Engineering Society of North America test guides:

Measurement of LEDs (2nd ed.), CIE 127:2007; IESNA Testing Procedures Committee. IESNA LM-79-2008 Approved Method for the Electrical and Photometric Measurements of LED Light Sources, New York: Illuminating Engineering Society of North America, 2008.

ASSIST Recommends: LED Life Testing. Vol. 1-6, 2005. Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY, 2005.

ANSI/IESNA Testing Procedures Committee, IESNA RP-16-07, Nomenclature and Definitions for Illuminating Engineering. See also Addendum A on solid-state lighting (Document is now continuously updated)

IESNA Testing Procedures Committee, IESNA LM-40-01, Approved Method for Life Performance Testing of Fluorescent Lamps, New York: Illuminating Engineering Society of North America, 2001.

## 1.3 Test Facility Description

The Energy Efficiency Lab used by BEST to collect energy efficiency measurement data is located in 1st Floor, 1st Building, Weitai Industrial Park, Yingrenshi, Shiyan, Baoan, Shenzhen, China. BEST Test Service Shenzhen Co., Ltd is a EPA recognized lab for lighting products, BEST is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200770-0). BEST Test Service Shenzhen Co., Ltd is also an ELI accredited lab for lighting products (ELI Certificate No. ELI-L04-2010) and UL accredited lab for lighting products

## 1.4 Test Equipment List

Apparatus List	Device	Cal. Date	Cal Due Date
1	Integral Sphere+ Spectroradiometer	Calibrated before Test	
2	Standard Light Source	Mar 10, 2018	Mar 09, 2019
3	Source Meter	Oct 18, 2018	Oct 17, 2019
4	Temperature Chamber	Sept 17, 2018	Sept 16, 2019
5	Multi Channel LED Aging Source	Sept 17, 2018	Sept 16, 2019
6	6 1/2 Digital Multimeter	Mar 28, 2018	Mar 27, 2019
7	Temperature Controller	Oct 18, 2018	Oct 17, 2019
8	Second Meter	Oct 18, 2018	Oct 17, 2019

**Statement of Traceability:** BEST Test Service Shenzhen Co., Ltd. certifies that all calibration has been performed using suitable standards traceable to the NIM China.

## 2 –Test Result

Data Set	Case Temperature(Ts) °C	Ambient Temperature(Ta) °C	Drive Current(mA)	Average Lumen Maintenance at 10,000 hours	Average Chromaticity Shift ( $\Delta u'v'$ ) at 10,000 hours	Reported TM-21 L70 Lifetime	Reported TM-21 L80 Lifetime	Reported TM-21 L90 Lifetime
1	54.8	54.3	100	98.15%	0.0043	>60000H	>60000H	53000H
2	85.0	84.9	100	97.26%	0.0048	>60000H	>60000H	38000H
3	105.3	104.9	100	96.69%	0.0055	>60000H	>60000H	31000H



## 3 – Test Method

---

### 3.1 Photometric and Electrical Measurement

Total light output (luminous flux) for the  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ambient temperature conditions is measured using a Labsphere 50cm 2II geometry integrating sphere. Temperature is controlled and measured at manufacture defined TMP inside the sphere. Spectral radiant flux measurements are made using Everfine HASS2000 to the detector port of the integrating sphere. Each LED package is operated at rated drive current (CC Mode). Each package should be stable before measurements are made. The determining method of stable is as follows:

Step 1 Take 3 measurements of the lamp light output at 15 minute interval (total time=30mintues.)This time period is in addition to the recommended pre-burning time.

Step 2 Calculate the percent difference between the maximum measured value and the minimum measured value for the three consecutive measurements.

Step 3 if the value calculated in Step 2 does not exceed 0.5 percent, the lamp is considered stable.

Luminous flux, chromaticity coordinates, correlated color temperature and color rendering index for each lamp are calculated from the spectral radiant flux measurements taken at 2 nm intervals over the range 380 to 780 nm. The calibration of the sphere photometer-spectrometer system is traceable to the NIST USA. The EUT fed under CC mode at rated input by KEITHLEY 2420 power source.

The total uncertainty of the light output measurements is estimated, at the 95% confidence level, not to exceed  $\pm 1.6\%$  over the wavelength range 350-1050 nm.

### 3.2 Season the LED Package from 0 hours to 10000 hours

Three ESPEC Temperature Chambers are using for Season, and the temperature is set to  $55^{\circ}\text{C}$ ,  $85^{\circ}\text{C}$ ,  $105^{\circ}\text{C}$ , the airflow is minimum to keep the uniformity of temperature.LED package are operated steady state (no cycling) for a period of 10000 hours, checked the lumen flux and Chromaticity Shift every 1000 hours. The samples are inspected at regular intervals (12 hours) throughout the 10000hours. The time and date of failure of each lamp is recorded. The actual elapsed time for each light package is in hour.



**4 – Data Set 1: 55°C; 100mA**

Description of Light Sources tested	:	01..JT.AJ2835
Case Temperature	:	54.8°C
Ambient Temperature	:	54.3°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

INITIAL DATA										
Sample No.	Ref.Voltage (V)	Forward Current (mA)	Total input power (W)	Luminous Flux (Lumens)	CCT (K)	x (CIE 1931)	y (CIE 1931)	u' (CIE 1976)	v' (CIE 1976)	CRI (Ra)
L1	9.18	100	0.92	121.83	2774	0.4572	0.4152	0.2587	0.5287	82.7
L2	9.16	100	0.92	126.56	2791	0.4579	0.4187	0.2576	0.5301	82.5
L3	9.20	100	0.92	128.36	2798	0.4591	0.4219	0.2570	0.5315	82.1
L4	9.18	100	0.92	127.62	2835	0.4535	0.4162	0.2560	0.5285	83.0
L5	9.15	100	0.92	126.42	2792	0.4578	0.4187	0.2576	0.5301	82.5
L6	9.18	100	0.92	127.69	2855	0.4504	0.4127	0.2555	0.5267	83.2
L7	9.18	100	0.92	121.76	2775	0.4571	0.4151	0.2587	0.5286	82.7
L8	9.18	100	0.92	127.25	2745	0.4621	0.4206	0.2595	0.5314	82.4
L9	9.19	100	0.92	126.06	2783	0.4575	0.4170	0.2582	0.5294	82.8
L10	9.20	100	0.92	127.21	2843	0.4535	0.4172	0.2555	0.5289	82.8
L11	9.15	100	0.91	124.52	2776	0.4587	0.4183	0.2583	0.5301	82.6
L12	9.15	100	0.92	126.13	2835	0.4541	0.4175	0.2558	0.5291	82.8
L13	9.18	100	0.92	127.59	2804	0.4574	0.4194	0.2570	0.5303	82.3
L14	9.23	100	0.92	126.39	2786	0.4578	0.4180	0.2579	0.5298	82.6
L15	9.18	100	0.92	127.46	2831	0.4547	0.4180	0.2559	0.5294	82.8
L16	9.16	100	0.92	126.54	2852	0.4521	0.4156	0.2553	0.5281	82.9
L17	9.14	100	0.91	128.13	2877	0.4521	0.4190	0.2539	0.5294	82.6
L18	9.30	100	0.93	128.56	2829	0.4579	0.4239	0.2555	0.5320	82.2
L19	9.15	100	0.91	128.78	2879	0.4520	0.4190	0.2538	0.5294	82.6
L20	9.22	100	0.92	128.52	2832	0.4578	0.4239	0.2553	0.5320	82.2
L21	9.19	100	0.92	127.27	2834	0.4540	0.4171	0.2559	0.5289	82.8
L22	9.21	100	0.92	128.76	2876	0.4512	0.4171	0.2541	0.5285	82.8
L23	9.17	100	0.92	128.16	2796	0.4582	0.4200	0.2573	0.5306	82.4
L24	9.21	100	0.92	127.55	2807	0.4567	0.4187	0.2569	0.5299	82.7
L25	9.19	100	0.92	128.39	2837	0.4554	0.4200	0.2555	0.5302	82.5
AV	9.18	100.0	0.92	126.94	2818	0.4558	0.4184	0.2565	0.5297	82.6
MIN	9.14	100.0	0.91	121.76	2745	0.4504	0.4127	0.2538	0.5267	82.1
MAX	9.30	100.0	0.93	128.78	2879	0.4621	0.4239	0.2595	0.5320	83.2
MEDIAN	9.18	100.0	0.92	127.46	2829	0.4571	0.4183	0.2560	0.5294	82.6
STDEV	0.03	0.0	0.00	1.85	36	0.0029	0.0026	0.0016	0.0012	0.3
N	25	25	25	25	25	25	25	25	25	25



Description of Light Sources tested	:	01.JT.AJ2835
Case Temperature	:	54.8°C
Ambient Temperature	:	54.3°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

LUMEN MAINTENANCE											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L1	100.00%	99.76%	99.63%	99.48%	99.32%	99.16%	98.99%	98.81%	98.60%	98.38%	98.15%
L2	100.00%	99.79%	99.66%	99.51%	99.35%	99.19%	99.02%	98.84%	98.63%	98.41%	98.18%
L3	100.00%	99.67%	99.54%	99.39%	99.23%	99.07%	98.90%	98.72%	98.51%	98.29%	98.06%
L4	100.00%	99.84%	99.71%	99.56%	99.40%	99.24%	99.07%	98.89%	98.68%	98.46%	98.23%
L5	100.00%	99.97%	99.84%	99.69%	99.53%	99.37%	99.20%	99.02%	98.81%	98.59%	98.36%
L6	100.00%	99.66%	99.53%	99.38%	99.22%	99.06%	98.89%	98.71%	98.50%	98.28%	98.05%
L7	100.00%	99.76%	99.63%	99.48%	99.32%	99.16%	98.99%	98.81%	98.60%	98.38%	98.15%
L8	100.00%	99.68%	99.55%	99.40%	99.24%	99.08%	98.91%	98.73%	98.52%	98.30%	98.07%
L9	100.00%	99.73%	99.60%	99.45%	99.29%	99.13%	98.96%	98.78%	98.57%	98.35%	98.12%
L10	100.00%	99.79%	99.66%	99.51%	99.35%	99.19%	99.02%	98.84%	98.63%	98.41%	98.18%
L11	100.00%	99.81%	99.68%	99.53%	99.37%	99.21%	99.04%	98.86%	98.65%	98.43%	98.20%
L12	100.00%	99.72%	99.59%	99.44%	99.28%	99.12%	98.95%	98.77%	98.56%	98.34%	98.11%
L13	100.00%	99.82%	99.69%	99.54%	99.38%	99.22%	99.05%	98.87%	98.66%	98.44%	98.21%
L14	100.00%	99.78%	99.65%	99.50%	99.34%	99.18%	99.01%	98.83%	98.62%	98.40%	98.17%
L15	100.00%	99.76%	99.63%	99.48%	99.32%	99.16%	98.99%	98.81%	98.60%	98.38%	98.15%
L16	100.00%	99.64%	99.51%	99.36%	99.20%	99.04%	98.87%	98.69%	98.48%	98.26%	98.03%
L17	100.00%	99.85%	99.72%	99.57%	99.41%	99.25%	99.08%	98.90%	98.69%	98.47%	98.24%
L18	100.00%	99.71%	99.58%	99.43%	99.27%	99.11%	98.94%	98.76%	98.55%	98.33%	98.10%
L19	100.00%	99.67%	99.54%	99.39%	99.23%	99.07%	98.90%	98.72%	98.51%	98.29%	98.06%
L20	100.00%	99.74%	99.61%	99.46%	99.30%	99.14%	98.97%	98.79%	98.58%	98.36%	98.13%
L21	100.00%	99.97%	99.84%	99.69%	99.53%	99.37%	99.20%	99.02%	98.81%	98.59%	98.36%
L22	100.00%	99.66%	99.53%	99.38%	99.22%	99.06%	98.89%	98.71%	98.50%	98.28%	98.05%
L23	100.00%	99.64%	99.51%	99.36%	99.20%	99.04%	98.87%	98.69%	98.48%	98.26%	98.03%
L24	100.00%	99.85%	99.72%	99.57%	99.41%	99.25%	99.08%	98.90%	98.69%	98.47%	98.24%
L25	100.00%	99.81%	99.68%	99.53%	99.37%	99.21%	99.04%	98.86%	98.65%	98.43%	98.20%
AV	100.00%	99.76%	99.63%	99.48%	99.32%	99.16%	98.99%	98.81%	98.60%	98.38%	98.15%
MIN	100.00%	99.64%	99.51%	99.36%	99.20%	99.04%	98.87%	98.69%	98.48%	98.26%	98.03%
MAX	100.00%	99.97%	99.84%	99.69%	99.53%	99.37%	99.20%	99.02%	98.81%	98.59%	98.36%
MEDIAN	100.00%	99.76%	99.63%	99.48%	99.32%	99.16%	98.99%	98.81%	98.60%	98.38%	98.15%
STDEV	0.00%	0.09%	0.09%	0.09%	0.09%	0.09%	0.09%	0.09%	0.09%	0.09%	0.09%
N	25	25	25	25	25	25	25	25	25	25	25

Description of Light Sources tested	:	01.JT.AJ2835
Case Temperature	:	54.8°C
Ambient Temperature	:	54.3°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

$\Delta u'v'$											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L1	0.0000	0.0003	0.0006	0.0010	0.0014	0.0018	0.0023	0.0029	0.0036	0.0044	0.0052
L2	0.0000	0.0003	0.0007	0.0010	0.0015	0.0019	0.0024	0.0029	0.0036	0.0044	0.0051
L3	0.0000	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0019	0.0025	0.0032	0.0039
L4	0.0000	0.0002	0.0004	0.0006	0.0009	0.0012	0.0015	0.0019	0.0025	0.0031	0.0037
L5	0.0000	0.0003	0.0007	0.0010	0.0014	0.0019	0.0023	0.0029	0.0036	0.0043	0.0051
L6	0.0000	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0018	0.0024	0.0030	0.0037
L7	0.0000	0.0003	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014	0.0019	0.0025	0.0030
L8	0.0000	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0018	0.0024	0.0031	0.0037
L9	0.0000	0.0003	0.0005	0.0008	0.0011	0.0015	0.0019	0.0024	0.0030	0.0037	0.0044
L10	0.0000	0.0003	0.0005	0.0008	0.0011	0.0015	0.0019	0.0024	0.0030	0.0037	0.0044
L11	0.0000	0.0004	0.0007	0.0011	0.0015	0.0019	0.0024	0.0030	0.0037	0.0044	0.0052
L12	0.0000	0.0003	0.0005	0.0006	0.0009	0.0011	0.0014	0.0019	0.0025	0.0031	0.0038
L13	0.0000	0.0003	0.0007	0.0010	0.0015	0.0019	0.0024	0.0029	0.0036	0.0044	0.0051
L14	0.0000	0.0004	0.0008	0.0013	0.0018	0.0023	0.0029	0.0035	0.0042	0.0050	0.0058
L15	0.0000	0.0004	0.0006	0.0009	0.0012	0.0015	0.0019	0.0025	0.0031	0.0039	0.0046
L16	0.0000	0.0002	0.0004	0.0007	0.0010	0.0013	0.0017	0.0021	0.0027	0.0033	0.0040
L17	0.0000	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0018	0.0024	0.0030	0.0037
L18	0.0000	0.0003	0.0005	0.0006	0.0009	0.0011	0.0014	0.0019	0.0025	0.0031	0.0038
L19	0.0000	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0013	0.0018	0.0023	0.0029
L20	0.0000	0.0001	0.0003	0.0005	0.0007	0.0010	0.0013	0.0017	0.0023	0.0029	0.0036
L21	0.0000	0.0003	0.0005	0.0008	0.0011	0.0015	0.0019	0.0024	0.0030	0.0037	0.0044
L22	0.0000	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0018	0.0024	0.0031	0.0037
L23	0.0000	0.0003	0.0005	0.0006	0.0009	0.0011	0.0014	0.0019	0.0025	0.0031	0.0038
L24	0.0000	0.0004	0.0007	0.0011	0.0015	0.0019	0.0024	0.0030	0.0037	0.0044	0.0052
L25	0.0000	0.0002	0.0005	0.0008	0.0011	0.0015	0.0019	0.0025	0.0031	0.0038	0.0046
AV	0.0000	0.0003	0.0005	0.0008	0.0011	0.0014	0.0018	0.0023	0.0029	0.0036	0.0043
MIN	0.0000	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0013	0.0018	0.0023	0.0029
MAX	0.0000	0.0004	0.0008	0.0013	0.0018	0.0023	0.0029	0.0035	0.0042	0.0050	0.0058
MEDIAN	0.0000	0.0003	0.0005	0.0007	0.0010	0.0013	0.0017	0.0021	0.0027	0.0033	0.0040
STDEV	0.0000	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0006	0.0007	0.0008
N	25	25	25	25	25	25	25	25	25	25	25

Description of Light Sources tested	:	01.JT.AJ2835
Case Temperature	:	54.8°C
Ambient Temperature	:	54.3°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

Voltage											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L1	9.18	9.18	9.19	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.21
L2	9.16	9.17	9.17	9.18	9.18	9.19	9.19	9.19	9.19	9.19	9.19
L3	9.20	9.21	9.21	9.22	9.22	9.23	9.23	9.23	9.23	9.23	9.24
L4	9.18	9.18	9.19	9.19	9.20	9.21	9.21	9.21	9.21	9.21	9.21
L5	9.15	9.16	9.17	9.17	9.18	9.18	9.18	9.18	9.19	9.19	9.19
L6	9.18	9.19	9.19	9.20	9.21	9.21	9.21	9.21	9.22	9.22	9.22
L7	9.18	9.18	9.19	9.19	9.20	9.20	9.20	9.21	9.21	9.21	9.21
L8	9.18	9.18	9.19	9.19	9.20	9.21	9.21	9.21	9.21	9.21	9.21
L9	9.19	9.19	9.20	9.20	9.21	9.22	9.22	9.22	9.22	9.22	9.22
L10	9.20	9.21	9.21	9.22	9.22	9.23	9.23	9.23	9.23	9.24	9.24
L11	9.15	9.15	9.16	9.16	9.17	9.17	9.17	9.18	9.18	9.18	9.18
L12	9.15	9.16	9.17	9.17	9.18	9.18	9.18	9.18	9.19	9.19	9.19
L13	9.18	9.19	9.19	9.20	9.21	9.21	9.21	9.21	9.22	9.22	9.22
L14	9.23	9.23	9.24	9.24	9.25	9.25	9.26	9.26	9.26	9.26	9.26
L15	9.18	9.19	9.19	9.20	9.21	9.21	9.21	9.21	9.22	9.22	9.22
L16	9.16	9.17	9.17	9.18	9.19	9.19	9.19	9.19	9.20	9.20	9.20
L17	9.14	9.15	9.16	9.16	9.17	9.17	9.17	9.17	9.18	9.18	9.18
L18	9.30	9.30	9.31	9.32	9.32	9.33	9.33	9.33	9.33	9.33	9.33
L19	9.15	9.15	9.16	9.17	9.17	9.18	9.18	9.18	9.18	9.18	9.18
L20	9.22	9.23	9.23	9.24	9.24	9.25	9.25	9.25	9.25	9.26	9.26
L21	9.19	9.19	9.20	9.21	9.21	9.22	9.22	9.22	9.22	9.22	9.22
L22	9.21	9.21	9.22	9.23	9.23	9.24	9.24	9.24	9.24	9.24	9.24
L23	9.17	9.17	9.18	9.18	9.19	9.20	9.20	9.20	9.20	9.20	9.20
L24	9.21	9.21	9.22	9.22	9.23	9.23	9.23	9.24	9.24	9.24	9.24
L25	9.19	9.19	9.20	9.20	9.21	9.22	9.22	9.22	9.22	9.22	9.22
AV	9.18	9.19	9.20	9.20	9.21	9.21	9.21	9.22	9.22	9.22	9.22
MIN	9.14	9.15	9.16	9.16	9.17	9.17	9.17	9.17	9.18	9.18	9.18
MAX	9.30	9.30	9.31	9.32	9.32	9.33	9.33	9.33	9.33	9.33	9.33
MEDIAN	9.18	9.19	9.19	9.20	9.21	9.21	9.21	9.21	9.22	9.22	9.22
STDEV	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
N	25	25	25	25	25	25	25	25	25	25	25

**5 – Data Set 2: 85°C; 100mA**

Description of Light Sources tested	:	01..JT.AJ2835
Case Temperature	:	85.0°C
Ambient Temperature	:	84.9°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

INITIAL DATA										
Sample No.	Ref.Voltage (V)	Forward Current (mA)	Total input power (W)	Luminous Flux (Lumens)	CCT (K)	x (CIE 1931)	y (CIE 1931)	u' (CIE 1976)	v' (CIE 1976)	CRI (Ra)
L26	9.15	100	0.92	127.47	2815	0.4558	0.4180	0.2566	0.5295	82.7
L27	9.16	100	0.92	127.89	2847	0.4537	0.4181	0.2552	0.5293	82.8
L28	9.31	100	0.93	125.32	2884	0.4476	0.4111	0.2544	0.5257	83.3
L29	9.17	100	0.92	127.73	2836	0.4548	0.4188	0.2556	0.5297	82.6
L30	9.19	100	0.92	126.91	2837	0.4530	0.4155	0.2559	0.5282	83.1
L31	9.19	100	0.92	126.72	2828	0.4563	0.4208	0.2558	0.5306	82.4
L32	9.21	100	0.92	125.91	2812	0.4551	0.4162	0.2570	0.5288	82.8
L33	9.16	100	0.92	127.54	2865	0.4510	0.4152	0.2548	0.5278	82.9
L34	9.14	100	0.91	127.37	2833	0.4550	0.4188	0.2558	0.5297	82.5
L35	9.14	100	0.91	126.24	2820	0.4556	0.4181	0.2564	0.5295	82.7
L36	9.16	100	0.92	125.43	2829	0.4525	0.4136	0.2565	0.5274	83.0
L37	9.18	100	0.92	124.40	2836	0.4542	0.4176	0.2558	0.5291	82.7
L38	9.18	100	0.92	126.49	2788	0.4587	0.4199	0.2577	0.5307	82.4
L39	9.19	100	0.92	127.48	2815	0.4572	0.4205	0.2564	0.5307	82.3
L40	9.17	100	0.92	128.13	2861	0.4523	0.4172	0.2548	0.5287	82.7
L41	9.17	100	0.92	127.71	2782	0.4580	0.4178	0.2581	0.5298	82.7
L42	9.18	100	0.92	127.67	2847	0.4534	0.4175	0.2553	0.5290	82.9
L43	9.14	100	0.91	127.00	2856	0.4529	0.4177	0.2549	0.5290	82.8
L44	9.17	100	0.92	128.93	2871	0.4515	0.4171	0.2543	0.5285	82.7
L45	9.21	100	0.92	127.58	2858	0.4523	0.4168	0.2549	0.5286	82.9
L46	9.17	100	0.92	128.98	2824	0.4560	0.4195	0.2561	0.5301	82.5
L47	9.23	100	0.92	127.59	2851	0.4531	0.4175	0.2551	0.5290	82.7
L48	9.17	100	0.92	128.80	2822	0.4561	0.4194	0.2562	0.5301	82.5
L49	9.15	100	0.92	126.54	2833	0.4543	0.4175	0.2559	0.5291	82.8
L50	9.15	100	0.91	126.50	2837	0.4540	0.4175	0.2557	0.5291	82.8
AV	9.18	100.0	0.92	127.13	2835	0.4542	0.4175	0.2558	0.5291	82.7
MIN	9.14	100.0	0.91	124.40	2782	0.4476	0.4111	0.2543	0.5257	82.3
MAX	9.31	100.0	0.93	128.98	2884	0.4587	0.4208	0.2581	0.5307	83.3
MEDIAN	9.17	100.0	0.92	127.47	2836	0.4542	0.4176	0.2558	0.5291	82.7
STDEV	0.04	0.0	0.00	1.12	24	0.0024	0.0021	0.0009	0.0011	0.2
N	25	25	25	25	25	25	25	25	25	25

Description of Light Sources tested	:	01.JT.AJ2835
Case Temperature	:	85.0°C
Ambient Temperature	:	84.9°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

LUMEN MAINTENANCE											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L26	100.00%	99.63%	99.40%	99.16%	98.92%	98.67%	98.42%	98.16%	97.89%	97.62%	97.30%
L27	100.00%	99.61%	99.38%	99.14%	98.90%	98.65%	98.40%	98.14%	97.87%	97.60%	97.28%
L28	100.00%	99.64%	99.40%	99.16%	98.92%	98.68%	98.42%	98.16%	97.89%	97.62%	97.30%
L29	100.00%	99.68%	99.45%	99.21%	98.97%	98.72%	98.47%	98.21%	97.94%	97.67%	97.35%
L30	100.00%	99.66%	99.43%	99.19%	98.95%	98.70%	98.45%	98.19%	97.92%	97.65%	97.33%
L31	100.00%	99.64%	99.41%	99.17%	98.93%	98.68%	98.43%	98.17%	97.90%	97.63%	97.31%
L32	100.00%	99.65%	99.42%	99.18%	98.94%	98.69%	98.44%	98.18%	97.91%	97.64%	97.32%
L33	100.00%	99.67%	99.44%	99.20%	98.96%	98.71%	98.46%	98.20%	97.93%	97.66%	97.34%
L34	100.00%	99.65%	99.42%	99.18%	98.94%	98.69%	98.44%	98.18%	97.91%	97.64%	97.32%
L35	100.00%	99.55%	99.32%	99.08%	98.84%	98.59%	98.34%	98.08%	97.81%	97.54%	97.22%
L36	100.00%	99.58%	99.34%	99.10%	98.86%	98.61%	98.36%	98.10%	97.83%	97.56%	97.24%
L37	100.00%	99.62%	99.38%	99.14%	98.90%	98.65%	98.40%	98.14%	97.87%	97.60%	97.28%
L38	100.00%	99.57%	99.34%	99.10%	98.86%	98.61%	98.36%	98.10%	97.83%	97.56%	97.24%
L39	100.00%	99.59%	99.36%	99.12%	98.88%	98.63%	98.38%	98.12%	97.85%	97.58%	97.26%
L40	100.00%	99.56%	99.33%	99.09%	98.85%	98.60%	98.35%	98.09%	97.82%	97.55%	97.23%
L41	100.00%	99.58%	99.34%	99.10%	98.86%	98.61%	98.36%	98.10%	97.83%	97.56%	97.24%
L42	100.00%	99.56%	99.33%	99.09%	98.85%	98.60%	98.35%	98.09%	97.82%	97.55%	97.23%
L43	100.00%	99.62%	99.39%	99.15%	98.91%	98.66%	98.41%	98.15%	97.88%	97.61%	97.29%
L44	100.00%	99.56%	99.33%	99.09%	98.85%	98.60%	98.35%	98.09%	97.82%	97.55%	97.23%
L45	100.00%	99.15%	98.92%	98.68%	98.44%	98.19%	97.94%	97.68%	97.41%	97.14%	96.82%
L46	100.00%	99.67%	99.44%	99.20%	98.96%	98.71%	98.46%	98.20%	97.93%	97.66%	97.34%
L47	100.00%	99.63%	99.40%	99.16%	98.92%	98.67%	98.42%	98.16%	97.89%	97.62%	97.30%
L48	100.00%	99.59%	99.36%	99.12%	98.88%	98.63%	98.38%	98.12%	97.85%	97.58%	97.26%
L49	100.00%	99.56%	99.33%	99.09%	98.85%	98.60%	98.35%	98.09%	97.82%	97.55%	97.23%
L50	100.00%	99.58%	99.34%	99.10%	98.86%	98.61%	98.36%	98.10%	97.83%	97.56%	97.24%
AV	100.00%	99.59%	99.36%	99.12%	98.88%	98.63%	98.38%	98.12%	97.85%	97.58%	97.26%
MIN	100.00%	99.15%	98.92%	98.68%	98.44%	98.19%	97.94%	97.68%	97.41%	97.14%	96.82%
MAX	100.00%	99.68%	99.45%	99.21%	98.97%	98.72%	98.47%	98.21%	97.94%	97.67%	97.35%
MEDIAN	100.00%	99.61%	99.38%	99.14%	98.90%	98.65%	98.40%	98.14%	97.87%	97.60%	97.28%
STDEV	0.00%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%
N	25	25	25	25	25	25	25	25	25	25	25

Description of Light Sources tested	:	01..JT.AJ2835
Case Temperature	:	85.0°C
Ambient Temperature	:	84.9°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

$\Delta u'v'$											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L26	0.0000	0.0004	0.0008	0.0012	0.0016	0.0021	0.0027	0.0034	0.0041	0.0049	0.0056
L27	0.0000	0.0004	0.0007	0.0011	0.0016	0.0020	0.0026	0.0033	0.0040	0.0047	0.0055
L28	0.0000	0.0002	0.0005	0.0007	0.0010	0.0013	0.0018	0.0023	0.0029	0.0034	0.0040
L29	0.0000	0.0002	0.0004	0.0007	0.0010	0.0013	0.0017	0.0022	0.0028	0.0034	0.0040
L30	0.0000	0.0003	0.0007	0.0011	0.0015	0.0020	0.0026	0.0032	0.0039	0.0047	0.0054
L31	0.0000	0.0003	0.0007	0.0010	0.0014	0.0018	0.0023	0.0030	0.0036	0.0041	0.0047
L32	0.0000	0.0003	0.0007	0.0010	0.0014	0.0018	0.0024	0.0030	0.0037	0.0044	0.0051
L33	0.0000	0.0003	0.0006	0.0009	0.0013	0.0016	0.0021	0.0028	0.0034	0.0040	0.0047
L34	0.0000	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0017	0.0021	0.0026	0.0031
L35	0.0000	0.0004	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022	0.0028	0.0033	0.0039
L36	0.0000	0.0004	0.0009	0.0014	0.0019	0.0024	0.0031	0.0038	0.0046	0.0054	0.0063
L37	0.0000	0.0004	0.0007	0.0011	0.0016	0.0020	0.0026	0.0033	0.0040	0.0047	0.0055
L38	0.0000	0.0004	0.0008	0.0012	0.0016	0.0021	0.0027	0.0034	0.0041	0.0048	0.0056
L39	0.0000	0.0002	0.0005	0.0008	0.0011	0.0014	0.0018	0.0024	0.0030	0.0036	0.0042
L40	0.0000	0.0004	0.0008	0.0012	0.0016	0.0021	0.0027	0.0034	0.0041	0.0048	0.0055
L41	0.0000	0.0002	0.0005	0.0007	0.0010	0.0013	0.0017	0.0023	0.0028	0.0034	0.0040
L42	0.0000	0.0003	0.0005	0.0008	0.0011	0.0014	0.0018	0.0024	0.0029	0.0035	0.0041
L43	0.0000	0.0004	0.0007	0.0010	0.0014	0.0018	0.0023	0.0029	0.0036	0.0042	0.0049
L44	0.0000	0.0002	0.0005	0.0007	0.0010	0.0013	0.0017	0.0023	0.0028	0.0034	0.0040
L45	0.0000	0.0001	0.0003	0.0005	0.0008	0.0011	0.0015	0.0020	0.0026	0.0032	0.0037
L46	0.0000	0.0004	0.0008	0.0012	0.0016	0.0021	0.0027	0.0034	0.0041	0.0049	0.0056
L47	0.0000	0.0001	0.0002	0.0004	0.0005	0.0007	0.0010	0.0014	0.0019	0.0023	0.0028
L48	0.0000	0.0004	0.0008	0.0012	0.0016	0.0021	0.0027	0.0034	0.0041	0.0048	0.0056
L49	0.0000	0.0004	0.0009	0.0014	0.0019	0.0024	0.0031	0.0038	0.0046	0.0054	0.0063
L50	0.0000	0.0003	0.0006	0.0009	0.0013	0.0016	0.0021	0.0028	0.0034	0.0040	0.0047
AV	0.0000	0.0003	0.0006	0.0009	0.0013	0.0017	0.0022	0.0028	0.0034	0.0041	0.0048
MIN	0.0000	0.0001	0.0002	0.0004	0.0005	0.0007	0.0010	0.0014	0.0019	0.0023	0.0028
MAX	0.0000	0.0004	0.0009	0.0014	0.0019	0.0024	0.0031	0.0038	0.0046	0.0054	0.0063
MEDIAN	0.0000	0.0003	0.0007	0.0010	0.0014	0.0018	0.0023	0.0029	0.0036	0.0041	0.0047
STDEV	0.0000	0.0001	0.0002	0.0003	0.0004	0.0005	0.0005	0.0006	0.0007	0.0008	0.0009
N	25	25	25	25	25	25	25	25	25	25	25



Description of Light Sources tested	:	01..JT.AJ2835
Case Temperature	:	85.0°C
Ambient Temperature	:	84.9°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

Voltage											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L26	9.15	9.16	9.16	9.17	9.17	9.18	9.18	9.18	9.18	9.18	9.19
L27	9.16	9.16	9.17	9.17	9.18	9.19	9.19	9.19	9.19	9.19	9.19
L28	9.31	9.31	9.32	9.32	9.33	9.33	9.34	9.34	9.34	9.34	9.34
L29	9.17	9.17	9.18	9.18	9.19	9.19	9.19	9.20	9.20	9.20	9.20
L30	9.19	9.20	9.20	9.21	9.21	9.22	9.22	9.22	9.22	9.22	9.23
L31	9.19	9.20	9.21	9.21	9.22	9.22	9.22	9.22	9.23	9.23	9.23
L32	9.21	9.21	9.22	9.22	9.23	9.23	9.24	9.24	9.24	9.24	9.24
L33	9.16	9.17	9.17	9.18	9.18	9.19	9.19	9.19	9.19	9.19	9.20
L34	9.14	9.14	9.15	9.15	9.16	9.17	9.17	9.17	9.17	9.17	9.17
L35	9.14	9.15	9.16	9.16	9.17	9.17	9.17	9.17	9.18	9.18	9.18
L36	9.16	9.16	9.17	9.18	9.18	9.19	9.19	9.19	9.19	9.19	9.19
L37	9.18	9.18	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.21	9.21
L38	9.18	9.19	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.21	9.22
L39	9.19	9.20	9.20	9.21	9.21	9.22	9.22	9.22	9.22	9.22	9.23
L40	9.17	9.18	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.20	9.20
L41	9.17	9.18	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.21	9.21
L42	9.18	9.19	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.21	9.21
L43	9.14	9.14	9.15	9.15	9.16	9.17	9.17	9.17	9.17	9.17	9.17
L44	9.17	9.17	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.20	9.20
L45	9.21	9.21	9.22	9.23	9.23	9.24	9.24	9.24	9.24	9.24	9.24
L46	9.17	9.17	9.18	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.20
L47	9.23	9.23	9.24	9.24	9.25	9.25	9.26	9.26	9.26	9.26	9.26
L48	9.17	9.17	9.18	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.20
L49	9.15	9.16	9.17	9.17	9.18	9.18	9.18	9.18	9.19	9.19	9.19
L50	9.15	9.15	9.16	9.17	9.17	9.18	9.18	9.18	9.18	9.18	9.18
AV	9.18	9.18	9.19	9.19	9.20	9.21	9.21	9.21	9.21	9.21	9.21
MIN	9.14	9.14	9.15	9.15	9.16	9.17	9.17	9.17	9.17	9.17	9.17
MAX	9.31	9.31	9.32	9.32	9.33	9.33	9.34	9.34	9.34	9.34	9.34
MEDIAN	9.17	9.17	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.20	9.20
STDEV	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
N	25	25	25	25	25	25	25	25	25	25	25



**6 – Data Set 3: 105°C; 100mA**

Description of Light Sources tested	:	01.JT.AJ2835
Case Temperature	:	105.3°C
Ambient Temperature	:	104.9°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

INITIAL DATA										
Sample No.	Ref.Voltage (V)	Forward Current (mA)	Total input power (W)	Luminous Flux (Lumens)	CCT (K)	x (CIE 1931)	y (CIE 1931)	u' (CIE 1976)	v' (CIE 1976)	CRI (Ra)
L51	9.14	100	0.91	124.43	2779	0.4585	0.4183	0.2582	0.5300	82.6
L52	9.20	100	0.92	126.96	2808	0.4567	0.4187	0.2569	0.5299	82.7
L53	9.17	100	0.92	128.62	2873	0.4515	0.4171	0.2543	0.5286	82.7
L54	9.17	100	0.92	128.01	2834	0.4556	0.4201	0.2556	0.5303	82.5
L55	9.17	100	0.92	128.08	2873	0.4514	0.4170	0.2542	0.5285	82.7
L56	9.21	100	0.92	127.34	2812	0.4552	0.4163	0.2570	0.5288	82.8
L57	9.22	100	0.92	128.63	2853	0.4531	0.4176	0.2551	0.5290	82.6
L58	9.19	100	0.92	126.77	2789	0.4571	0.4171	0.2579	0.5294	82.8
L59	9.17	100	0.92	128.46	2797	0.4582	0.4201	0.2572	0.5306	82.4
L60	9.14	100	0.91	127.43	2856	0.4529	0.4176	0.2549	0.5290	82.8
L61	9.17	100	0.92	127.87	2780	0.4583	0.4181	0.2582	0.5299	82.7
L62	9.17	100	0.92	128.54	2859	0.4524	0.4173	0.2548	0.5288	82.7
L63	9.20	100	0.92	128.01	2834	0.4562	0.4212	0.2555	0.5308	82.4
L64	9.18	100	0.92	127.39	2787	0.4588	0.4199	0.2577	0.5307	82.4
L65	9.20	100	0.92	128.89	2875	0.4513	0.4171	0.2542	0.5285	82.8
L66	9.18	100	0.92	127.62	2832	0.4542	0.4172	0.2560	0.5290	82.8
L67	9.19	100	0.92	128.61	2813	0.4573	0.4205	0.2565	0.5307	82.3
L68	9.19	100	0.92	127.61	2838	0.4530	0.4156	0.2559	0.5282	83.1
L69	9.18	100	0.92	127.30	2747	0.4620	0.4206	0.2595	0.5314	82.4
L70	9.18	100	0.92	125.76	2825	0.4548	0.4172	0.2563	0.5291	82.7
L71	9.22	100	0.92	128.49	2835	0.4576	0.4240	0.2552	0.5320	82.2
L72	9.16	100	0.92	128.56	2837	0.4548	0.4188	0.2556	0.5297	82.6
L73	9.14	100	0.91	129.35	2884	0.4519	0.4195	0.2535	0.5295	82.6
L74	9.19	100	0.92	127.78	2853	0.4505	0.4127	0.2556	0.5267	83.2
L75	9.16	100	0.92	126.94	2828	0.4527	0.4137	0.2565	0.5274	83.0
AV	9.18	100.0	0.92	127.74	2828	0.4550	0.4181	0.2561	0.5295	82.7
MIN	9.14	100.0	0.91	124.43	2747	0.4505	0.4127	0.2535	0.5267	82.2
MAX	9.22	100.0	0.92	129.35	2884	0.4620	0.4240	0.2595	0.5320	83.2
MEDIAN	9.18	100.0	0.92	127.87	2834	0.4548	0.4176	0.2559	0.5294	82.7
STDEV	0.02	0.0	0.00	1.05	35	0.0030	0.0024	0.0015	0.0012	0.2
N	25	25	25	25	25	25	25	25	25	25

Description of Light Sources tested	:	01.JT.AJ2835
Case Temperature	:	105.3°C
Ambient Temperature	:	104.9°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

LUMEN MAINTENANCE											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L51	100.00%	99.54%	99.28%	99.01%	98.74%	98.45%	98.13%	97.81%	97.48%	97.14%	96.78%
L52	100.00%	99.67%	99.41%	99.14%	98.87%	98.58%	98.26%	97.94%	97.61%	97.27%	96.91%
L53	100.00%	99.16%	98.90%	98.63%	98.36%	98.07%	97.75%	97.43%	97.10%	96.76%	96.40%
L54	100.00%	99.46%	99.20%	98.93%	98.66%	98.37%	98.05%	97.73%	97.40%	97.06%	96.70%
L55	100.00%	99.49%	99.23%	98.96%	98.69%	98.40%	98.08%	97.76%	97.43%	97.09%	96.73%
L56	100.00%	99.37%	99.11%	98.84%	98.57%	98.28%	97.96%	97.64%	97.31%	96.97%	96.61%
L57	100.00%	99.44%	99.18%	98.91%	98.64%	98.35%	98.03%	97.71%	97.38%	97.04%	96.68%
L58	100.00%	99.67%	99.41%	99.14%	98.87%	98.58%	98.26%	97.94%	97.61%	97.27%	96.91%
L59	100.00%	99.16%	98.90%	98.63%	98.36%	98.07%	97.75%	97.43%	97.10%	96.76%	96.40%
L60	100.00%	99.46%	99.20%	98.93%	98.66%	98.37%	98.05%	97.73%	97.40%	97.06%	96.70%
L61	100.00%	99.38%	99.12%	98.85%	98.58%	98.29%	97.97%	97.65%	97.32%	96.98%	96.62%
L62	100.00%	99.53%	99.27%	99.00%	98.73%	98.44%	98.12%	97.80%	97.47%	97.13%	96.77%
L63	100.00%	99.49%	99.23%	98.96%	98.69%	98.40%	98.08%	97.76%	97.43%	97.09%	96.73%
L64	100.00%	99.51%	99.25%	98.98%	98.71%	98.42%	98.10%	97.78%	97.45%	97.11%	96.75%
L65	100.00%	99.34%	99.08%	98.81%	98.54%	98.25%	97.93%	97.61%	97.28%	96.94%	96.58%
L66	100.00%	99.55%	99.29%	99.02%	98.75%	98.46%	98.14%	97.82%	97.49%	97.15%	96.79%
L67	100.00%	99.21%	98.95%	98.68%	98.41%	98.12%	97.80%	97.48%	97.15%	96.81%	96.45%
L68	100.00%	99.22%	98.96%	98.69%	98.42%	98.13%	97.81%	97.49%	97.16%	96.82%	96.46%
L69	100.00%	99.62%	99.36%	99.09%	98.82%	98.53%	98.21%	97.89%	97.56%	97.22%	96.86%
L70	100.00%	99.48%	99.22%	98.95%	98.68%	98.39%	98.07%	97.75%	97.42%	97.08%	96.72%
L71	100.00%	99.46%	99.20%	98.93%	98.66%	98.37%	98.05%	97.73%	97.40%	97.06%	96.70%
L72	100.00%	99.34%	99.08%	98.81%	98.54%	98.25%	97.93%	97.61%	97.28%	96.94%	96.58%
L73	100.00%	99.55%	99.29%	99.02%	98.75%	98.46%	98.14%	97.82%	97.49%	97.15%	96.79%
L74	100.00%	99.69%	99.43%	99.16%	98.89%	98.60%	98.29%	97.96%	97.63%	97.29%	96.93%
L75	100.00%	99.37%	99.11%	98.84%	98.57%	98.28%	97.96%	97.64%	97.31%	96.97%	96.61%
AV	100.00%	99.45%	99.19%	98.92%	98.65%	98.36%	98.04%	97.72%	97.39%	97.04%	96.69%
MIN	100.00%	99.16%	98.90%	98.63%	98.36%	98.07%	97.75%	97.43%	97.10%	96.76%	96.40%
MAX	100.00%	99.69%	99.43%	99.16%	98.89%	98.60%	98.29%	97.96%	97.63%	97.29%	96.93%
Median	100.00%	99.46%	99.20%	98.93%	98.66%	98.37%	98.05%	97.73%	97.40%	97.06%	96.70%
STDEV	0.00%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%
N	25	25	25	25	25	25	25	25	25	25	25

Description of Light Sources tested	:	01.JT.AJ2835
Case Temperature	:	105.3°C
Ambient Temperature	:	104.9°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

$\Delta u'v'$											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L51	0.0000	0.0004	0.0008	0.0013	0.0018	0.0023	0.0029	0.0035	0.0041	0.0048	0.0055
L52	0.0000	0.0004	0.0008	0.0012	0.0016	0.0021	0.0027	0.0032	0.0038	0.0044	0.0051
L53	0.0000	0.0005	0.0009	0.0014	0.0019	0.0025	0.0030	0.0036	0.0043	0.0049	0.0057
L54	0.0000	0.0003	0.0007	0.0011	0.0015	0.0020	0.0025	0.0031	0.0037	0.0043	0.0049
L55	0.0000	0.0005	0.0010	0.0016	0.0022	0.0028	0.0035	0.0042	0.0049	0.0057	0.0065
L56	0.0000	0.0004	0.0009	0.0013	0.0018	0.0024	0.0029	0.0036	0.0042	0.0049	0.0056
L57	0.0000	0.0005	0.0010	0.0016	0.0022	0.0028	0.0035	0.0042	0.0049	0.0057	0.0065
L58	0.0000	0.0005	0.0010	0.0016	0.0022	0.0028	0.0035	0.0042	0.0049	0.0057	0.0065
L59	0.0000	0.0004	0.0007	0.0011	0.0016	0.0020	0.0026	0.0031	0.0037	0.0043	0.0050
L60	0.0000	0.0004	0.0008	0.0012	0.0016	0.0020	0.0025	0.0030	0.0036	0.0042	0.0048
L61	0.0000	0.0005	0.0010	0.0015	0.0020	0.0025	0.0031	0.0038	0.0044	0.0051	0.0059
L62	0.0000	0.0005	0.0010	0.0016	0.0022	0.0028	0.0035	0.0042	0.0049	0.0057	0.0065
L63	0.0000	0.0004	0.0008	0.0012	0.0016	0.0021	0.0027	0.0032	0.0038	0.0044	0.0051
L64	0.0000	0.0005	0.0010	0.0016	0.0021	0.0028	0.0034	0.0041	0.0048	0.0056	0.0064
L65	0.0000	0.0004	0.0007	0.0010	0.0013	0.0017	0.0022	0.0026	0.0031	0.0037	0.0043
L66	0.0000	0.0004	0.0009	0.0014	0.0019	0.0025	0.0031	0.0037	0.0043	0.0050	0.0058
L67	0.0000	0.0004	0.0008	0.0011	0.0016	0.0020	0.0025	0.0030	0.0036	0.0042	0.0048
L68	0.0000	0.0004	0.0007	0.0011	0.0014	0.0018	0.0022	0.0027	0.0032	0.0037	0.0043
L69	0.0000	0.0006	0.0009	0.0013	0.0017	0.0022	0.0027	0.0032	0.0038	0.0043	0.0050
L70	0.0000	0.0005	0.0009	0.0012	0.0017	0.0021	0.0026	0.0031	0.0037	0.0042	0.0049
L71	0.0000	0.0004	0.0008	0.0012	0.0016	0.0020	0.0025	0.0031	0.0036	0.0042	0.0048
L72	0.0000	0.0005	0.0009	0.0013	0.0017	0.0021	0.0026	0.0031	0.0037	0.0043	0.0049
L73	0.0000	0.0005	0.0010	0.0016	0.0022	0.0028	0.0035	0.0042	0.0049	0.0057	0.0065
L74	0.0000	0.0005	0.0010	0.0015	0.0020	0.0025	0.0031	0.0038	0.0044	0.0051	0.0059
L75	0.0000	0.0004	0.0008	0.0013	0.0018	0.0024	0.0029	0.0035	0.0042	0.0048	0.0056
AV	0.0000	0.0004	0.0009	0.0013	0.0018	0.0023	0.0029	0.0035	0.0041	0.0048	0.0055
MIN	0.0000	0.0003	0.0007	0.0010	0.0013	0.0017	0.0022	0.0026	0.0031	0.0037	0.0043
MAX	0.0000	0.0006	0.0010	0.0016	0.0022	0.0028	0.0035	0.0042	0.0049	0.0057	0.0065
Median	0.0000	0.0004	0.0009	0.0013	0.0018	0.0023	0.0029	0.0035	0.0041	0.0048	0.0055
STDEV	0.0000	0.0001	0.0001	0.0002	0.0003	0.0003	0.0004	0.0005	0.0006	0.0007	0.0007
N	25	25	25	25	25	25	25	25	25	25	25

Description of Light Sources tested	:	01.JT.AJ2835
Case Temperature	:	105.3°C
Ambient Temperature	:	104.9°C
Drive Current	:	100mA
Measure Current	:	100mA
Failures Observed	:	None

Voltage											
Sample No.	0H	1000H	2000H	3000H	4000H	5000H	6000H	7000H	8000H	9000H	10000H
L51	9.14	9.14	9.15	9.16	9.16	9.17	9.17	9.17	9.17	9.17	9.17
L52	9.20	9.21	9.22	9.22	9.23	9.23	9.23	9.23	9.24	9.24	9.24
L53	9.17	9.17	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.20	9.20
L54	9.17	9.17	9.18	9.18	9.19	9.19	9.19	9.20	9.20	9.20	9.20
L55	9.17	9.17	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.20	9.20
L56	9.21	9.21	9.22	9.22	9.23	9.23	9.24	9.24	9.24	9.24	9.24
L57	9.22	9.23	9.23	9.24	9.24	9.25	9.25	9.25	9.25	9.26	9.26
L58	9.19	9.19	9.20	9.21	9.21	9.22	9.22	9.22	9.22	9.22	9.22
L59	9.17	9.17	9.18	9.18	9.19	9.19	9.19	9.20	9.20	9.20	9.20
L60	9.14	9.14	9.15	9.15	9.16	9.17	9.17	9.17	9.17	9.17	9.17
L61	9.17	9.18	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.21	9.21
L62	9.17	9.18	9.18	9.19	9.19	9.20	9.20	9.20	9.20	9.20	9.20
L63	9.20	9.20	9.21	9.21	9.22	9.22	9.22	9.23	9.23	9.23	9.23
L64	9.18	9.19	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.22	9.22
L65	9.20	9.21	9.21	9.22	9.22	9.23	9.23	9.23	9.23	9.24	9.24
L66	9.18	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.22	9.22	9.22
L67	9.19	9.20	9.20	9.21	9.21	9.22	9.22	9.22	9.22	9.22	9.23
L68	9.19	9.19	9.20	9.21	9.21	9.22	9.22	9.22	9.22	9.22	9.22
L69	9.18	9.18	9.19	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.21
L70	9.18	9.18	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.21	9.21
L71	9.22	9.22	9.23	9.23	9.24	9.25	9.25	9.25	9.25	9.25	9.25
L72	9.16	9.17	9.17	9.18	9.19	9.19	9.19	9.19	9.20	9.20	9.20
L73	9.14	9.15	9.16	9.16	9.17	9.17	9.17	9.17	9.18	9.18	9.18
L74	9.19	9.19	9.20	9.20	9.21	9.21	9.21	9.22	9.22	9.22	9.22
L75	9.16	9.16	9.17	9.18	9.18	9.19	9.19	9.19	9.19	9.19	9.19
AV	9.18	9.18	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.21	9.21
MIN	9.14	9.14	9.15	9.15	9.16	9.17	9.17	9.17	9.17	9.17	9.17
MAX	9.22	9.23	9.23	9.24	9.24	9.25	9.25	9.25	9.25	9.26	9.26
MEDIAN	9.18	9.18	9.19	9.20	9.20	9.21	9.21	9.21	9.21	9.21	9.21
STDEV	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
N	25	25	25	25	25	25	25	25	25	25	25

## 7 – Summary

### TM-21 Projection L70

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		SHENZHEN JUFEI OPTOELECTRONICS CO.,LTD. Model:01.JT.AJ2835W80N05			
Test Condition 1 - 55°C Case Temp		Test Condition 2 - 85°C Case Temp		Test Condition 3 - 105°C Case Temp	
Sample size	25	Sample size	25	Sample size	25
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100
Test duration (hours)	10,000	Test duration (hours)	10,000	Test duration (hours)	10,000
Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000
Tested case temperature (°C)	55	Tested case temperature (°C)	85	Tested case temperature (°C)	105
$\alpha$	2.043E-06	$\alpha$	2.778E-06	$\alpha$	3.414E-06
B	1.002	B	1.000	B	1.001
Reported L70(10k) (hours)	>60000	Reported L70(10k) (hours)	>60000	Reported L70(10k) (hours)	>60000

### TM-21 Projection L80

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		SHENZHEN JUFEI OPTOELECTRONICS CO.,LTD. Model:01.JT.AJ2835W80N05			
Test Condition 1 - 55°C Case Temp		Test Condition 2 - 85°C Case Temp		Test Condition 3 - 105°C Case Temp	
Sample size	25	Sample size	25	Sample size	25
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100
Test duration (hours)	10,000	Test duration (hours)	10,000	Test duration (hours)	10,000
Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000
Tested case temperature (°C)	55	Tested case temperature (°C)	85	Tested case temperature (°C)	105
$\alpha$	2.043E-06	$\alpha$	2.778E-06	$\alpha$	3.414E-06
B	1.002	B	1.000	B	1.001
Reported L80(10k) (hours)	>60000	Reported L80(10k) (hours)	>60000	Reported L80(10k) (hours)	>60000

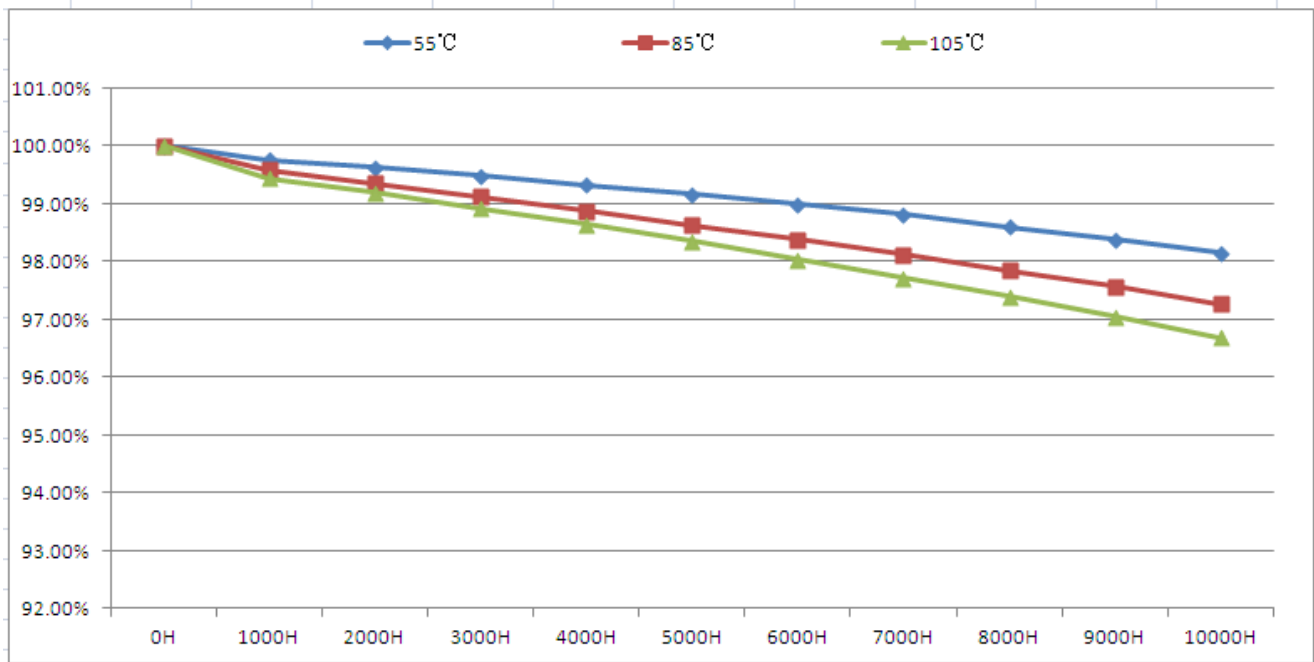
## TM-21 Projection L90

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		SHENZHEN JUFEI OPTOELECTRONICS CO.,LTD. Model:01.JT.AJ2835W80N05			
Test Condition 1 - 55°C Case Temp		Test Condition 2 - 85°C Case Temp		Test Condition 3 - 105°C Case Temp	
Sample size	25	Sample size	25	Sample size	25
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100
Test duration (hours)	10,000	Test duration (hours)	10,000	Test duration (hours)	10,000
Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000
Tested case temperature (°C)	55	Tested case temperature (°C)	85	Tested case temperature (°C)	105
$\alpha$	2.043E-06	$\alpha$	2.778E-06	$\alpha$	3.414E-06
B	1.002	B	1.000	B	1.001
Reported L90(10k) (hours)	53,000	Reported L90(10k) (hours)	38,000	Reported L90(10k) (hours)	31,000

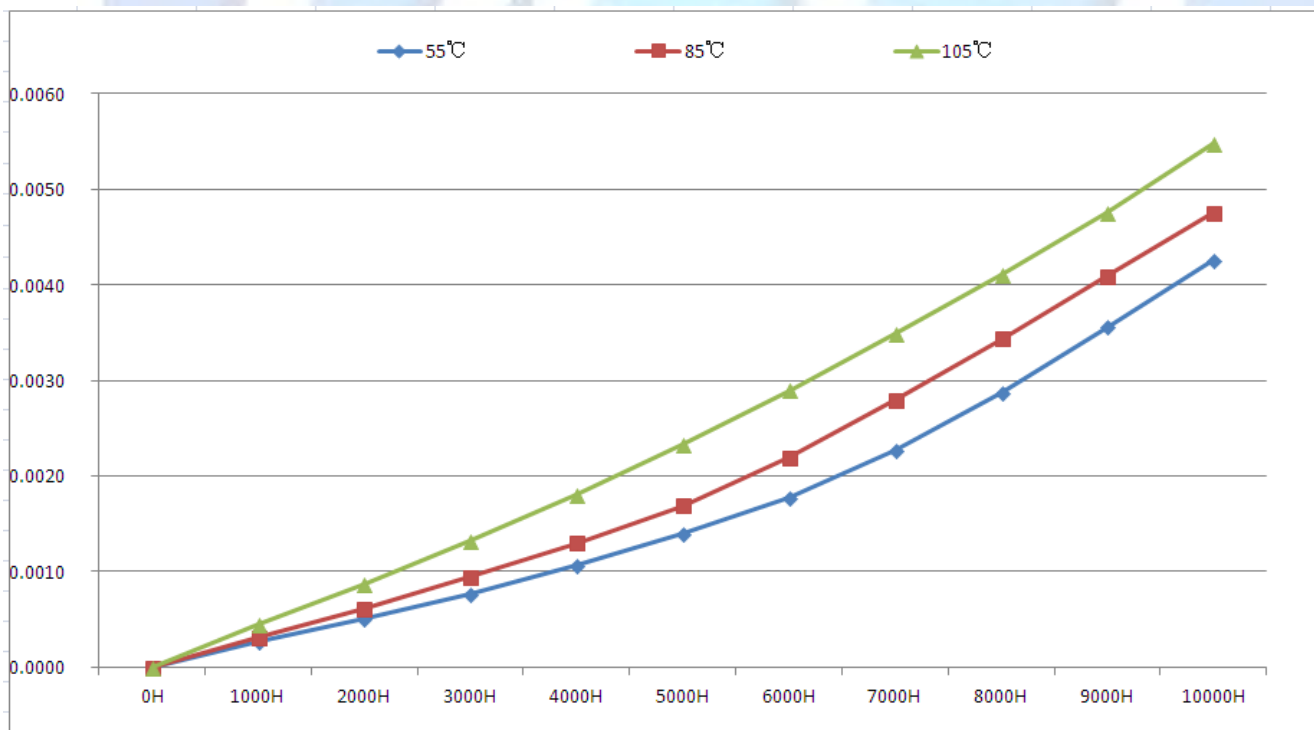




Lumen Maintenance

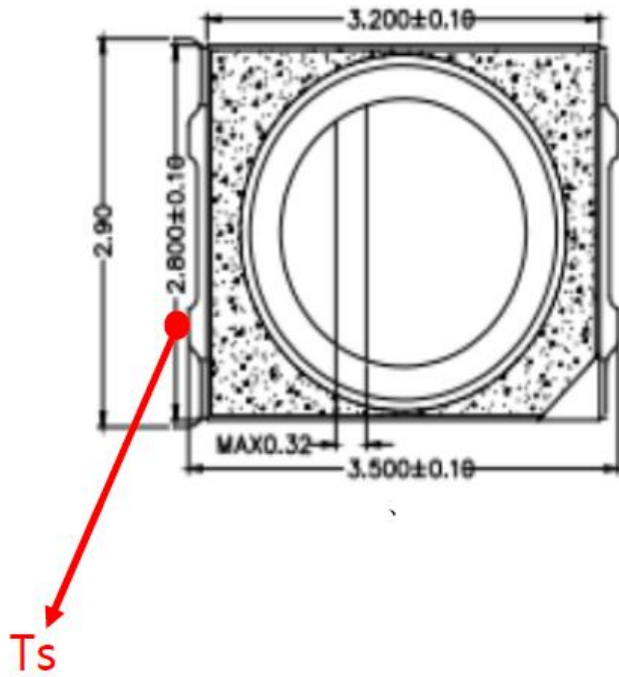


Color Maintenance ( $\Delta u'v'$ )





### 8 – Diagram and Temperature Measure Point (TMP)



## 9 – EUT Photos



END