

TEST REPORT

IES LM-80-15

For

Shenzhen Refond Optoelectronic Co., Ltd.

1 to 8th Floor, Building #1, 10th Industrial Zone, Tian Liao Community, Gong Ming Area,
Guang Ming New District, SHENZHEN, CHINA.

Report No.: SZANL180614001-01

Product Description: Flexible filament

Model No.: RF-FPR6W1W1K-C9

Test Initiation Date: 2017-09-29

Test Completion Date: 2018-06-20

Report Issue Date: 2018-06-21

Test Standard: IES LM-80-15

Test Laboratory: Shenzhen Anbotek Compliance Laboratory Limited

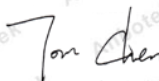
Tested by

Reviewed by Lab Director

Meteor Liu



Tom Chen



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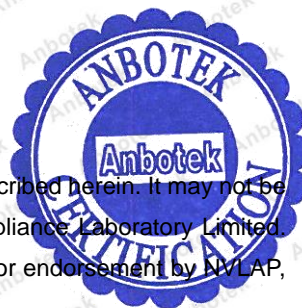


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1 General Information

1.1 Description of LED Light Sources

Tested Model:

Part Number: RF-FPR6W1W1K-C9

Part Type: Flexible filament

Nominal CCT: 1700K

Family products covered by this report:

According to ENERGY STAR® Program Guidance Regarding LED Package, LED Array and LED Module Lumen Maintenance Performance Data Supporting Qualification of Lighting Products, the following products can be covered by this report. The information of these models shows that the covered products meet all section 3 item 7 requirements of ENERGY STAR® Program Guidance Regarding LED Package, LED Array and LED Module Lumen Maintenance Performance Data Supporting Qualification of Lighting Products (September 9, 2011)

Model name ** representative CCT(**=1800-7000)	CCT(K)	Number of dies	Current (mA)	power intensity (W/mm2)	Power (W)	Current intensity (A/mm2)	Distance between of dies(mm)
RF-FPR6W1W1K-C9	1700	200	30	0.0190	7.8	0.1174	1.400
RF-FPR2W**1K-*9	1700-6500	100	10	0.0151	2.600	0.0783	1.140
RF-FPR2W**1G-*9	1700-6500	100	20	0.0151	2.600	0.0783	1.140
RF-FPR3W**67-*9	1700-6500	75	36	0.0132	2.592	0.0886	1.740
RF-FPR4W**67-*9	1700-6500	175	72	0.0140	4.824	0.0805	1.300
RF-FPR5W**1K-*9	1700-6500	200	20	0.0144	5.200	0.0783	1.200
RF-FPR6W**1K-*9	1700-6500	150	30	0.0093	3.900	0.0783	1.300
RF-FPR2W**1K-*5	1700-6500	100	10	0.0151	2.600	0.1006	1.140
RF-FPR2W**1G-*5	1700-6500	100	20	0.0151	2.600	0.1006	1.140
RF-FPR3W**67-*5	1700-6500	75	36	0.0132	2.592	0.1139	1.740
RF-FPR4W**67-*5	1700-6500	175	72	0.0140	4.824	0.1035	1.300
RF-FPR5W**1K-*5	1700-6500	200	20	0.0144	5.200	0.1006	1.200
RF-FPR6W**1K-*5	1700-6500	150	30	0.0093	3.900	0.1006	1.870
RF-FPR6W**1K-*5	1700-6500	200	20	0.0123	5.200	0.1006	1.400
SFW8F24A-01	1700-6500	175	72	0.0140	4.824	0.0805	1.300

Disclaimer:

The truthfulness and accuracy of all the technical information above for the covered LED products is ensured by manufacturer of LED light source. Shenzhen Anbotek Compliance Laboratory Limited isn't responsible or gives any guarantees for the truthfulness of the technical information.

1.2 Product Description for Equipment under Test (EUT)

Applicant: Shenzhen Refond Optoelectronic Co., Ltd.

Tested Model: RF-FPR6W1W1K-C9

Part Type: Flexible filament

Nominal CCT: 1700K

Nominal Ra: 80

Number of Flexible filament tested: See tables

Case Temperature (Test Point Temperature): See tables

Drive Current of the Flexible filament During Lifetime Test: See tables

Initial luminous flux and forward voltage at photometric measurement current: See tables

Lumen maintenance data for each individual Flexible filament along with median value, standard deviation, minimum and maximum lumen maintenance value for all of the Flexible filament: See tables

Observation of Flexible filament failure including the failure conditions and time of failure: See tables

Flexible filament monitoring interval: The LED light source is inspected at regular interval (24 hours) throughout the 6000 hours test.

Photometric measurement uncertainty: 1.5% on flux measurements for LM-80 testing.

Chromaticity shift reported over the Measurement time: See tables

Flexible filament Test interval: At regular intervals (1000 hours) throughout the 6000 hours test.

Date of Receiving Sample: 2017-09-27

Test Duration: 2017-09-29 to 2018-06-20

1.3 Standards Used

IESNA LM-80-15: IES Approved Method for Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules

1.4 Test Facility Description

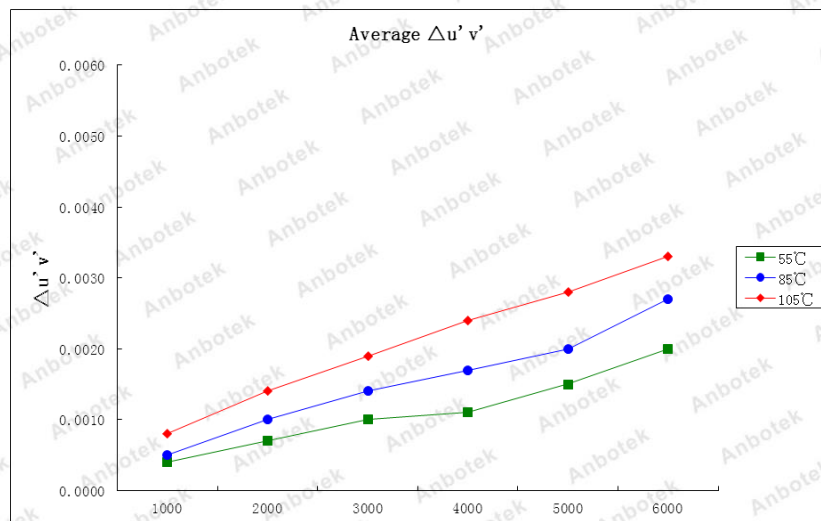
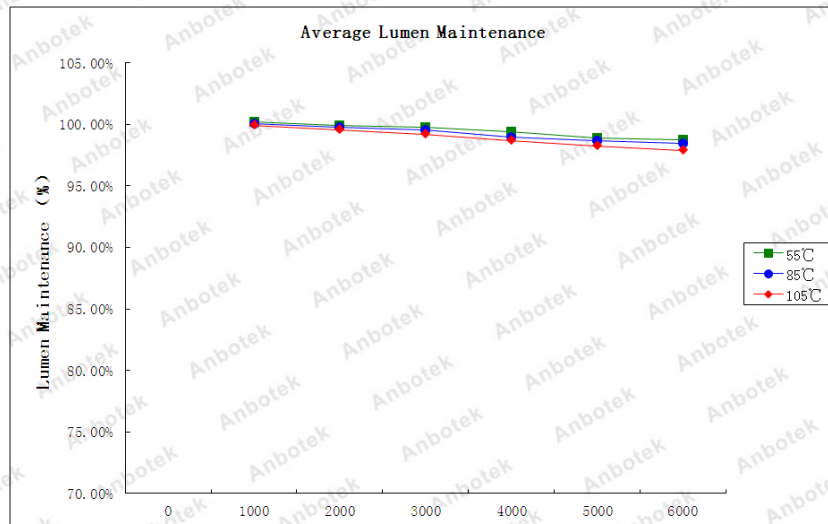
The test facility used by Shenzhen Anbotek Compliance Laboratory Limited is located at 1/F., Building C, Gold Power Industrial Park, Julongshan Grand Industrial Zone, Pingshan New District, Shenzhen, Guangdong, China.

1.5 Test Equipment List

Device	Manufacture	Model No.	Serial No.	Calibration Date	Calibration Due Date
Digital Power Meter	YOKOGAWA	WT210	SE-074	2018-06-06	2019-06-05
LM-80 Aging Test System	KEYI	KY-3X-LH60	SE-564	2018-06-06	2019-06-05
DC Power Supply	EVERFINE	WY605	SE-605	2018-06-06	2019-06-05
Standard Lamp	EVERFINE	D062	SE-606	2018-06-06	2019-06-05
Spectrum Analyzer	EVERFINE	HAAS-2000	SE-607	2018-06-06	2019-06-05
Integrating Sphere (0.5m)	EVERFINE	AIS-2	SE-608	Before use	Before use

2 Summary of Test Result

Data Set	1	2	3
Nominal case temperatures	55°C	85°C	105°C
Drive Current	30 mA	30 mA	30 mA
Condition	Ts=54.3°C Ta=53.1°C R.H. < 65% IF=30 mA	Ts=84.4°C Ta=83.3°C R.H. < 65% IF=30 mA	Ts=104.2°C Ta=103.4°C R.H. < 65% IF=30 mA
sample size	30	30	30
Duration (in Hours)	6000	6000	6000
Intervals (in Hours)	1000	1000	1000
Failure	0	0	0



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 an integrating sphere. Each Flexible filament is operated at rated drive current (CC Mode).

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 380-800nm.

3.2 Season the Flexible filament from 0 hours to 6000 hours

Three LM-80 aging measurement system Temperature Chambers are using for Seasoning, and the temperature is set to 55°C , 85°C , 105°C (manufacture defined), the airflow is minimum to keep the uniformity to temperature. Flexible filament are operated steady state (no cycling) for a period of 6000 hours, checked the lumen flux and Chromaticity Shift every 1000 hours. The samples are inspected at regular intervals (24 hours) throughout the 6000 hours. The time and date of failure of each lamp is recorded. The actual elapsed time for each light Flexible filament is in hour.

4 Data Set 1: 55°C, 30 mA

Description of Light Sources Tested:	RF-FPR6W1W1K-C9
Case Temperature:	54.3°C
Ambient Temperature:	53.1°C
Drive Current:	30 mA
Measure Current:	30 mA
Failures Observed:	None

Lumen Maintenance (%)

Sample No.	VF(V)	Φ(lm)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
L1	269.08	621.25	100.12%	99.92%	99.85%	99.34%	98.76%	98.90%
L2	274.28	686.27	100.29%	100.02%	99.46%	99.36%	98.93%	98.93%
L3	270.76	646.42	100.05%	99.87%	99.75%	99.59%	98.92%	98.72%
L4	273.98	689.40	100.18%	99.96%	99.84%	99.24%	98.83%	98.84%
L5	271.46	655.22	100.19%	100.00%	99.87%	99.63%	98.85%	98.85%
L6	272.26	654.91	100.28%	99.85%	99.96%	99.29%	98.74%	98.58%
L7	271.53	650.73	100.27%	99.83%	99.53%	99.34%	98.81%	98.68%
L8	272.07	670.49	100.09%	99.85%	99.75%	99.18%	98.95%	98.91%
L9	273.64	671.93	100.28%	99.89%	99.74%	99.43%	98.95%	98.69%
L10	273.81	682.26	100.16%	99.84%	99.78%	99.42%	98.95%	98.50%
L11	273.12	669.79	100.16%	99.88%	99.60%	99.61%	98.91%	98.67%
L12	270.47	638.72	100.29%	100.02%	99.79%	99.55%	99.04%	98.62%
L13	267.17	588.08	100.21%	100.01%	99.93%	99.63%	99.06%	98.55%
L14	272.72	671.32	100.17%	100.00%	99.72%	99.28%	99.01%	98.82%
L15	269.02	615.50	100.23%	99.90%	99.79%	99.60%	98.73%	98.91%
L16	267.78	699.26	100.26%	99.84%	99.53%	99.38%	99.01%	98.95%
L17	267.34	680.20	100.16%	99.96%	99.48%	99.51%	98.90%	98.91%
L18	265.39	650.46	100.11%	100.02%	99.81%	99.44%	99.05%	98.62%
L19	268.26	696.32	100.10%	100.01%	99.97%	99.45%	98.88%	98.89%
L20	270.88	644.09	100.12%	99.89%	99.82%	99.33%	99.06%	98.85%
L21	269.83	619.07	100.14%	100.00%	99.76%	99.36%	99.01%	98.73%
L22	264.41	632.36	100.28%	99.99%	99.54%	99.38%	98.93%	98.66%
L23	264.66	639.48	100.05%	99.91%	99.80%	99.63%	99.08%	98.81%
L24	268.82	608.52	100.16%	99.99%	99.85%	99.47%	98.84%	98.77%
L25	266.68	667.33	100.13%	99.90%	99.58%	99.38%	98.75%	98.59%
L26	268.93	607.96	100.29%	99.85%	99.55%	99.33%	98.75%	98.65%
L27	267.97	678.72	100.26%	99.84%	99.56%	99.34%	99.02%	98.85%
L28	263.50	614.12	100.00%	99.88%	99.87%	99.18%	98.95%	98.80%
L29	265.16	648.73	100.11%	99.87%	99.75%	99.43%	98.81%	98.68%
L30	268.15	693.94	100.16%	99.87%	99.73%	99.50%	99.07%	98.54%
AV	269.44	653.10	100.18%	99.92%	99.73%	99.42%	98.92%	98.75%
median	269.05	652.82	100.16%	99.90%	99.76%	99.40%	98.93%	98.75%
MIN	263.50	588.08	100.00%	99.83%	99.46%	99.18%	98.73%	98.50%
MAX	274.28	699.26	100.29%	100.02%	99.97%	99.63%	99.08%	98.95%
STDEV	3.09	30.02	0.0008	0.0007	0.0015	0.0013	0.0011	0.0013

Description of Light Sources Tested:	RF-FPR6W1W1K-C9
Case Temperature:	54.3°C
Ambient Temperature:	53.1°C
Drive Current:	30 mA
Measure Current:	30 mA
Failures Observed:	None

Chromaticity Shift ($\Delta u'v'$)

Sample No.	u'	v'	CCT(K)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
L1	0.5578	0.4052	1726	0.0004	0.0003	0.0007	0.0015	0.0011	0.0011
L2	0.5594	0.4067	1724	0.0003	0.0007	0.0009	0.0007	0.0022	0.0021
L3	0.5583	0.4060	1727	0.0006	0.0009	0.0014	0.0014	0.0008	0.0023
L4	0.5594	0.4069	1725	0.0002	0.0008	0.0012	0.0013	0.0019	0.0010
L5	0.5581	0.4055	1726	0.0001	0.0007	0.0017	0.0005	0.0013	0.0025
L6	0.5596	0.4061	1719	0.0004	0.0007	0.0013	0.0015	0.0024	0.0021
L7	0.5587	0.4060	1725	0.0004	0.0004	0.0018	0.0016	0.0008	0.0018
L8	0.5583	0.4063	1729	0.0003	0.0005	0.0005	0.0006	0.0016	0.0022
L9	0.5600	0.4065	1719	0.0002	0.0010	0.0005	0.0006	0.0014	0.0020
L10	0.5599	0.4066	1720	0.0005	0.0006	0.0002	0.0015	0.0008	0.0014
L11	0.5597	0.4063	1720	0.0002	0.0005	0.0013	0.0018	0.0016	0.0027
L12	0.5578	0.4063	1732	0.0003	0.0011	0.0005	0.0004	0.0024	0.0022
L13	0.5568	0.4056	1735	0.0005	0.0010	0.0009	0.0015	0.0014	0.0018
L14	0.5585	0.4056	1723	0.0005	0.0009	0.0009	0.0012	0.0011	0.0015
L15	0.5580	0.4058	1728	0.0007	0.0005	0.0017	0.0019	0.0018	0.0025
L16	0.5572	0.4055	1731	0.0004	0.0007	0.0006	0.0008	0.0009	0.0022
L17	0.5572	0.4051	1730	0.0004	0.0006	0.0016	0.0007	0.0020	0.0025
L18	0.5553	0.4048	1741	0.0001	0.0010	0.0016	0.0007	0.0016	0.0022
L19	0.5572	0.4054	1731	0.0002	0.0004	0.0006	0.0009	0.0024	0.0019
L20	0.5584	0.4059	1726	0.0007	0.0007	0.0006	0.0008	0.0016	0.0023
L21	0.5583	0.4058	1726	0.0003	0.0003	0.0003	0.0012	0.0008	0.0027
L22	0.5539	0.4041	1745	0.0003	0.0004	0.0008	0.0014	0.0007	0.0016
L23	0.5540	0.4042	1746	0.0005	0.0005	0.0010	0.0013	0.0022	0.0022
L24	0.5573	0.4055	1731	0.0006	0.0008	0.0012	0.0014	0.0017	0.0015
L25	0.5567	0.4051	1733	0.0006	0.0007	0.0013	0.0004	0.0017	0.0020
L26	0.5578	0.4056	1729	0.0002	0.0003	0.0012	0.0015	0.0017	0.0021
L27	0.5564	0.4058	1739	0.0004	0.0005	0.0017	0.0010	0.0021	0.0009
L28	0.5543	0.4048	1747	0.0004	0.0005	0.0011	0.0011	0.0010	0.0019
L29	0.5549	0.4052	1745	0.0003	0.0009	0.0007	0.0008	0.0015	0.0021
L30	0.5574	0.4054	1730	0.0002	0.0006	0.0009	0.0014	0.0013	0.0016
AV	0.5576	0.4057	1730	0.0004	0.0007	0.0010	0.0011	0.0015	0.0020
median	0.5578	0.4056	1729	0.0004	0.0007	0.0010	0.0012	0.0016	0.0021
MIN	0.5539	0.4041	1719	0.0001	0.0003	0.0002	0.0004	0.0007	0.0009
MAX	0.5600	0.4069	1747	0.0007	0.0011	0.0018	0.0019	0.0024	0.0027
STDEV	0.0017	0.0007	8.08	0.0002	0.0002	0.0005	0.0004	0.0005	0.0005

5 Data Set 2: 85°C, 30 mA

Description of Light Sources Tested:	RF-FPR6W1W1K-C9
Case Temperature:	84.4°C
Ambient Temperature:	83.3°C
Drive Current:	30 mA
Measure Current:	30 mA
Failures Observed:	None

Lumen Maintenance (%)

Sample No.	V _F (V)	Φ(lm)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
L31	266.98	688.63	99.90%	99.55%	99.62%	98.99%	98.51%	98.16%
L32	266.19	668.52	100.10%	99.65%	99.61%	98.84%	98.77%	98.55%
L33	264.94	645.24	99.92%	99.93%	99.43%	99.08%	98.65%	97.92%
L34	266.20	662.15	100.05%	99.85%	99.56%	98.85%	98.87%	98.42%
L35	265.90	656.23	100.10%	99.79%	99.66%	98.86%	98.87%	98.75%
L36	265.62	651.26	100.01%	99.76%	99.39%	98.92%	98.67%	98.70%
L37	265.36	646.31	100.09%	99.86%	99.53%	98.96%	98.49%	98.62%
L38	264.99	638.53	100.11%	99.62%	99.51%	98.91%	98.51%	98.35%
L39	264.84	635.83	100.16%	99.72%	99.62%	99.01%	98.76%	98.39%
L40	264.50	628.91	100.07%	99.56%	99.51%	98.94%	98.85%	98.49%
L41	264.25	623.98	100.01%	99.64%	99.46%	98.88%	98.82%	98.72%
L42	264.11	619.62	100.11%	99.86%	99.56%	99.08%	98.45%	98.56%
L43	264.13	620.10	100.17%	99.80%	99.40%	98.90%	98.60%	97.99%
L44	266.70	668.40	99.89%	99.75%	99.38%	99.09%	98.72%	98.44%
L45	266.35	662.04	100.13%	99.86%	99.40%	99.04%	98.76%	98.10%
L46	266.05	656.30	100.11%	99.82%	99.65%	99.00%	98.71%	98.23%
L47	265.54	646.82	100.15%	99.66%	99.66%	99.05%	98.46%	98.05%
L48	265.39	643.43	100.05%	99.56%	99.59%	99.09%	98.79%	98.72%
L49	264.47	624.64	99.99%	99.75%	99.52%	99.08%	98.85%	98.48%
L50	264.27	620.13	99.90%	99.55%	99.44%	98.90%	98.51%	97.93%
L51	265.75	664.22	100.07%	99.62%	99.62%	98.97%	98.55%	98.35%
L52	265.28	654.69	100.03%	99.64%	99.52%	99.05%	98.72%	98.50%
L53	264.65	642.21	100.17%	99.67%	99.48%	99.07%	98.69%	98.75%
L54	267.11	687.63	100.06%	99.82%	99.46%	98.85%	98.80%	98.42%
L55	266.14	670.30	100.02%	99.78%	99.37%	98.89%	98.62%	98.64%
L56	263.87	626.69	100.02%	99.55%	99.42%	98.96%	98.56%	98.66%
L57	267.91	620.39	100.15%	99.75%	99.42%	99.05%	98.49%	98.26%
L58	266.76	680.28	100.08%	99.67%	99.36%	98.99%	98.75%	98.35%
L59	265.34	653.78	100.07%	99.87%	99.52%	98.95%	98.81%	98.68%
L60	264.46	636.09	100.09%	99.88%	99.54%	99.09%	98.84%	98.53%
AV	265.47	648.11	100.06%	99.73%	99.51%	98.98%	98.68%	98.42%
median	265.38	646.57	100.07%	99.75%	99.51%	98.98%	98.71%	98.46%
MIN	263.87	619.62	99.89%	99.55%	99.36%	98.84%	98.45%	97.92%
MAX	267.91	688.63	100.17%	99.93%	99.66%	99.09%	98.87%	98.75%
STDEV	1.03	20.34	0.0008	0.0012	0.0009	0.0008	0.0014	0.0025

Description of Light Sources Tested:	RF-FPR6W1W1K-C9
Case Temperature:	84.4°C
Ambient Temperature:	83.3°C
Drive Current:	30 mA
Measure Current:	30 mA
Failures Observed:	None

Chromaticity Shift ($\Delta u'v'$)

Sample No.	u'	v'	CCT(K)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
L31	0.5567	0.4048	1731	0.0008	0.0008	0.0018	0.0011	0.0030	0.0028
L32	0.5563	0.4052	1735	0.0008	0.0015	0.0015	0.0022	0.0030	0.0036
L33	0.5555	0.4050	1740	0.0003	0.0014	0.0017	0.0021	0.0018	0.0017
L34	0.5550	0.4052	1744	0.0002	0.0008	0.0019	0.0010	0.0006	0.0024
L35	0.5548	0.4051	1745	0.0006	0.0008	0.0011	0.0015	0.0024	0.0016
L36	0.5547	0.4050	1745	0.0005	0.0004	0.0016	0.0025	0.0022	0.0025
L37	0.5545	0.4049	1746	0.0003	0.0014	0.0020	0.0005	0.0023	0.0037
L38	0.5543	0.4048	1747	0.0007	0.0015	0.0005	0.0020	0.0006	0.0005
L39	0.5542	0.4048	1748	0.0004	0.0008	0.0014	0.0006	0.0025	0.0017
L40	0.5539	0.4047	1749	0.0001	0.0014	0.0021	0.0029	0.0021	0.0022
L41	0.5538	0.4046	1749	0.0009	0.0016	0.0023	0.0004	0.0031	0.0037
L42	0.5536	0.4046	1751	0.0002	0.0006	0.0009	0.0026	0.0012	0.0028
L43	0.5536	0.4046	1751	0.0005	0.0014	0.0018	0.0007	0.0015	0.0035
L44	0.5561	0.4053	1738	0.0001	0.0015	0.0006	0.0027	0.0018	0.0040
L45	0.5559	0.4052	1738	0.0003	0.0005	0.0013	0.0019	0.0008	0.0037
L46	0.5557	0.4051	1739	0.0007	0.0006	0.0018	0.0006	0.0019	0.0027
L47	0.5554	0.4050	1740	0.0006	0.0009	0.0012	0.0025	0.0014	0.0036
L48	0.5553	0.4049	1741	0.0008	0.0004	0.0018	0.0007	0.0029	0.0036
L49	0.5547	0.4047	1744	0.0007	0.0018	0.0004	0.0024	0.0026	0.0014
L50	0.5545	0.4047	1745	0.0005	0.0011	0.0017	0.0010	0.0031	0.0008
L51	0.5553	0.4050	1741	0.0007	0.0004	0.0011	0.0020	0.0007	0.0025
L52	0.5550	0.4049	1742	0.0010	0.0012	0.0015	0.0016	0.0030	0.0029
L53	0.5546	0.4047	1744	0.0008	0.0014	0.0015	0.0022	0.0015	0.0039
L54	0.5553	0.4045	1738	0.0002	0.0005	0.0023	0.0021	0.0018	0.0019
L55	0.5547	0.4043	1741	0.0003	0.0008	0.0011	0.0022	0.0010	0.0033
L56	0.5531	0.4037	1749	0.0006	0.0009	0.0011	0.0019	0.0016	0.0025
L57	0.5569	0.4058	1735	0.0007	0.0014	0.0011	0.0015	0.0023	0.0038
L58	0.5563	0.4055	1737	0.0004	0.0014	0.0005	0.0029	0.0021	0.0029
L59	0.5555	0.4052	1741	0.0005	0.0010	0.0007	0.0004	0.0025	0.0005
L60	0.5549	0.4049	1743	0.0002	0.0011	0.0017	0.0013	0.0014	0.0033
AV	0.5550	0.4049	1743	0.0005	0.0010	0.0014	0.0017	0.0020	0.0027
median	0.5550	0.4049	1743	0.0005	0.0010	0.0015	0.0019	0.0020	0.0028
MIN	0.5531	0.4037	1731	0.0001	0.0004	0.0004	0.0004	0.0006	0.0005
MAX	0.5569	0.4058	1751	0.0010	0.0018	0.0023	0.0029	0.0031	0.0040
STDEV	0.0009	0.0004	5.02	0.0002	0.0004	0.0005	0.0008	0.0008	0.0010

6 Data Set 3: 105°C, 30 mA

Description of Light Sources Tested:	RF-FPR6W1W1K-C9
Case Temperature:	104.2°C
Ambient Temperature:	103.4°C
Drive Current:	30 mA
Measure Current:	30 mA
Failures Observed:	None

Lumen Maintenance (%)

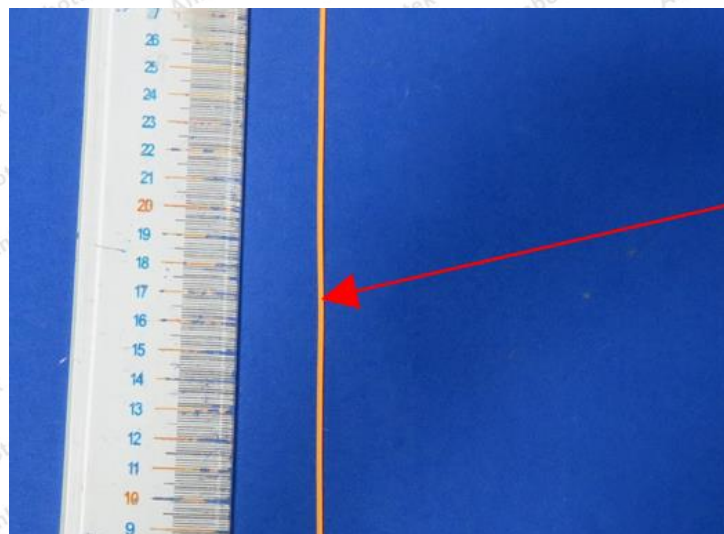
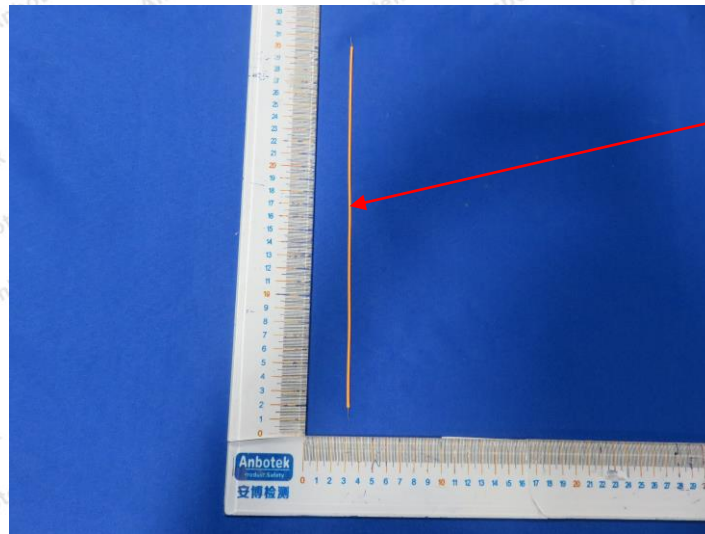
Sample No.	V _F (V)	Φ(lm)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
L61	264.02	625.78	99.90%	99.83%	99.21%	98.76%	98.06%	97.50%
L62	264.97	645.46	99.84%	99.39%	99.01%	98.70%	98.44%	97.90%
L63	267.99	691.40	99.95%	99.34%	99.22%	98.47%	98.24%	97.78%
L64	266.63	667.95	99.87%	99.46%	99.27%	98.81%	98.14%	98.08%
L65	265.98	655.44	99.75%	99.75%	99.05%	98.89%	97.99%	97.70%
L66	264.99	635.91	99.98%	99.61%	99.26%	98.53%	98.17%	98.01%
L67	263.34	608.81	99.98%	99.63%	99.10%	98.50%	98.20%	97.46%
L68	264.71	633.57	99.99%	99.51%	98.92%	98.35%	98.40%	97.89%
L69	264.15	621.60	99.85%	99.66%	98.95%	98.74%	98.19%	97.87%
L70	265.91	654.48	99.93%	99.69%	99.19%	98.88%	98.26%	97.62%
L71	265.63	649.25	99.90%	99.37%	99.18%	98.73%	98.18%	97.80%
L72	264.64	629.90	99.99%	99.39%	99.17%	98.85%	98.29%	98.05%
L73	264.10	618.13	99.89%	99.46%	99.29%	98.74%	98.07%	98.16%
L74	265.36	645.37	99.90%	99.62%	99.00%	98.38%	98.31%	98.18%
L75	264.88	636.24	99.92%	99.68%	99.21%	98.63%	98.19%	98.00%
L76	264.17	621.73	99.80%	99.54%	99.08%	98.87%	98.09%	97.84%
L77	264.01	625.73	99.90%	99.82%	99.14%	98.80%	98.44%	98.11%
L78	269.47	613.66	99.89%	99.74%	99.30%	98.59%	98.45%	98.18%
L79	268.92	604.82	99.86%	99.54%	99.26%	98.71%	98.22%	97.44%
L80	264.32	620.49	99.84%	99.31%	99.16%	98.67%	98.01%	97.50%
L81	268.17	695.33	99.86%	99.78%	99.21%	98.73%	98.34%	98.18%
L82	267.68	686.78	99.76%	99.34%	99.12%	98.79%	98.30%	97.81%
L83	270.79	638.77	99.92%	99.44%	99.26%	98.55%	98.23%	97.98%
L84	266.71	674.91	99.91%	99.49%	99.13%	98.53%	98.09%	97.71%
L85	266.11	663.84	99.95%	99.58%	99.21%	98.79%	98.03%	98.05%
L86	268.93	723.80	99.78%	99.62%	99.14%	98.85%	98.17%	98.01%
L87	267.34	693.41	99.98%	99.59%	99.07%	98.54%	98.32%	97.58%
L88	265.94	667.10	99.98%	99.64%	98.92%	98.68%	98.26%	97.87%
L89	270.27	643.19	99.88%	99.59%	99.16%	98.82%	98.23%	97.72%
L90	269.48	626.80	99.86%	99.39%	99.19%	98.74%	98.18%	97.99%
AV	266.32	647.32	99.89%	99.56%	99.15%	98.69%	98.22%	97.87%
median	265.93	640.98	99.90%	99.59%	99.17%	98.73%	98.21%	97.88%
MIN	263.34	604.82	99.75%	99.31%	98.92%	98.35%	97.99%	97.44%
MAX	270.79	723.80	99.99%	99.83%	99.30%	98.89%	98.45%	98.18%
STDEV	2.11	29.51	0.0007	0.0015	0.0011	0.0015	0.0013	0.0023

Description of Light Sources Tested:	RF-FPR6W1W1K-C9
Case Temperature:	104.2°C
Ambient Temperature:	103.4°C
Drive Current:	30 mA
Measure Current:	30 mA
Failures Observed:	None

Chromaticity Shift ($\Delta u'v'$)

Sample No.	u'	v'	CCT(K)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
L61	0.5547	0.4049	1744	0.0008	0.0004	0.0008	0.0022	0.0020	0.0046
L62	0.5553	0.4052	1742	0.0009	0.0017	0.0025	0.0034	0.0021	0.0016
L63	0.5568	0.4055	1735	0.0012	0.0016	0.0018	0.0033	0.0029	0.0041
L64	0.5560	0.4052	1738	0.0009	0.0019	0.0017	0.0024	0.0026	0.0038
L65	0.5556	0.4050	1740	0.0017	0.0005	0.0028	0.0025	0.0029	0.0037
L66	0.5550	0.4048	1742	0.0016	0.0018	0.0025	0.0019	0.0038	0.0034
L67	0.5544	0.4046	1745	0.0009	0.0020	0.0013	0.0024	0.0039	0.0032
L68	0.5542	0.4048	1748	0.0003	0.0005	0.0019	0.0026	0.0030	0.0035
L69	0.5538	0.4047	1750	0.0012	0.0013	0.0020	0.0007	0.0023	0.0011
L70	0.5562	0.4050	1735	0.0006	0.0004	0.0009	0.0021	0.0028	0.0042
L71	0.5561	0.4049	1736	0.0010	0.0021	0.0006	0.0013	0.0035	0.0035
L72	0.5554	0.4046	1739	0.0003	0.0020	0.0027	0.0023	0.0033	0.0046
L73	0.5551	0.4045	1740	0.0004	0.0013	0.0015	0.0035	0.0016	0.0034
L74	0.5557	0.4048	1737	0.0015	0.0022	0.0020	0.0029	0.0023	0.0045
L75	0.5554	0.4046	1739	0.0009	0.0016	0.0028	0.0018	0.0034	0.0034
L76	0.5549	0.4044	1741	0.0005	0.0015	0.0028	0.0030	0.0012	0.0046
L77	0.5548	0.4049	1744	0.0004	0.0004	0.0027	0.0023	0.0038	0.0043
L78	0.5579	0.4058	1729	0.0007	0.0014	0.0028	0.0018	0.0036	0.0040
L79	0.5576	0.4057	1730	0.0008	0.0020	0.0009	0.0033	0.0038	0.0023
L80	0.5549	0.4046	1742	0.0013	0.0013	0.0028	0.0033	0.0009	0.0015
L81	0.5570	0.4057	1734	0.0005	0.0004	0.0005	0.0006	0.0018	0.0009
L82	0.5567	0.4056	1735	0.0003	0.0015	0.0028	0.0022	0.0037	0.0044
L83	0.5580	0.4061	1730	0.0015	0.0021	0.0014	0.0029	0.0028	0.0031
L84	0.5557	0.4053	1741	0.0012	0.0016	0.0017	0.0015	0.0028	0.0041
L85	0.5553	0.4052	1742	0.0011	0.0011	0.0005	0.0024	0.0036	0.0038
L86	0.5574	0.4061	1734	0.0004	0.0016	0.0025	0.0023	0.0023	0.0035
L87	0.5566	0.4058	1737	0.0005	0.0020	0.0013	0.0021	0.0039	0.0034
L88	0.5558	0.4054	1740	0.0009	0.0012	0.0015	0.0024	0.0025	0.0019
L89	0.5569	0.4055	1733	0.0006	0.0011	0.0019	0.0035	0.0038	0.0025
L90	0.5566	0.4053	1734	0.0003	0.0013	0.0026	0.0015	0.0026	0.0025
AV	0.5559	0.4052	1739	0.0008	0.0014	0.0019	0.0024	0.0028	0.0033
median	0.5557	0.4051	1739	0.0008	0.0015	0.0019	0.0023	0.0028	0.0035
MIN	0.5538	0.4044	1729	0.0003	0.0004	0.0005	0.0006	0.0009	0.0009
MAX	0.5580	0.4061	1750	0.0017	0.0022	0.0028	0.0035	0.0039	0.0046
STDEV	0.0011	0.0005	5.14	0.0004	0.0006	0.0008	0.0008	0.0008	0.0011

7 Product Photo



*****END OF TEST REPORT*****