



NVLAP LAB CODE:201045-0



Shenzhen Anbotek Compliance Laboratory Limited

## IES LM-79-08 TEST REPORT

For  
Beyond LED Technology

**Report Number:** R011412502L  
**Product Type:** LED Tube Light  
**Test Date:** 2014-12-15-2014-12-18  
**Report Date:** 2014-12-25  
**Product Model:** 101782-1  
**Product Description:** 120-277VAC 50/60Hz 25W 6500K  
**Product Criteria:** IES LM-79-08: Electrical and Photometric Measurements of Solid-State Lighting Products

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**Tested By:**

**Reviewed By:**

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Anbotek Compliance Laboratory Limited. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the Federal Government.

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## 1 – GENERAL

### 1.1 Product description

#### General Information

<b>Applicant</b>	Beyond LED Technology
<b>Applicant Address</b>	1939 Parker Ct Stone Mountain, GA 30087
<b>Manufacturer</b>	Beyond LED Technology
<b>Manufacturer Address</b>	1939 Parker Ct Stone Mountain, GA 30087
<b>Brand name</b>	Beyond LED
<b>Test Model Number</b>	101782-1
<b>Burning time before test</b>	0 Hours (For new products)

#### Rated Values

<b>Rated Inputs</b>	100-277VAC 50/60Hz
<b>Rated Power</b>	25W
<b>Nominal CCT</b>	6500K

### 1.2 Standard of method

- ANSI C78.377-2011: Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-2002: Harmonic Emission Limits-Related Power Quality Requirements for Lighting Equipment
- CIE Publication No.13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources
- IESNA LM-79-08 Approved Method: Electric & Photometric Measurement of Solid-state Lighting Products

### 1.3 Test Facility

The test facility used by Shenzhen Anbotek Compliance Laboratory Limited is located at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China.

## 2 – Test Equipment List and Details

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Goniophotometric System	SENSING	GMS-3000	-	-	2014-3-20	2015-3-19
AC Power Source	Ainuo	AN97001W	-	0-300V, 1000VA	2014-3-12	2015-3-11
Digital Power Meter	YOKOGAWA	WT310		0-600V/0-10A/0-100Hz	2014-3-12	2015-3-11
Temperature & Humidity meter	XINIXI	CTH-608	-	0°C~50°C, 10% to 90%RH	2014-4-16	2015-4-15
Total Luminous Flux Standard Lamp	SENSING	220V/500W	S135009	220V/500W	2014-4-10	2015-4-09
Total Luminous Flux Standard Lamp	SENSING	220V/500W	S1350014	220V/500W	2014-4-10	2015-4-09
1.5m Integral Sphere	SENSING	SPR-600M	-	380nm-780nm,0.011m~6.00×10 <sup>5</sup> lm	2014-4-10	2015-4-09
Spectrum analyzer	SENSING	SPR-3000	-	380nm-780nm,0.011m~6.00×10 <sup>5</sup> lm	2014-4-10	2015-4-09
AC Power Source	ALL POWER	APW-110N	997079	0-300V, 0-1000VA	2014-7-14	2015-7-13
Digital Power Meter	YOKOGAWA	WT210	-	0-600V/0-10A/0-100Hz	2014-3-12	2015-3-11
DC Power Supply	Linkcolor	Linkcolor	-	DC 30V, 5A	2014-3-12	2015-3-11
Total Luminous Flux Standard Lamp	SENSING	110 V / 100 W	S13100190	Refer specification	2014-4-10	2015-4-09
Total Luminous Flux Standard Lamp	SENSING	110 V / 100 W	S1310034	Refer specification	2014-4-10	2015-4-09
Temperature & Humidity meter	XINIXI	CTH-608	-	0°C~50°C, 10% to 90%RH	2014-4-16	2015-4-15

Statement of Traceability: Shenzhen Anbotek Compliance Laboratory Limited attests that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).

## **3 - Test Method**

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### **3.1 Ambient Condition**

The ambient temperature in which measurements are being taken was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , the air flow around the sample(s) being tested did not affect the performance.

### **3.2 Power Supply Characteristics**

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within  $\pm 0.2$  percent under load.

### **3.3 Seasoning and Stabilization**

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

### **3.4 Integrating Sphere System**

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards.  $4\pi$  geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

### **3.5 Goniophotometer System**

The goniophotometer system is calibrated by standard light source before measurement. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The method according to IESNA LM-79-08 following chapter.

## 4-TEST RESULT

### [Integrating Sphere System]

#### 4.1 Electrical data

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.201	23.95	0.991

#### 4.2 Photometric data

Luminous Flux (lm)	Radiant Flux (W)	Efficacy (lm/W)	CCT (K)	Duv
2828.756	9.0027	118.11	6630	0.0078

#### 4.3 Chromaticity Coordinate

x	y	u	v	u'	v'
0.3090	0.3384	0.1918	0.3151	0.1918	0.4727

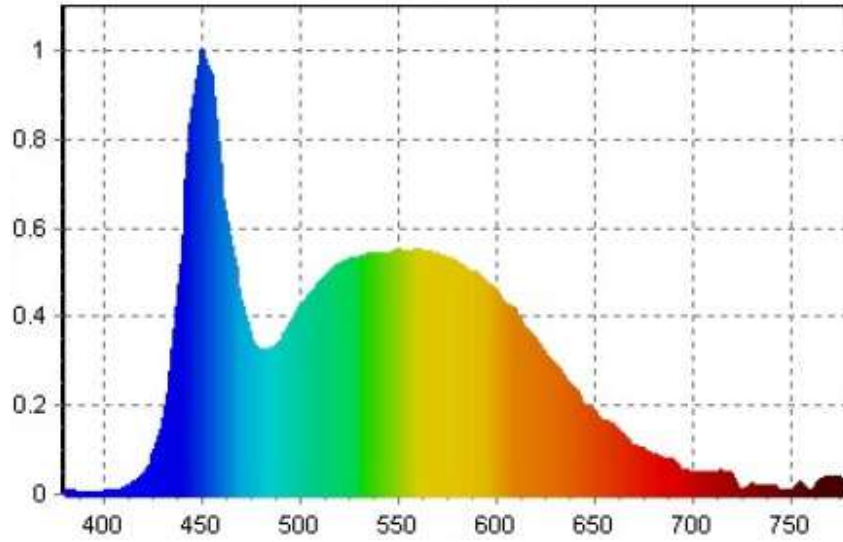
#### 4.4 Color Rendering Details

Ra
82.8

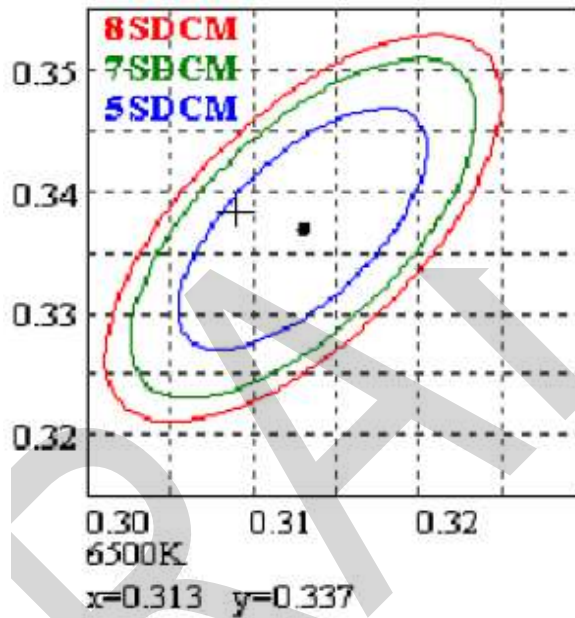
R1	R2	R3	R4	R5
80.2	84.4	87.1	85.6	80.5
R6	R7	R8	R9	R10
77.7	92.4	74.1	5.8	61.5
R11	R12	R13	R14	R15
84.6	49.4	81.4	92.6	75.9

### 4.5 Spectral Distribution

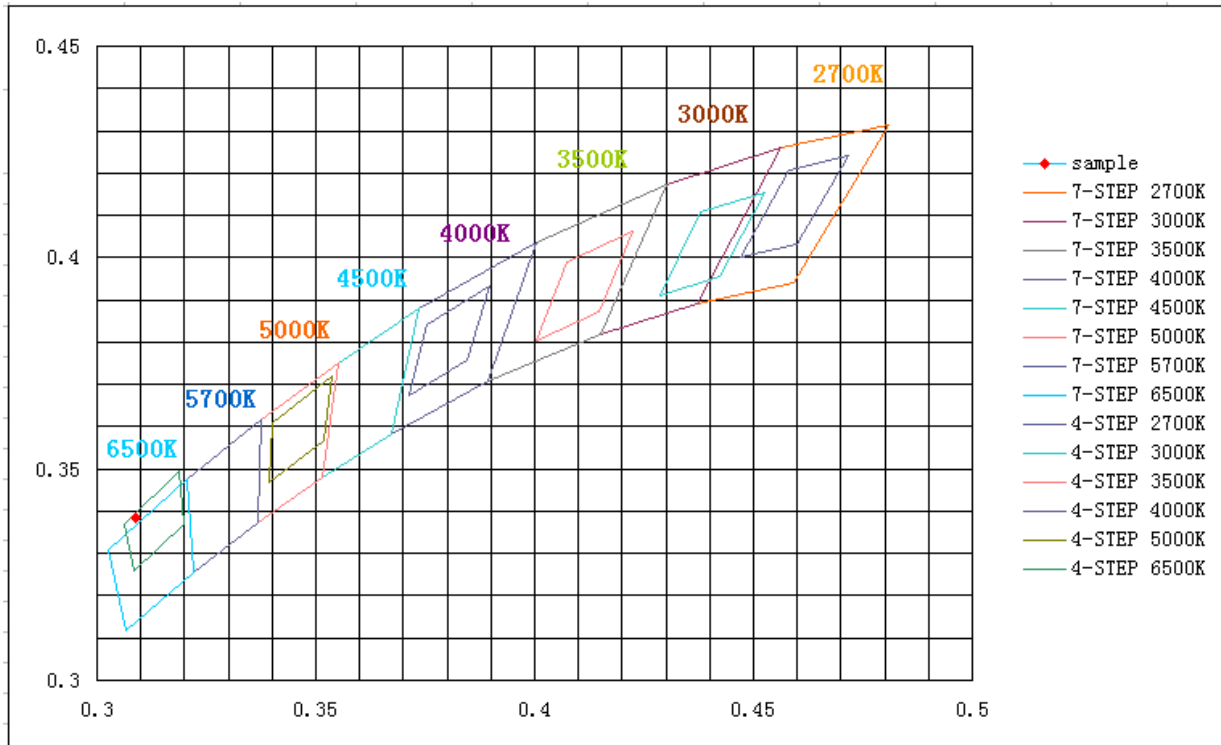
spectral distribution curve



### 4.6 Chromaticity Diagram (CIE 1931)



### 4.7 ANSI Chromaticity Quadrangles Diagram



### [Goniophotometer System]

#### 4.8 Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
119.990	60	0.207	23.883	0.962

#### 4.9 Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	CBCP (cd)	S/MH (C0/180)	S/MH (C90/270)
2838.78	118.86	547.523	1.46	1.32



#### 4.10 Zonal Lumen Summary

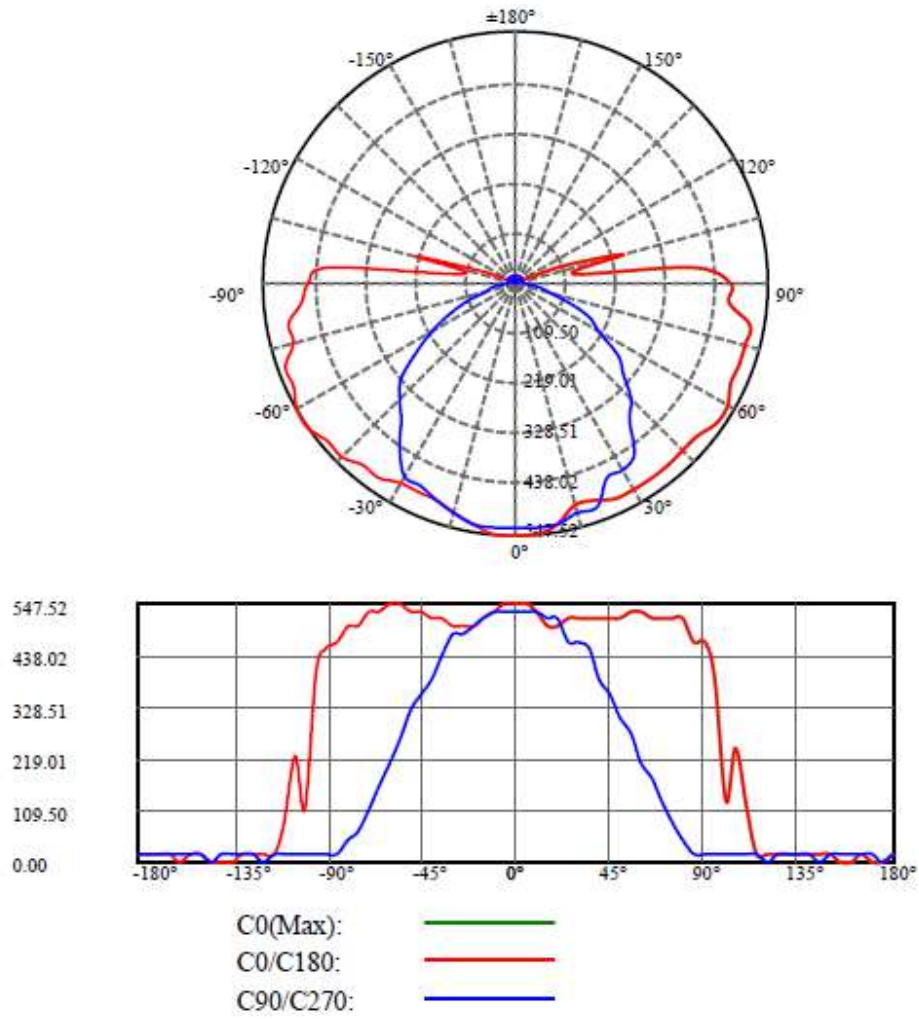
##### ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	421.01	14.83%
0-40	712.99	25.12%
0-60	1425.51	50.22%
0-90	2496.25	87.93%
0-120	2797.59	98.55%
0-180	2838.78	100.00%
60-90	1259.65	44.37%
90-120	457.05	16.10%
90-130	467.43	16.47%
90-150	486.25	17.13%
90-180	497.97	17.54%
0-82.97	2271.02	80.00%

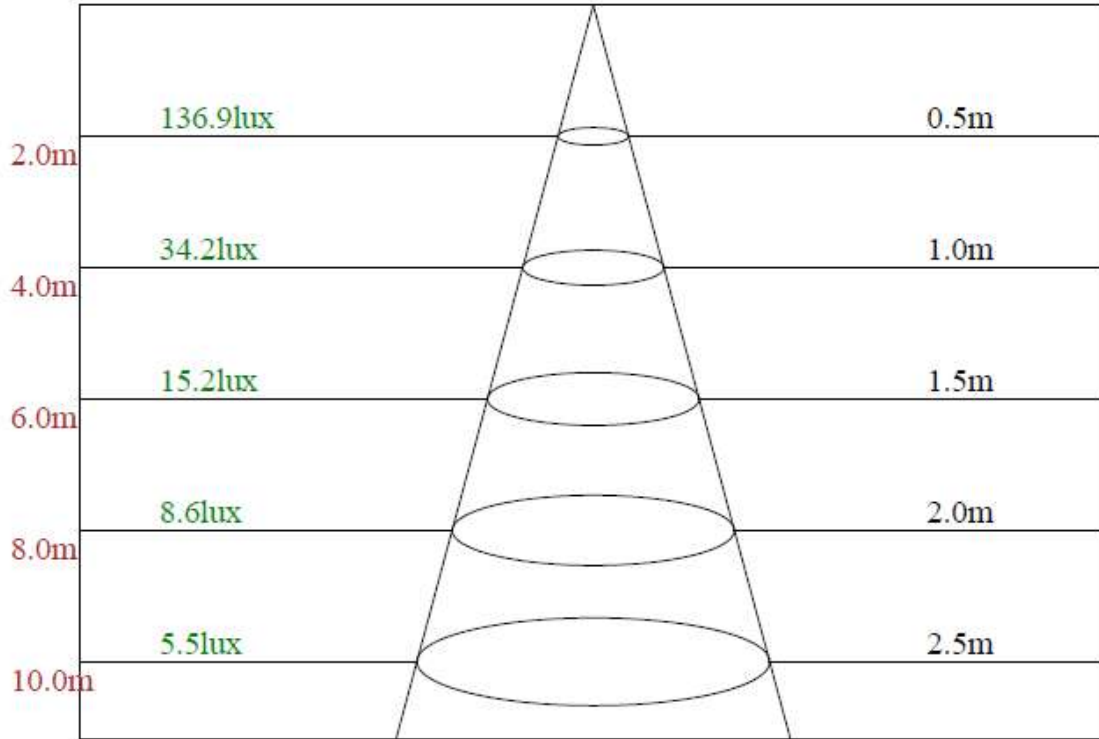
##### ZONAL LUMEN SUMMARY

0-10	51.36
10-20	144.73
20-30	224.92
30-40	291.98
40-50	340.44
50-60	372.08
60-70	378.19
70-80	365.65
80-90	326.90
90-100	206.11
100-110	74.88
110-120	20.35
120-130	10.38
130-140	10.13
140-150	8.68
150-160	6.77
160-170	4.02
170-180	0.94

### 4.11 Light Distribution Curve [Unit: cd]



### 4.12 Lux distance Curve



Beam angle of C0plane14.41

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## 4.13 Luminous Intensity (cd) Distribution Data

<i>C/γ</i> (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	547.52	547.52	531.42	499.21	499.21	515.32	515.32	515.32	515.32
22.5	547.52	531.42	515.32	499.21	499.21	483.11	483.11	499.21	499.21
45.0	547.52	547.52	531.42	515.32	499.21	483.11	467.00	467.00	467.00
67.5	547.52	547.52	531.42	515.32	499.21	467.00	467.00	402.59	386.49
90.0	531.42	531.42	531.42	515.32	515.32	467.00	467.00	450.90	386.49
112.5	547.52	547.52	515.32	515.32	499.21	483.11	467.00	418.69	370.38
135.0	547.52	547.52	531.42	499.21	499.21	483.11	467.00	467.00	467.00
157.5	547.52	547.52	531.42	515.32	483.11	499.21	483.11	515.32	515.32
180.0	547.52	547.52	531.42	515.32	499.21	499.21	499.21	515.32	515.32
202.5	547.52	547.52	531.42	499.21	483.11	483.11	483.11	499.21	499.21
225.0	547.52	531.42	531.42	515.32	499.21	467.00	483.11	467.00	483.11
247.5	547.52	547.52	515.32	515.32	499.21	483.11	467.00	418.69	370.38
270.0	531.42	531.42	531.42	515.32	499.21	483.11	483.11	434.80	386.49
292.5	547.52	547.52	547.52	515.32	499.21	483.11	467.00	402.59	370.38
315.0	547.52	547.52	515.32	499.21	499.21	467.00	467.00	467.00	467.00
337.5	547.52	547.52	531.42	515.32	499.21	499.21	499.21	515.32	499.21
360.0	547.52	547.52	531.42	499.21	499.21	515.32	515.32	515.32	515.32
<i>C/γ</i> (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	515.32	515.32	531.42	531.42	515.32	515.32	515.32	515.32	467.00
22.5	499.21	483.11	499.21	499.21	499.21	499.21	483.11	467.00	450.90
45.0	467.00	450.90	418.69	402.59	386.49	386.49	370.38	370.38	338.18
67.5	354.28	322.07	305.97	289.87	241.55	225.45	193.24	209.35	177.14
90.0	354.28	305.97	273.76	209.35	177.14	128.83	80.52	48.31	16.10
112.5	354.28	338.18	322.07	305.97	273.76	257.66	225.45	209.35	177.14
135.0	467.00	467.00	467.00	467.00	434.80	402.59	402.59	370.38	338.18
157.5	515.32	515.32	515.32	531.42	515.32	515.32	499.21	483.11	467.00
180.0	531.42	531.42	547.52	547.52	531.42	531.42	499.21	499.21	467.00
202.5	499.21	499.21	499.21	499.21	499.21	483.11	483.11	483.11	434.80
225.0	483.11	450.90	434.80	434.80	418.69	386.49	386.49	370.38	322.07
247.5	354.28	338.18	322.07	305.97	257.66	257.66	225.45	193.24	144.93
270.0	354.28	322.07	257.66	209.35	161.04	112.73	64.41	48.31	16.10
292.5	354.28	338.18	322.07	305.97	257.66	225.45	209.35	209.35	177.14
315.0	450.90	450.90	418.69	402.59	402.59	386.49	370.38	370.38	338.18
337.5	499.21	515.32	499.21	499.21	499.21	499.21	499.21	450.90	450.90
360.0	515.32	515.32	531.42	531.42	515.32	515.32	515.32	515.32	467.00
<i>C/γ</i> (°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	467.00	386.49	128.83	241.55	112.73	16.10	16.10	16.10	16.10
22.5	418.69	370.38	96.62	193.24	80.52	16.10	16.10	16.10	16.10
45.0	322.07	241.55	48.31	64.41	16.10	0.00	16.10	0.00	16.10
67.5	128.83	48.31	16.10	16.10	16.10	16.10	16.10	0.00	0.00
90.0	16.10	16.10	16.10	16.10	16.10	16.10	0.00	16.10	16.10
112.5	112.73	48.31	16.10	16.10	16.10	16.10	16.10	0.00	16.10
135.0	338.18	273.76	64.41	48.31	16.10	0.00	16.10	0.00	0.00
157.5	402.59	370.38	96.62	161.04	64.41	32.21	16.10	0.00	16.10
180.0	450.90	402.59	112.73	225.45	80.52	16.10	16.10	16.10	16.10
202.5	386.49	370.38	96.62	144.93	48.31	32.21	16.10	16.10	16.10
225.0	289.87	96.62	112.73	32.21	16.10	16.10	16.10	16.10	16.10
247.5	112.73	48.31	16.10	16.10	16.10	16.10	16.10	0.00	16.10
270.0	16.10	16.10	16.10	16.10	16.10	16.10	0.00	16.10	16.10
292.5	128.83	48.31	16.10	16.10	16.10	16.10	16.10	16.10	16.10
315.0	305.97	257.66	80.52	48.31	16.10	0.00	16.10	0.00	16.10
337.5	418.69	370.38	96.62	193.24	48.31	16.10	16.10	16.10	16.10
360.0	467.00	386.49	128.83	241.55	112.73	16.10	16.10	16.10	16.10

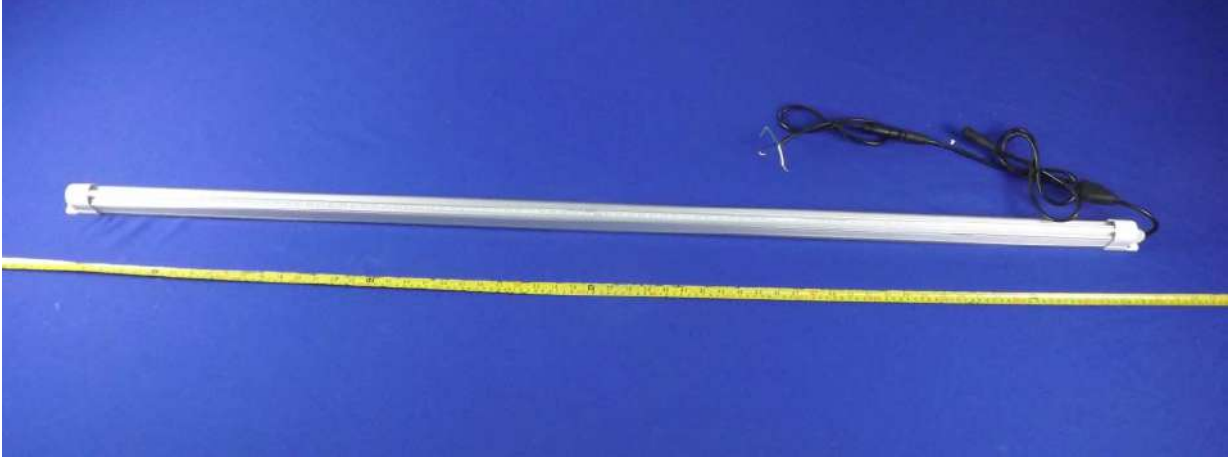
<i>Cl<sub>γ</sub></i> (°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	16.10	16.10	16.10	16.10	0.00	0.00	16.10	0.00	0.00
22.5	0.00	16.10	16.10	16.10	16.10	16.10	16.10	16.10	0.00
45.0	16.10	16.10	16.10	16.10	0.00	16.10	0.00	16.10	16.10
67.5	0.00	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10
90.0	16.10	16.10	0.00	16.10	16.10	16.10	16.10	16.10	0.00
112.5	16.10	16.10	16.10	16.10	16.10	16.10	0.00	16.10	16.10
135.0	0.00	16.10	0.00	0.00	16.10	16.10	16.10	0.00	0.00
157.5	0.00	0.00	16.10	16.10	16.10	16.10	16.10	0.00	16.10
180.0	0.00	0.00	0.00	16.10	16.10	0.00	16.10	16.10	16.10
202.5	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10
225.0	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10
247.5	16.10	16.10	16.10	16.10	16.10	16.10	16.10	32.21	16.10
270.0	16.10	16.10	0.00	16.10	16.10	16.10	16.10	16.10	16.10
292.5	16.10	16.10	16.10	16.10	16.10	16.10	16.10	32.21	16.10
315.0	16.10	16.10	32.21	16.10	16.10	16.10	16.10	0.00	0.00
337.5	32.21	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10
360.0	16.10	16.10	16.10	16.10	0.00	0.00	16.10	0.00	0.00

<i>Cl<sub>γ</sub></i> (°)	180.0
0.0	16.10
22.5	0.00
45.0	16.10
67.5	16.10
90.0	16.10
112.5	16.10
135.0	0.00
157.5	0.00
180.0	16.10
202.5	0.00
225.0	16.10
247.5	16.10
270.0	16.10
292.5	16.10
315.0	0.00
337.5	0.00
360.0	16.10

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**Attachment A – Product PHOTO**

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-----End of Report-----