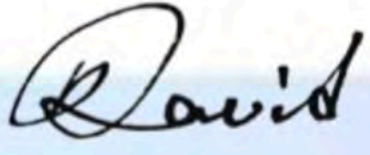





## IESNA LM-79 TEST REPORT

<b>Applicant's name</b> .....	P.Q.L., Inc.
<b>Address</b> .....	2285 Ward Avenue / Simi Valley, CA 93065
<b>Brand Name</b> .....	Superior Life®
<b>Report No.</b> .....	BTR66.181.16.0007.44
<b>Product Name</b> .....	Superior Life®
<b>Model Number</b> .....	91074, 91075, 9107X_41K, 91077
<b>Tested by</b> (printed name and signature) .....	David Zhang 
<b>Title</b> .....	<b>Test Engineer</b> .....
<b>Approved by</b> (printed name and signature) .....	Steven Huo 
<b>Title</b> .....	<b>Approved Signatory</b> .....
<b>Date of issue</b> .....	Oct 25, 2016
<b>Testing Laboratory Name</b> .....	BEST Test Service Shenzhen Co., Ltd.
<b>Address</b> .....	1 <sup>st</sup> Floor, 1 <sup>st</sup> Building, Weitai Industrial Park, Yingrenshi, Shiyan, Baoan, Shenzhen, China
<b>Accreditation</b> .....	DLC/Lighting Facts/UL/ETL/ELI/NVLAP/EPA/DOE
<b>Test specification</b>	
<b>Standard</b> .....	IESNA LM-79
<b>Test procedure</b> .....	IESNA LM-79 Test Procedure
<b>Non-standard test method</b> .....	No
<b>Test Report Form No.</b>	BEST_LM-79
<b>TRF originator</b> .....	BEST Test Service Shenzhen Co., Ltd. Mr Tseng
<b>Master TRF</b> .....	BEST_LM-79.doc

**Note:**

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<b>Product description:</b>	
Test date .....	Feb 29, 2016 – Mar 08, 2016
Sample Quantity .....	1 unit
SKU.....	N/A
Rating(s) (V; Hz) .....	AC 120V/60Hz
Nominal Power.....	16W
Nominal Power Factor .....	N/A
Nominal Lumen Output.....	1600lm
Nominal CCT .....	2700K, 3000K, 4000K, 5000K
Nominal CRI(Ra) .....	80
Number of hours operated prior to measurement	0H
Total operating time of the product for measurements including stabilization	3.5H
Ambient temperature	25°C
Orientation (burning position) of SSL product during test	Lighting Surface Down
Stabilization time	1.5 H
Photometric method	Sphere-spectroradiometer+Goniophotometer
reference standard used for Calibration	DC 24V 100W Omni-Directional Halogen Calibrated by NIM China
Correction factors applied	Self absorbing applied
Photometric measurement conditions	See test method description below
Bandwidth of spectroradiometer	2nm
Statement of uncertainties	1.12%
Deviation from standard operating procedures,	None



## 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 EVERFINE 2.0 m 4  $\Pi$  geometry integrating sphere. Temperature is measured at a position inside the sphere. Spectral radiant flux measurements are made using Integral Sphere to the detector port of the integrating sphere. Each lamp is operated at rated voltage in its designated orientation by a CHROMA 61602 AC SOURCE. Each lamp should be stable before measurements are made as below:

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 by EVERFINE HASS-2000. The calibration of the sphere photometer-spectrometer system is traceable to the NIM China by a calibrated halogen incandescent lamp. Lamp efficacy (lumens per watts) for each lamp model is computed based on the revised luminous flux result. Electrical measurements including voltage, current, power and power factor are measured using the YOKOGAWA WT310 digital power Meter.

The total uncertainty of the light output measurements is estimated, at the 95% confidence level, not to exceed  $\pm 1.12\%$  over the wavelength range 380-780 nm.

## Luminous Intensity

A Everfine GOR-5000 Goniophotometer was used to measure the intensity at each angle of distribution, Luminous intensity (cd) is measured within each vertical plane at a  $5^{\circ}$  vertical angle increment (maximum) from  $0^{\circ}$  to  $180^{\circ}$  Luminous intensity (cd), measurements repeated in vertical planes about the lamp (polar) axis in maximum increments of  $22.5^{\circ}$  from  $0^{\circ}$  to  $180^{\circ}$ , and export the intensity (cd) with excel format. The test distance is 25meters from the Goniophotometer to the detector

### Photometric and Electrical Test Data (91074)

Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	0.131	/	15.04	0.9580	1600.20	106.40
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
2727	82.6	11	0.4561	0.4071	0.2616	0.5255	-0.0010

### Photometric and Electrical Test Data (91075)

Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	0.123	/	14.03	0.9507	1618.0	115.30
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
3059	82.6	8	0.4322	0.4014	0.2487	0.5196	-0.0004



**Photometric and Electrical Test Data (9107X)**

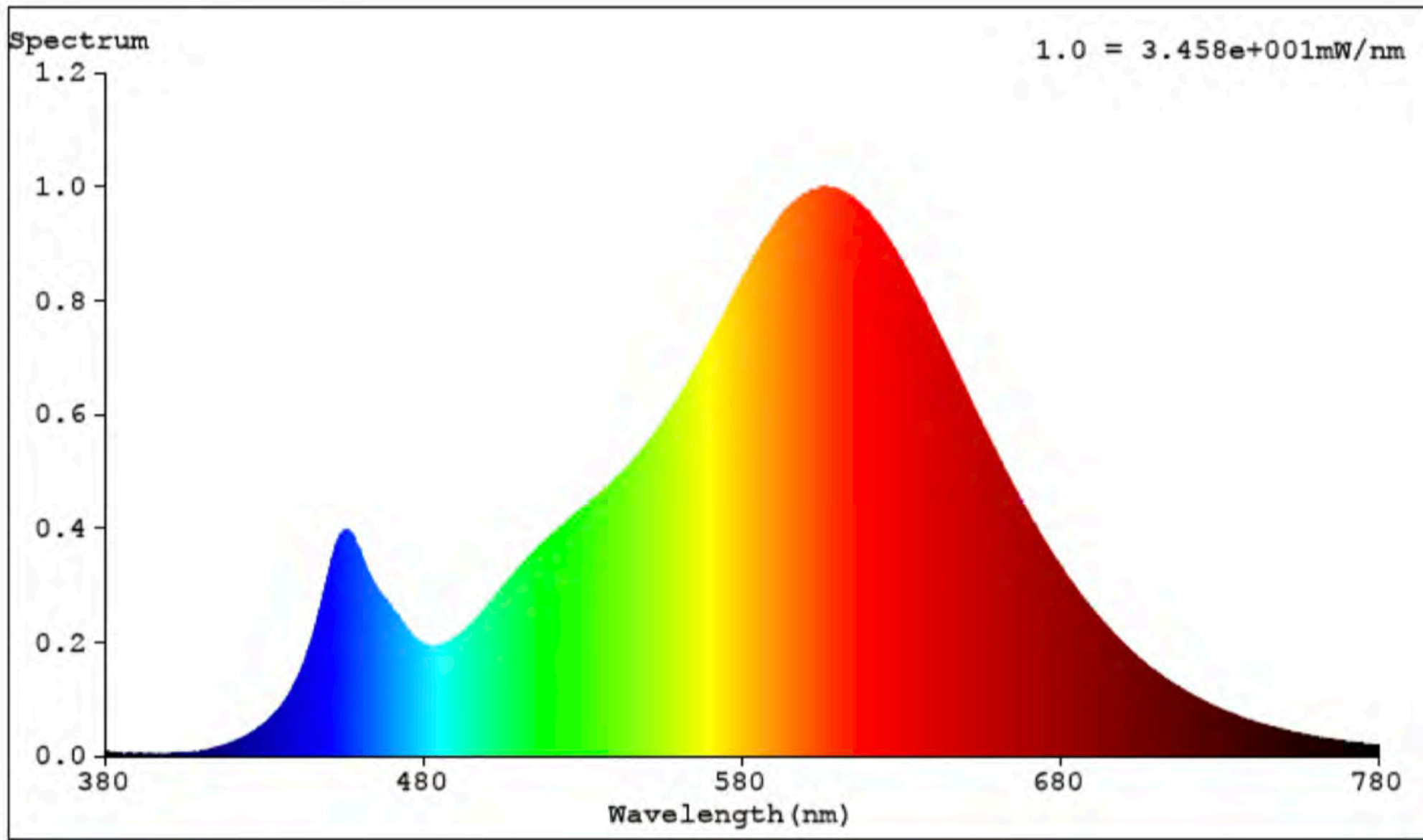
Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	0.124	/	14.15	0.9517	1693.9	119.69
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
3931	83.3	13	0.3853	0.3847	0.2251	0.5058	0.0023

**Photometric and Electrical Test Data (91077)**

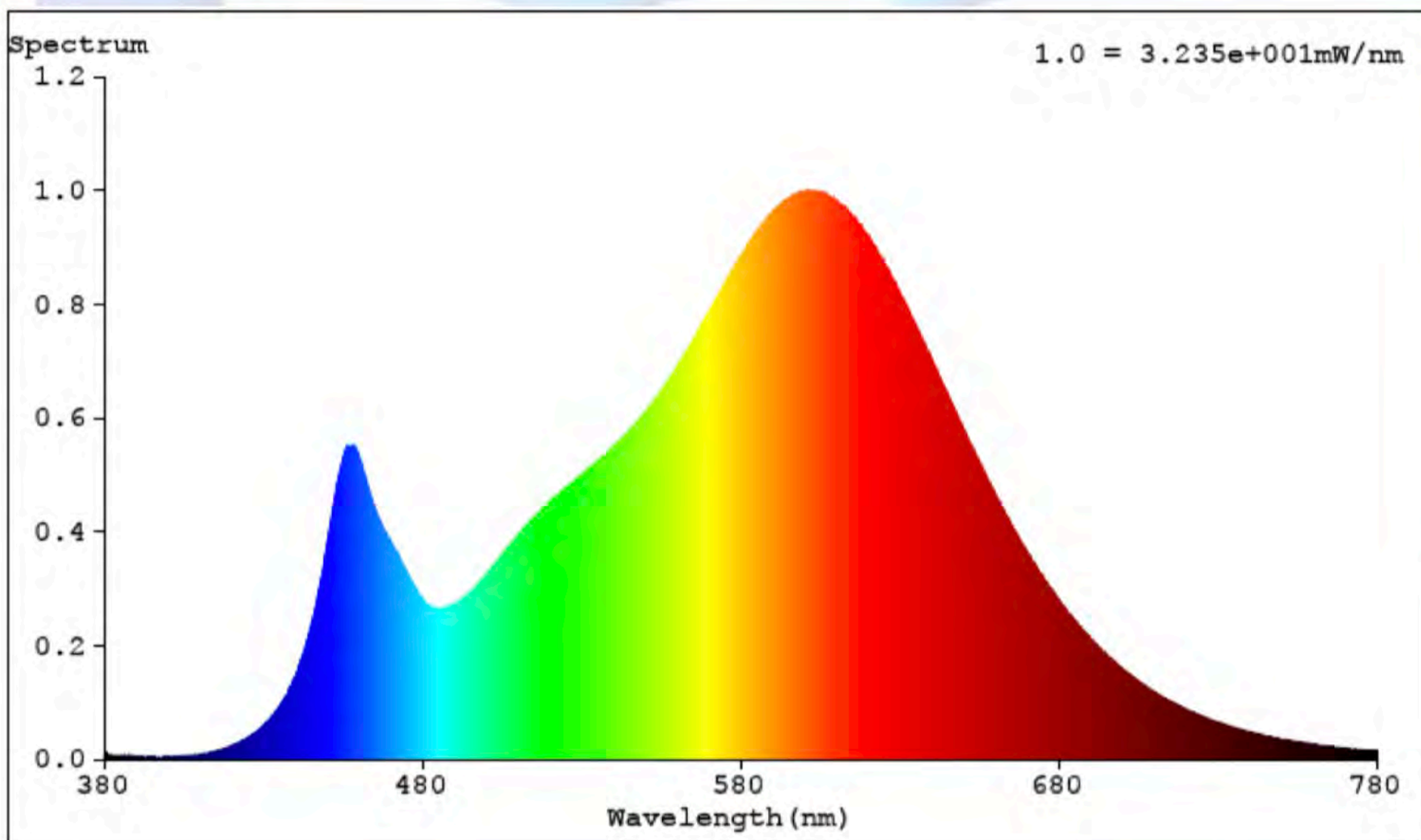
Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	0.127	/	14.47	0.9503	1688.7	116.70
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
5033	85.4	27	0.3446	0.3560	0.2094	0.4867	0.0024

The logo for BEST is displayed in large, white, bold, sans-serif capital letters. The letters are set against a light blue, rounded rectangular background that has a subtle gradient and a slight drop shadow, giving it a three-dimensional appearance.

### Spectrul Plots(91074)

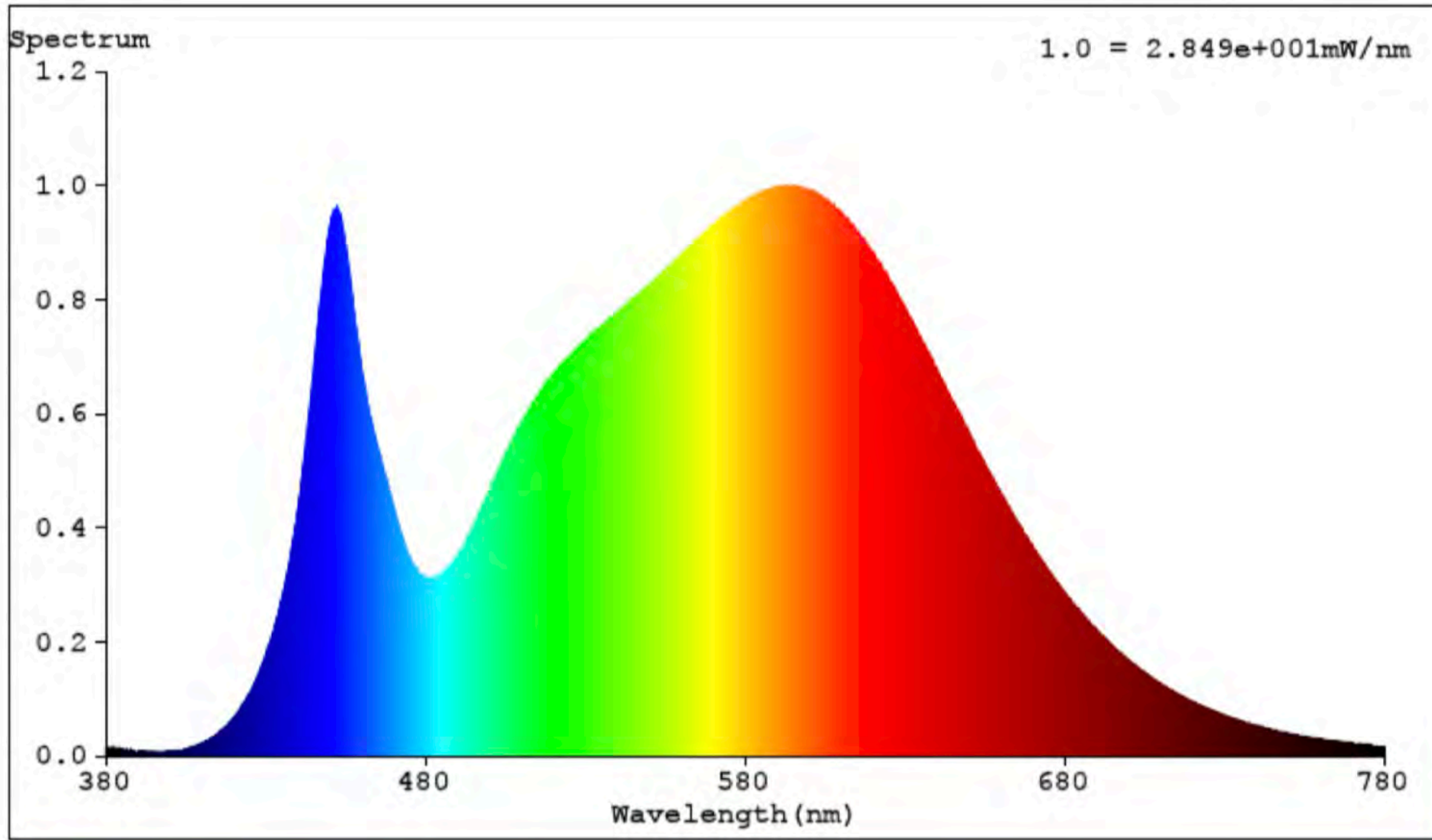


### Spectrul Plots(91075)

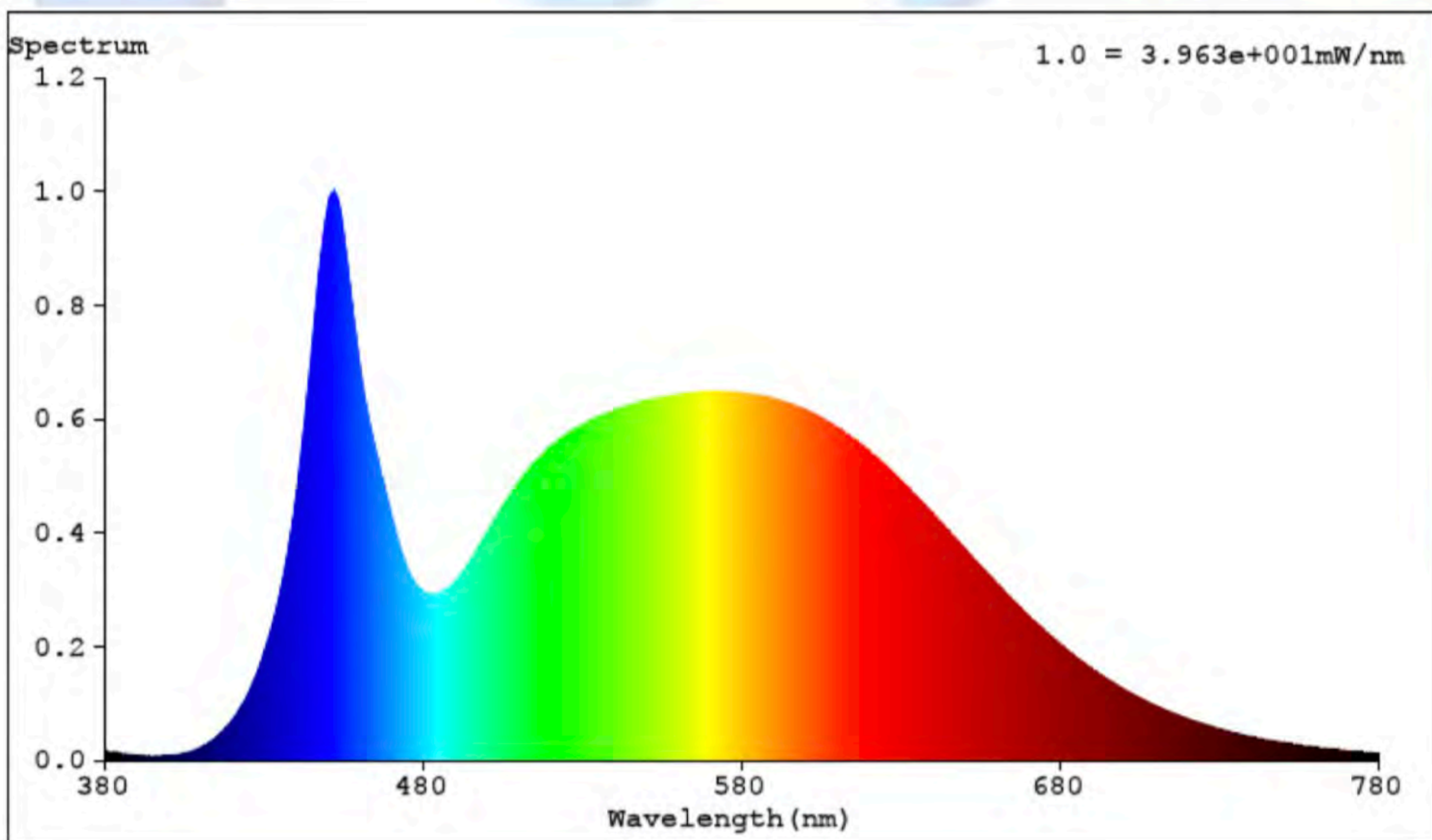




### Spectrul Plots(9107X)

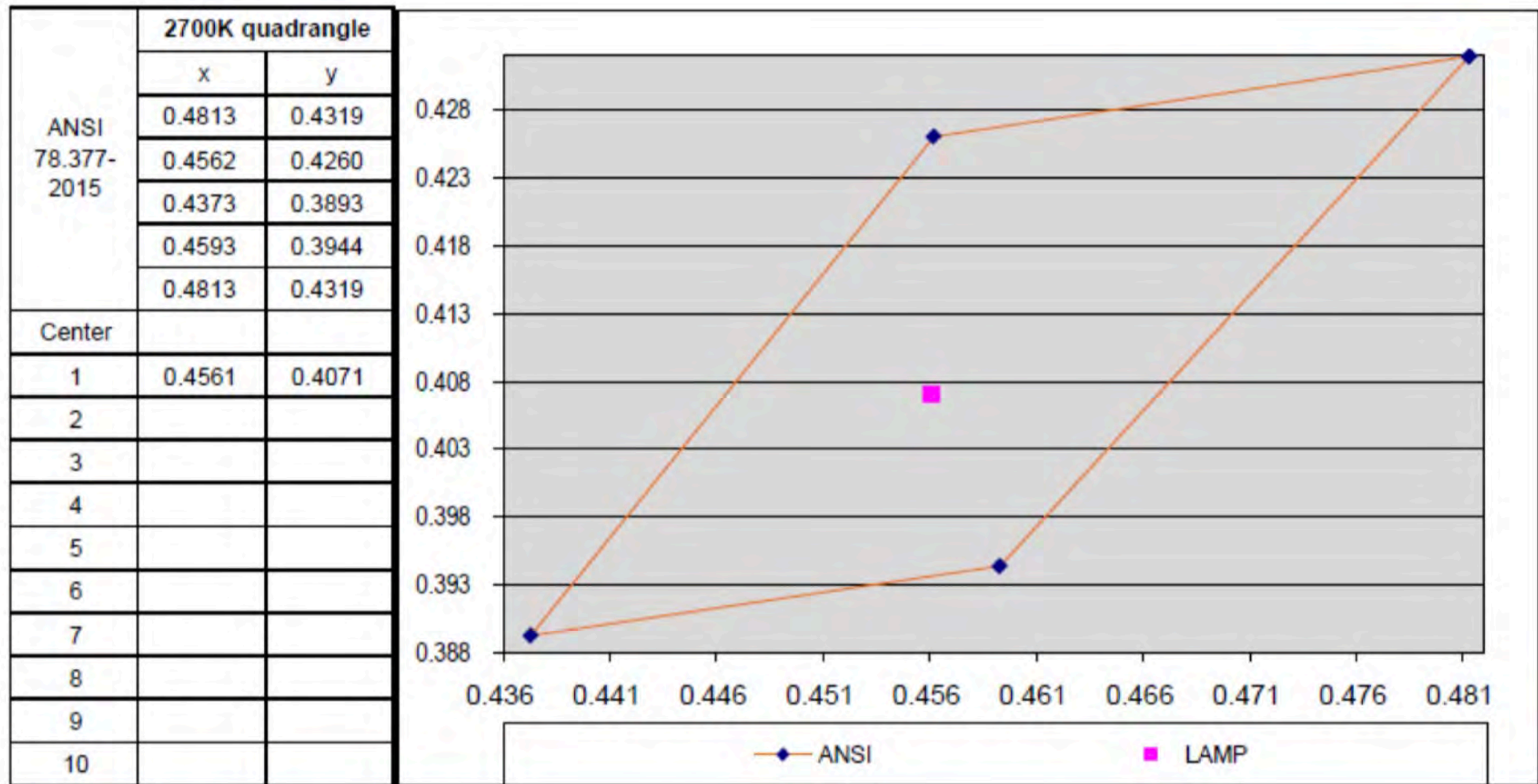


### Spectrul Plots (91077)

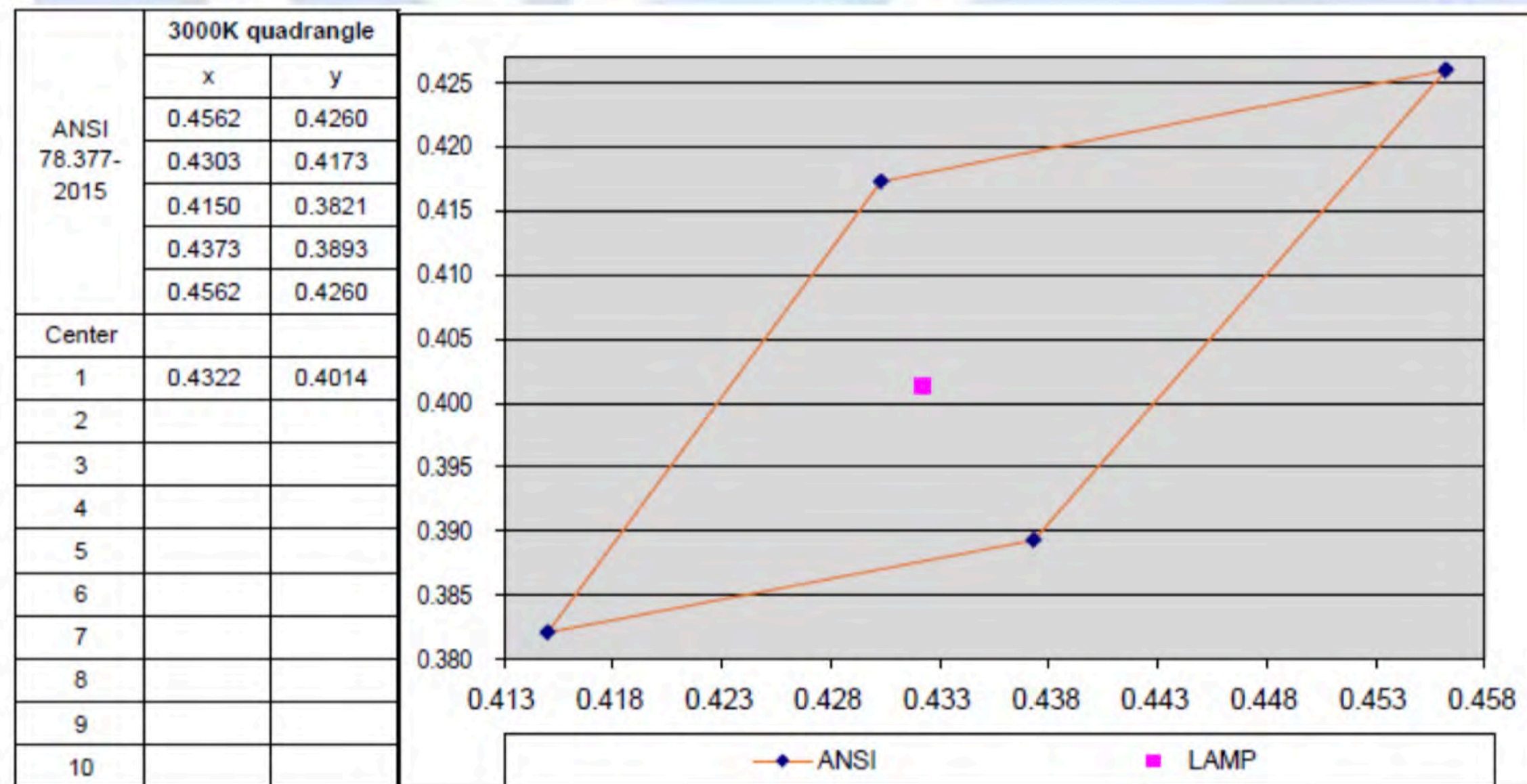


## 7 Step Quadrangle

9107X



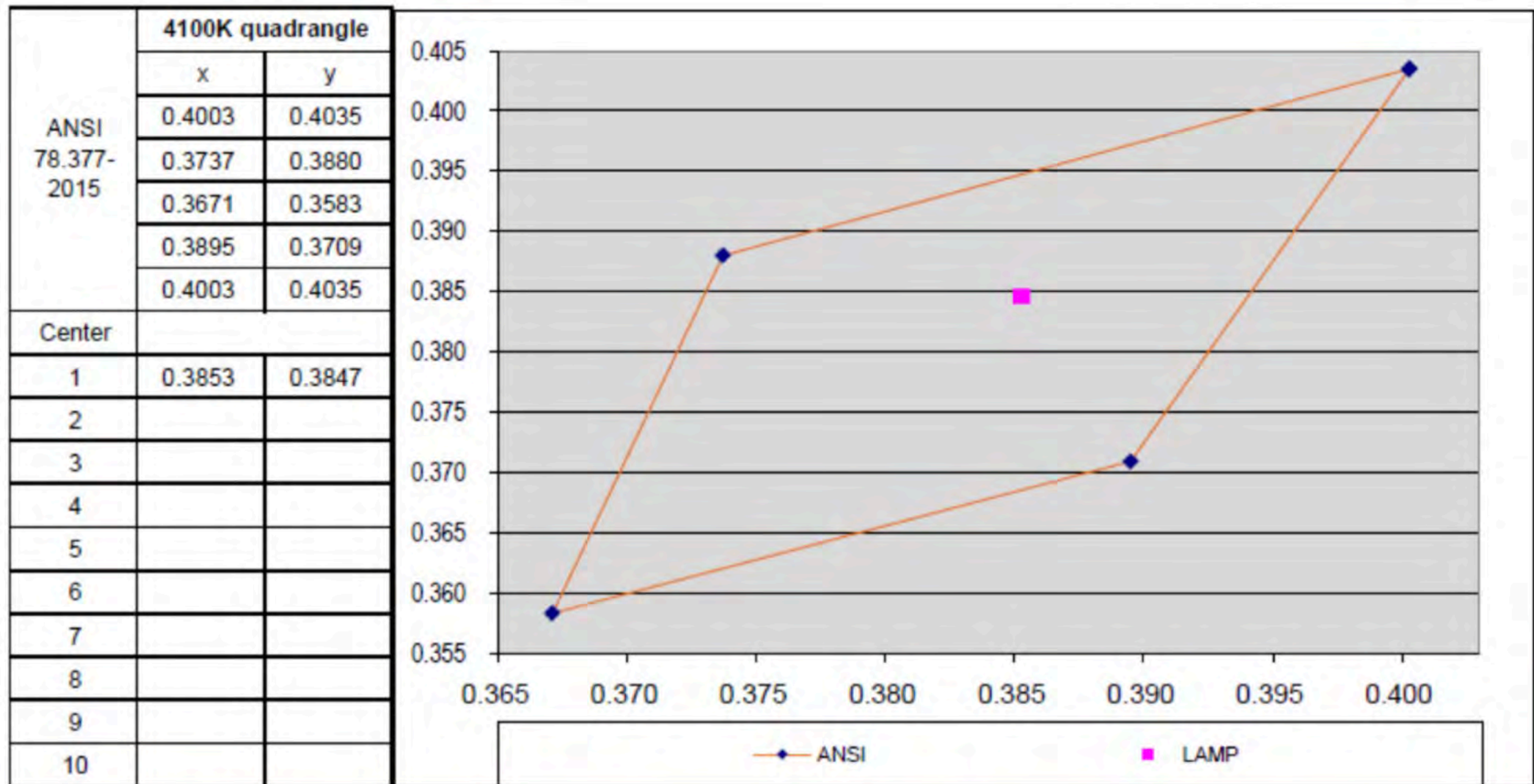
9107X



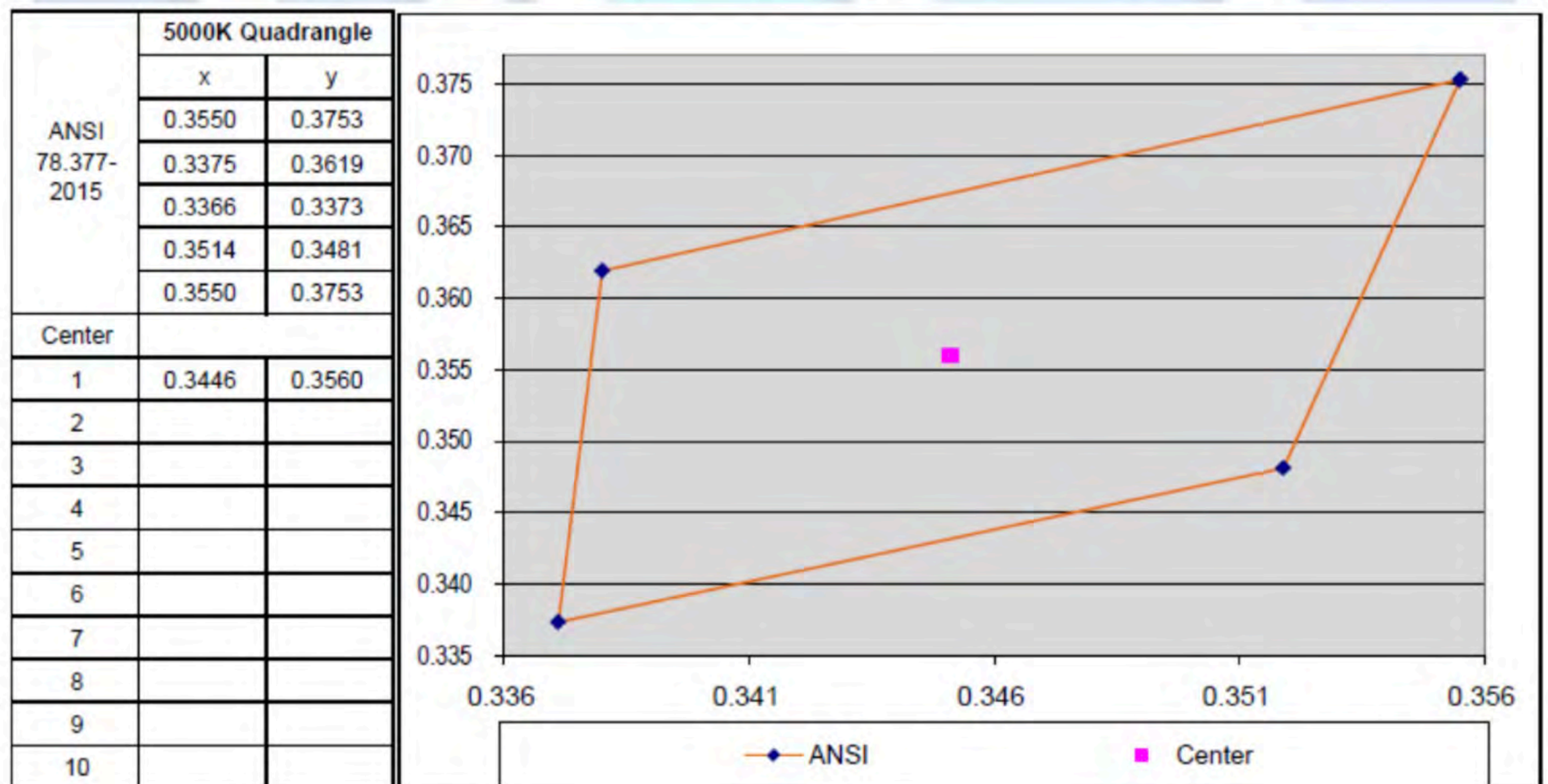


## 7 Step Quadrangle

9107X



91077





EUT Photo

