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**Test report of  
IES LM-79-08**

**Approved Method: Electrical and Photometric Measurements of  
Solid-State Lighting Products**

Rendered to:

**LIGHT EFFICIENT DESIGN, DIV OF TADD LLC**

188 S. Northwest Highway Cary, IL 60013.

For products:

LED Lamp

Models No.:

LED-8055E42, LED-8055E42C, LED-8055M42, LED-8055M42C

**Test Date:** Oct. 15, 2015 to Oct. 16, 2015

**Test Lab.:** LCTECH (Zhongshan) Testing Service Co., Ltd

2/F., Technology and Enterprise Development Center, Guangyuan Road, Xiaolan,  
Zhongshan, Guangdong, China

**Test Note:** *LED-8055E42, LED-8055E42C, LED-8055M42, LED-8055M42C are all the same except for model number and lamp base. This report is base on report LCGP15100125, they are all the same except for model number. Model LED-8055E42 is selected as the representative test sample.*

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**Mar. 9, 2016**

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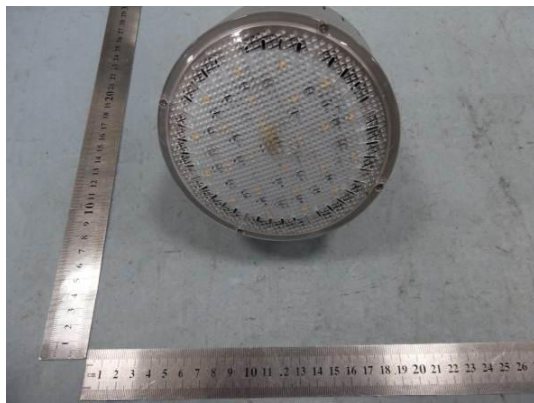


# 1. General

## 1.1 Product Information

Brand Name	Light Efficient Design
Trade Mark	-
Luminaire Type	LED Lamps
Model Number	LED-8055E42,LED-8055E42C,LED-8055M42,LED-8055M42C
Rated Inputs	120-277VAC 50-60Hz
Rated Power	30 W
Rated Light output	2800 lm
Declared CCT	4000 K
Power Supply	Integral LED driver
LED Package, Array or Module	Not provided
Receipt Samples	1 unit
Date of Receipt Samples	Oct. 13, 2015

### Photo



Picture 1



Picture 2

### 1.2 Standards or methods

The following standards are partly or totally used or referenced for test:

No.	Name
ANSI/NEMA/ ANSLG 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 Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. No. 15:2004	Colorimetry
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products

### 1.3 Equipment list

Instrument	ID	Model name	Cal. date	Next cal. Date
AC Power supply	LC-I-923	CHP-500	2015-02-05	2016-02-04
AC Power supply	LC-I-987	APW-110N	2015-02-05	2016-02-04
Power analyzer	LC-I-928	WT210	2015-02-09	2016-02-08
Power analyzer	LC-I-954	WT210	2015-03-04	2016-03-03
Multimeter	LC-I-972	Fluke 17B	2015-08-17	2016-08-16
Photometric colorimetric electric system (2 meter sphere)	LC-I-900	SPR3000	Before use	Before use
Standard lamp	LC-I-917	24V100W	2015-10-09	2016-10-08
Luminous Flux Standard Lamp	LC-I-946	110V/200W	2015-10-09	2016-10-08
Goniophotometer(with mirror)	LC-I-902	GMS2000	2012-05-10	2016-05-09
Wireless temperature transmitter	LC-I-978	DWRF-B	2015-02-11	2016-02-10
Wireless temperature transmitter	LC-I-979	DWRF-B	2015-02-11	2016-02-10

## 2. Test conducted and method

### 2.1 Ambient Condition

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

### 2.2 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.

### 2.3 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).

### 2.4 Electrical Instrumentation

The calibration uncertainties of the instruments for AC voltage and current were less than 0.2 percent, and the calibration uncertainty of the AC power meter was less than 0.5 percent (95 % confidence interval,  $k=2$ ).

### 2.5 Color Measurement Method

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the color characteristics (Color rendering index, correlated color temperature, chromaticity coordinate) were calculated from these by software automatically.

### 2.6 Total Luminous Flux Measurement Method

Total luminous flux was measured by sphere-spectroradiometer system and type C goniophotometer system.

Light intensity distribution was measured by a type C goniophotometer (with mirror) which can keep the sample in burn position when the tests conduct, and the total luminous flux was calculated from the intensity data by software automatically.

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the total luminous flux was calculated from these by software automatically.

### 2.7 Luminous Intensity Distribution Measurement Method

Luminous intensity distribution was measured by a mirror-type goniophotometer (Type C) which can keep the sample in burn position when the tests conduct, and the kinds of graph were generated by software automatically.

### 2.8 Spatial Non-uniformity of Chromaticity

The customer did not require this measurement.

### 3. Test Result Summary

#### 3.1 Electrical data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Input Voltage & Frequency	277.00V~60Hz	277.06V~60Hz
Input Current(A)	0.128	0.130
Total Power(W)	32.29	32.37
Power Factor	0.911	0.900
I-THD	13.35%	-

#### 3.2 Photometric data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Total Lumens(lm)	2841.70	2861.81
Luminaire Efficacy(Lm/W)	88.01	88.41
Correlated Color Temperature (CCT)(K)	4105	-
Color Rendering Index (CRI)	88.0	-
R9	29	-
Chromaticity Coordinate (x,y)	x = 0.3767 y = 0.3771	-
Chromaticity Coordinate (u,v)	u = 0.2225 v = 0.3341	-
Chromaticity Coordinate (u',v')	u' = 0.2225 v' = 0.5012	-
Duv	0.00127	-
Beam Angle	-	C0 plan: 113.66°
Filed Angle	-	C0 plan: 162.0°

#### 3.3 Color Rendering Details

R1	R2	R3	R4	R5	R6	R7	R8
87	93	97	88	87	91	89	72
R9	R10	R11	R12	R13	R14	R15	-
29	83	88	73	89	99	81	-

Note: N.A.

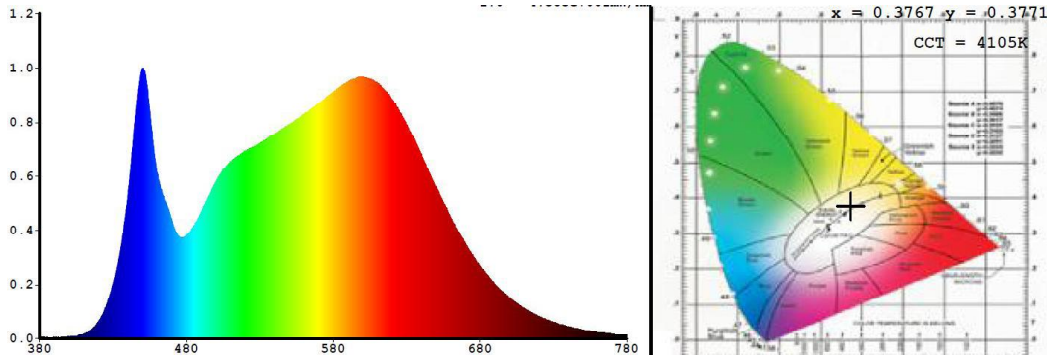


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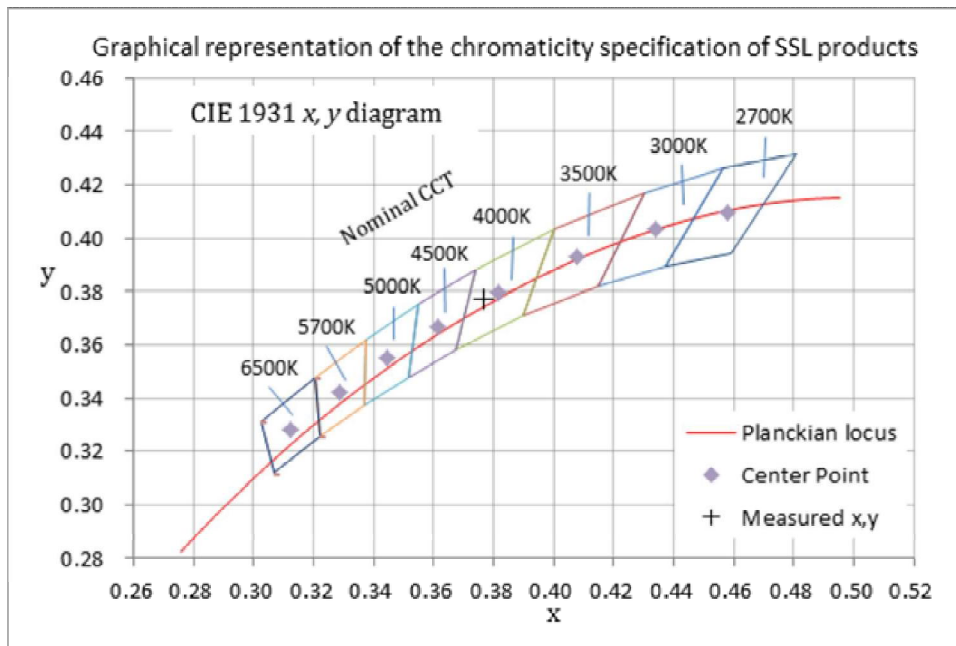


### 4. Test Data

#### 4.1 Spectral Distribution



#### 4.2 ANSI Chromaticity Quadrangles Diagram





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**4.3 Goniometry Test Data**

CIE Type	Direct	Basic Luminous Shape	Circular w/Sides
Spacing Criteria (0-180)	1.30	Luminous Length	0.12(Diameter)
Spacing Criteria (90-270)	1.28	Luminous Width	0.12(Diameter)
Spacing Criteria (Diagonal)	1.44	Luminous Height	0.01m
Test Distance	30.04 m		

**4.4 Zonal Lumen Summary**

Zone	Lumens	%Lamp	%Fixt
0-20	344.99	12.10	12.10
0-30	739.72	25.80	25.80
0-40	1221.00	42.70	42.70
0-60	2185.42	76.40	76.40
0-80	2725.2	95.20	95.20
0-90	2798.84	97.80	97.80
10-90	2710.25	94.70	94.70
20-40	876.01	30.60	30.60
20-50	1382.47	48.30	48.30
40-70	1307.5	45.70	45.70
60-80	539.79	18.90	18.90
70-80	196.71	6.90	6.90
80-90	73.63	2.60	2.60
90-110	33.77	1.20	1.20
90-120	42.11	1.50	1.50
90-130	48.62	1.70	1.70
90-150	58.17	2.00	2.00
90-180	62.97	2.20	2.20
110-180	29.19	1.00	1.00
0-180	2861.81	100.00	100.00

Total Luminaire Efficiency = 100.00%

**ZONAL LUMEN SUMMARY**

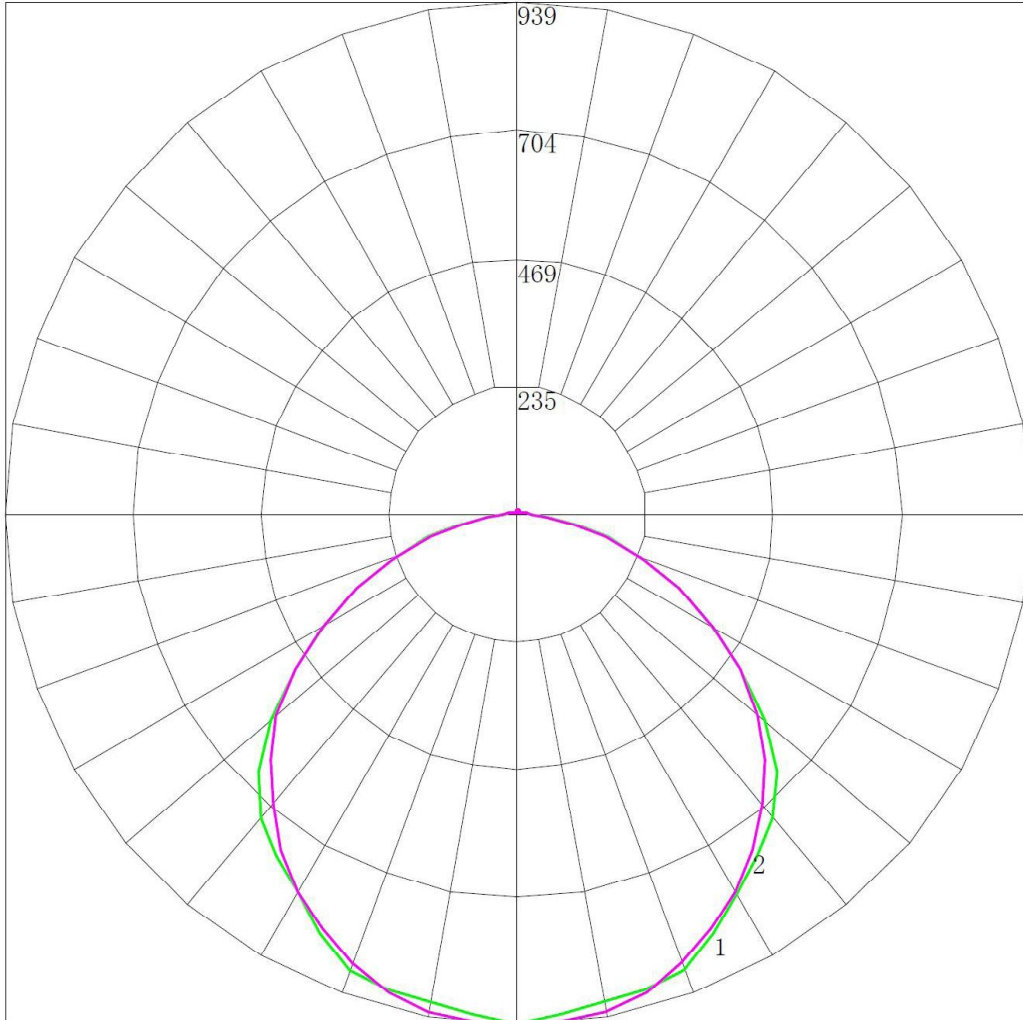
Zone	Lumens
0-10	88.58
10-20	256.41
20-30	394.73
30-40	481.28
40-50	506.46
50-60	457.96
60-70	343.08
70-80	196.71
80-90	73.63
90-100	21.61
100-110	12.17
110-120	8.33
120-130	6.51
130-140	5.54
140-150	4.01
150-160	2.62
160-170	1.66
170-180	0.52





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4.5 Polar Curves

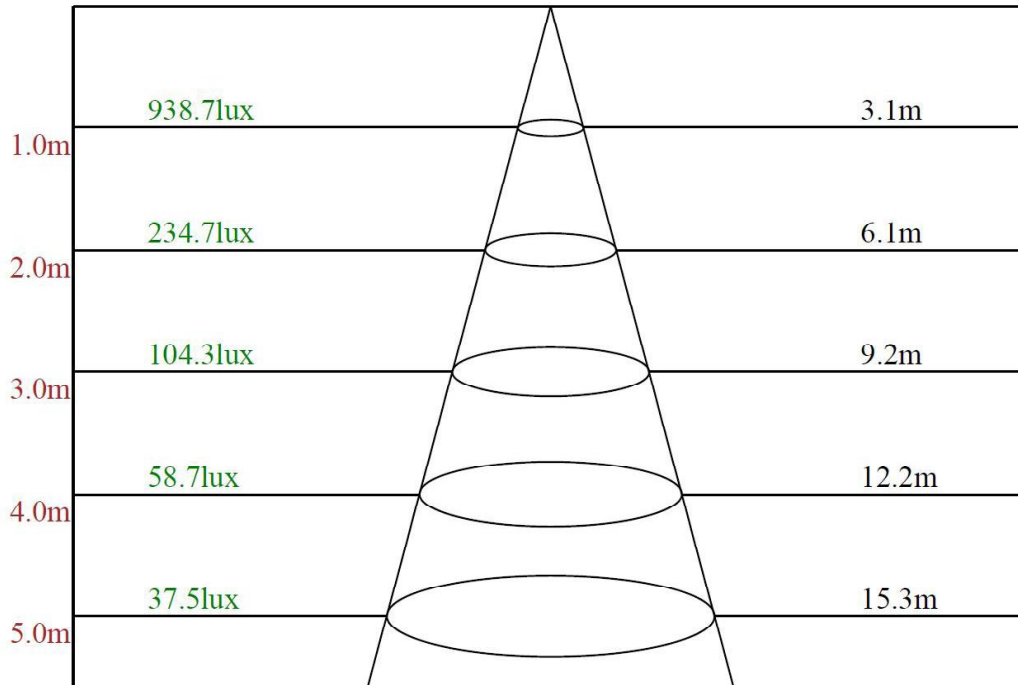


Maximum Candela = 938.701 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180)  
# 2 - Vertical Plane Through Horizontal Angles (90 - 270)



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4.6 Lux Distance curve



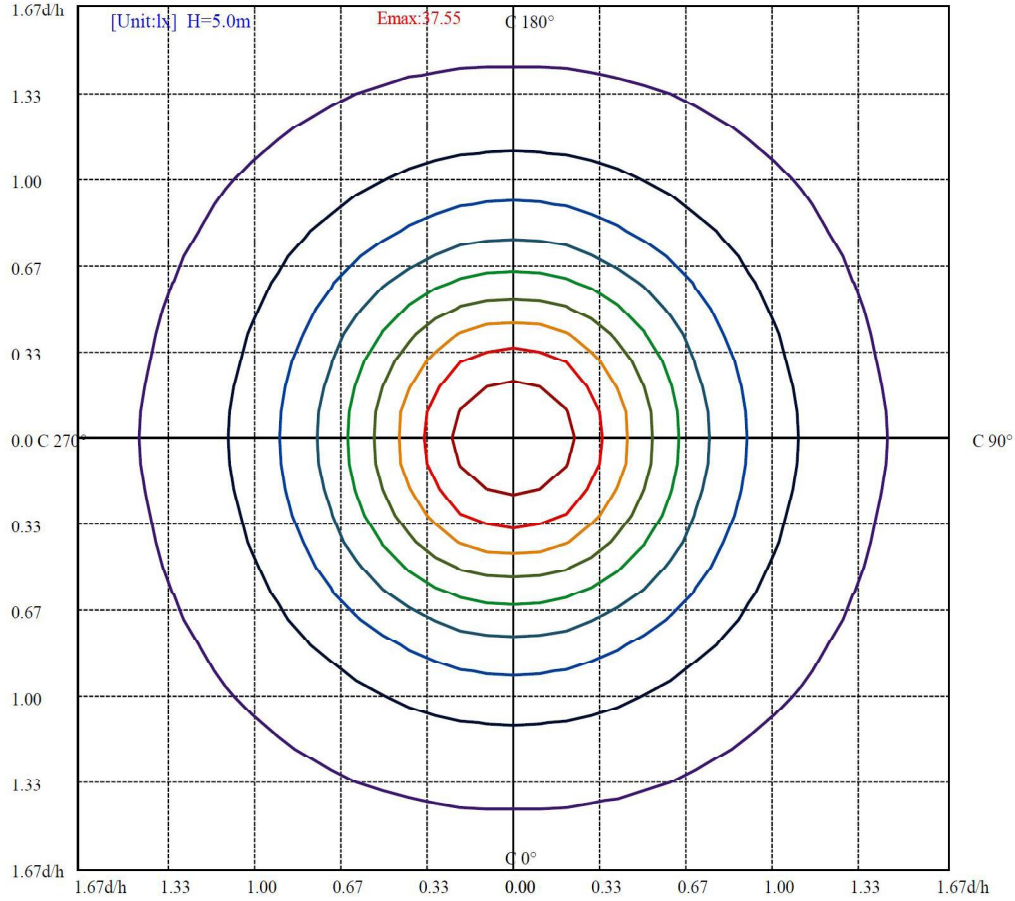
Beam angle of C0plane113.66



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4.7 ISO illuminance diagram



(10%Emax) 3.754804	—
(20%Emax) 7.5096	—
(30%Emax) 11.2644	—
(40%Emax) 15.0192	—
(50%Emax) 18.774	—
(60%Emax) 22.5288	—
(70%Emax) 26.2836	—
(80%Emax) 30.03844	—
(90%Emax) 33.79324	—

4.8 Candela Tabulation

	<u>0</u>	<u>15</u>	<u>30</u>	<u>45</u>	<u>60</u>	<u>75</u>	<u>90</u>
<b>0</b>	938.701	938.701	938.701	938.701	938.701	938.701	938.701
<b>5</b>	925.033	927.813	927.819	932.021	934.883	938.523	935.725
<b>10</b>	910.147	910.511	912.842	920.362	923.176	928.731	929.817
<b>15</b>	906.358	905.134	906.287	907.177	906.809	908.894	909.299
<b>20</b>	893.728	894.786	899.004	888.787	885.344	882.778	880.799
<b>25</b>	852.454	860.928	870.158	859.770	853.028	850.372	842.287
<b>30</b>	805.406	815.869	825.485	822.895	812.428	807.492	801.927
<b>35</b>	768.778	774.919	775.270	779.840	765.661	757.171	754.983
<b>40</b>	729.489	729.409	721.224	728.894	713.400	698.930	698.930
<b>45</b>	670.352	671.837	661.545	669.383	651.018	635.305	641.028
<b>50</b>	590.556	596.626	599.822	605.050	584.335	564.100	576.001
<b>55</b>	499.122	515.253	529.514	533.263	510.938	490.440	499.294
<b>60</b>	409.672	430.063	450.505	452.948	433.373	410.965	413.297
<b>65</b>	325.816	342.369	362.181	369.380	350.535	327.153	326.444
<b>70</b>	243.043	260.070	276.857	282.964	265.174	244.155	240.628
<b>75</b>	169.201	183.144	194.821	201.082	186.193	169.406	164.462
<b>80</b>	106.410	115.796	123.967	128.288	118.623	106.945	103.854
<b>85</b>	56.115	61.727	66.262	68.598	63.800	57.340	55.016
<b>90</b>	26.253	28.977	31.007	32.201	30.455	27.305	26.606
<b>95</b>	16.690	17.481	18.372	18.965	18.454	17.115	15.874
<b>100</b>	14.074	14.048	14.488	15.018	14.438	13.528	13.393
<b>105</b>	11.277	11.157	11.374	11.635	11.437	10.822	10.642
<b>110</b>	9.202	9.102	9.389	9.584	9.475	9.131	8.703
<b>115</b>	8.119	8.244	8.576	8.727	8.618	8.252	8.117
<b>120</b>	7.037	7.182	7.561	7.757	7.625	7.328	7.170
<b>125</b>	6.676	6.911	7.334	7.667	7.422	6.900	6.629
<b>130</b>	6.947	7.114	7.470	7.825	7.603	7.012	6.854
<b>135</b>	6.947	7.160	7.380	7.599	7.309	6.922	6.719
<b>140</b>	6.631	6.821	7.086	7.171	6.994	6.652	6.494
<b>145</b>	6.180	6.347	6.477	6.540	6.407	6.155	6.088
<b>150</b>	5.864	5.895	5.936	6.021	5.888	5.817	5.727
<b>155</b>	5.548	5.443	5.529	5.502	5.527	5.501	5.547
<b>160</b>	5.593	5.669	5.688	5.570	5.685	5.795	5.682
<b>165</b>	5.864	5.737	5.824	5.908	6.000	6.087	6.178
<b>170</b>	5.819	5.895	5.845	5.818	5.842	5.839	6.043
<b>175</b>	5.458	5.533	5.530	5.479	5.482	5.434	5.592
<b>180</b>	4.428	4.428	4.428	4.428	4.428	4.428	4.428

\*\*\*\*End of test report\*\*\*\*