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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-8055E57, LED-8055E57C, LED-8055M57, LED-8055M57C

**Test Date:** Oct. 30, 2015 to Oct. 31, 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-8055E57, LED-8055E57C, LED-8055M57, LED-8055M57C are all the same except for model number and lamp base. This report is based on report LCGP15100126, they are all the same except for model number. Model LED-8055E57 is selected as the representative test sample.*

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**Mar. 9, 2016**

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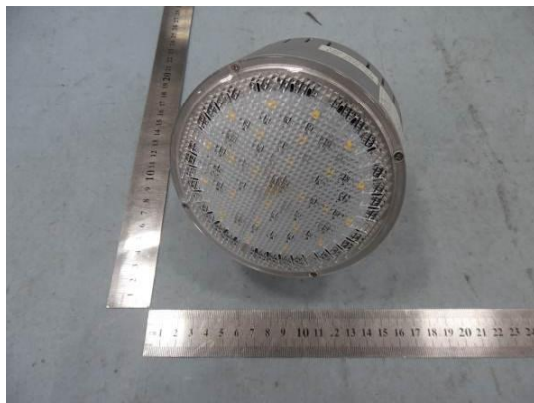


# 1. General

## 1.1 Product Information

Brand Name	Light Efficient Design
Trade Mark	-
Luminaire Type	LED Lamps
Model Number	LED-8055E57,LED-8055E57C,LED-8055M57,LED-8055M57C
Rated Inputs	120-277VAC 50-60Hz
Rated Power	30 W
Rated Light output	2800 lm
Declared CCT	5700 K
Power Supply	Integral LED driver
LED Package, Array or Module	Not provided
Receipt Samples	1 unit
Date of Receipt Samples	Oct. 29, 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	276.90 V~60Hz	276.97V~60Hz
Input Current(A)	0.127	0.128
Total Power(W)	32.19	32.40
Power Factor	0.918	0.912
I-THD	10.92%	-

#### 3.2 Photometric data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Total Lumens(lm)	2885.70	2902.74
Luminaire Efficacy(Lm/W)	89.65	89.59
Correlated Color Temperature (CCT)(K)	5958	-
Color Rendering Index (CRI)	88.3	-
R9	37	-
Chromaticity Coordinate (x,y)	x = 0.3230 y = 0.3306	-
Chromaticity Coordinate (u,v)	u = 0.2044 v = 0.3138	-
Chromaticity Coordinate (u',v')	u' = 0.2044 v' = 0.4707	-
Duv	-0.00103	-
Beam Angle	-	C60 plan: 121.72°
Filed Angle	-	C0 plan: 170.2°

#### 3.3 Color Rendering Details

R1	R2	R3	R4	R5	R6	R7	R8
88	92	93	89	89	87	90	78
R9	R10	R11	R12	R13	R14	R15	-
37	79	89	70	89	96	86	-

Note: N.A.

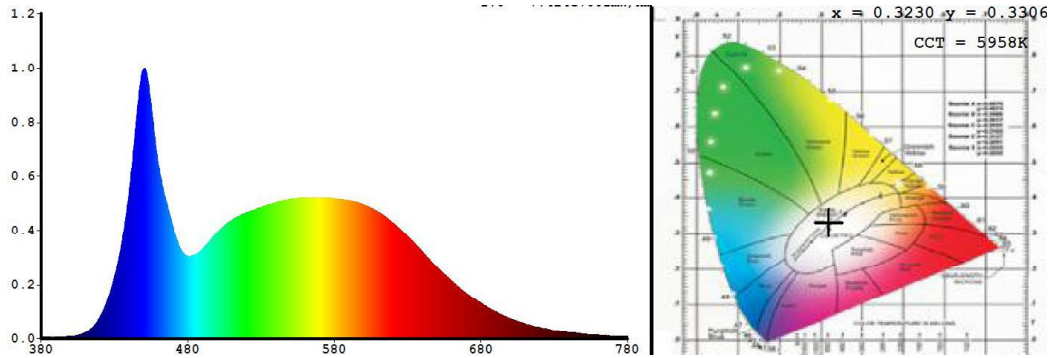


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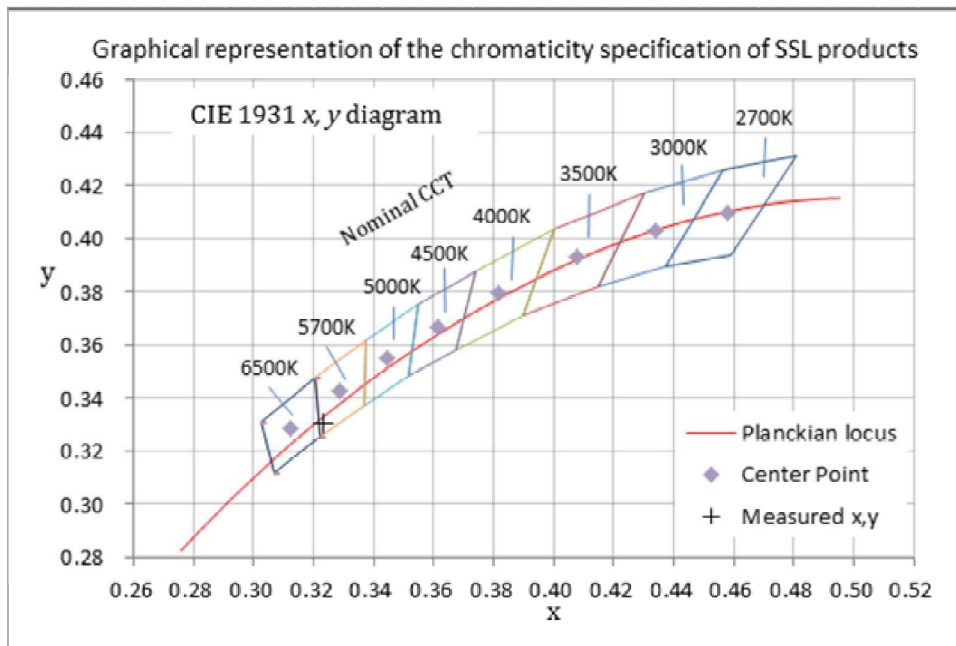


## 4. Test Data

### 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)	1.36	Luminous Length	0.12(Diameter)
Spacing Criteria (90-270)	1.34	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	319.52	11.00	11.00
0-30	688.87	23.70	23.70
0-40	1145.97	39.50	39.50
0-60	2090.53	72.00	72.00
0-80	2689.22	92.60	92.60
0-90	2791.76	96.20	96.20
10-90	2710.07	93.40	93.40
20-40	826.44	28.50	28.50
20-50	1314.5	45.30	45.30
40-70	1310.03	45.10	45.10
60-80	598.69	20.60	20.60
70-80	233.23	8.00	8.00
80-90	102.54	3.50	3.50
90-110	66.84	2.30	2.30
90-120	81.72	2.80	2.80
90-130	91.64	3.20	3.20
90-150	104.81	3.60	3.60
90-180	110.98	3.80	3.80
110-180	44.14	1.50	1.50
0-180	2902.74	100.00	100.00

Total Luminaire Efficiency = 100.00%

**ZONAL LUMEN SUMMARY**

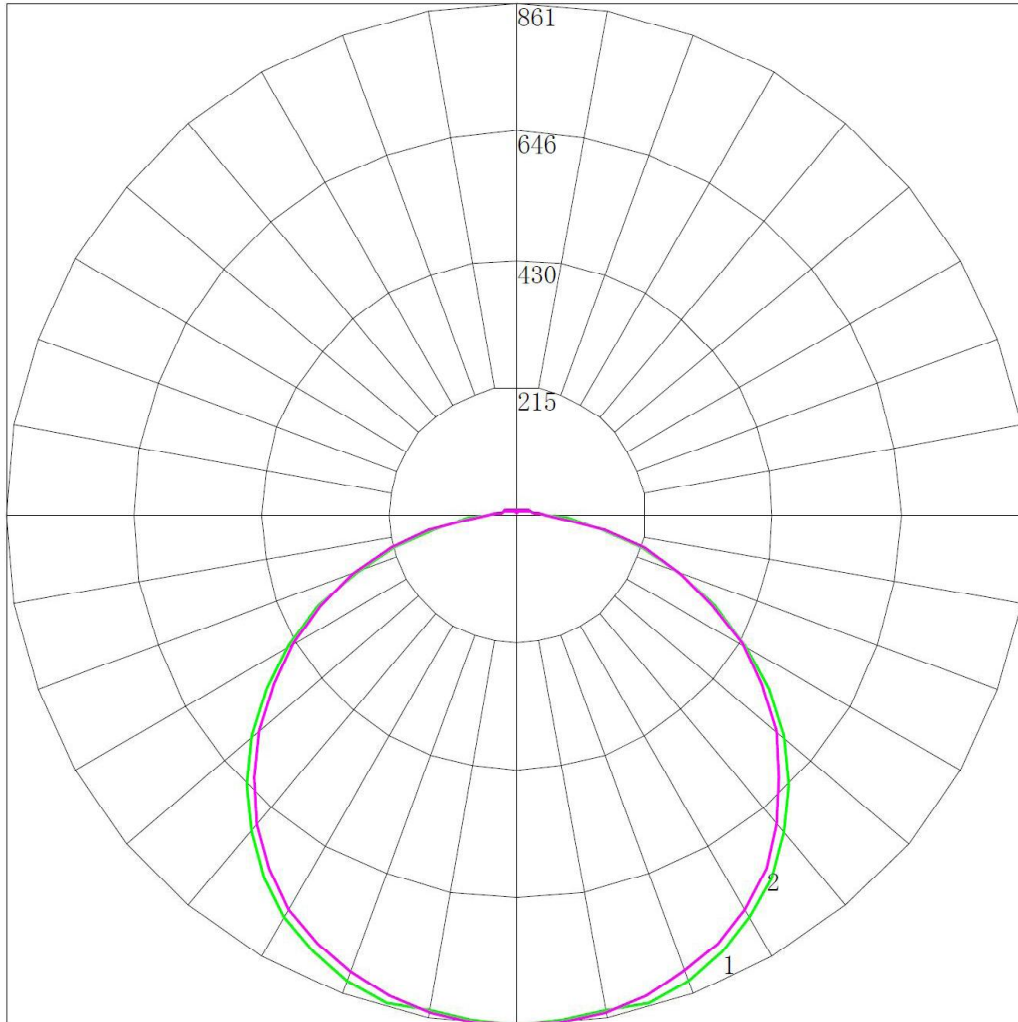
Zone	Lumens
0-10	81.69
10-20	237.83
20-30	369.34
30-40	457.10
40-50	488.05
50-60	456.51
60-70	365.46
70-80	233.23
80-90	102.54
90-100	42.94
100-110	23.91
110-120	14.87
120-130	9.92
130-140	7.63
140-150	5.55
150-160	3.54
160-170	2.05
170-180	0.58





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4.5 Polar Curves

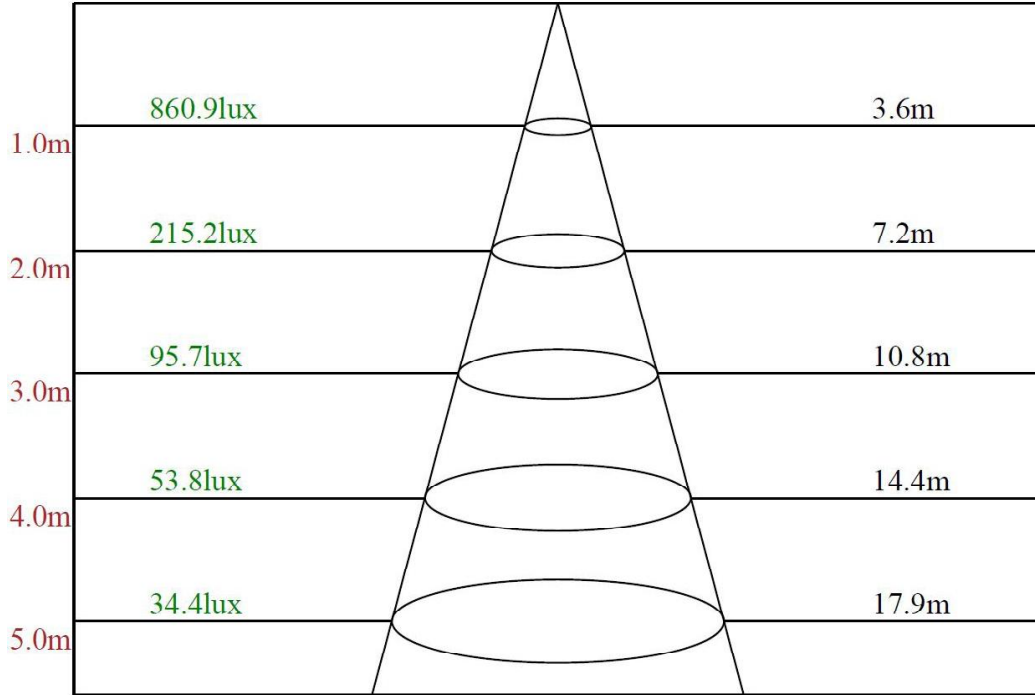


Maximum Candela = 860.891 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180)  
# 2 - Vertical Plane Through Horizontal Angles (90 - 270)



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4.6 Lux Distance curve

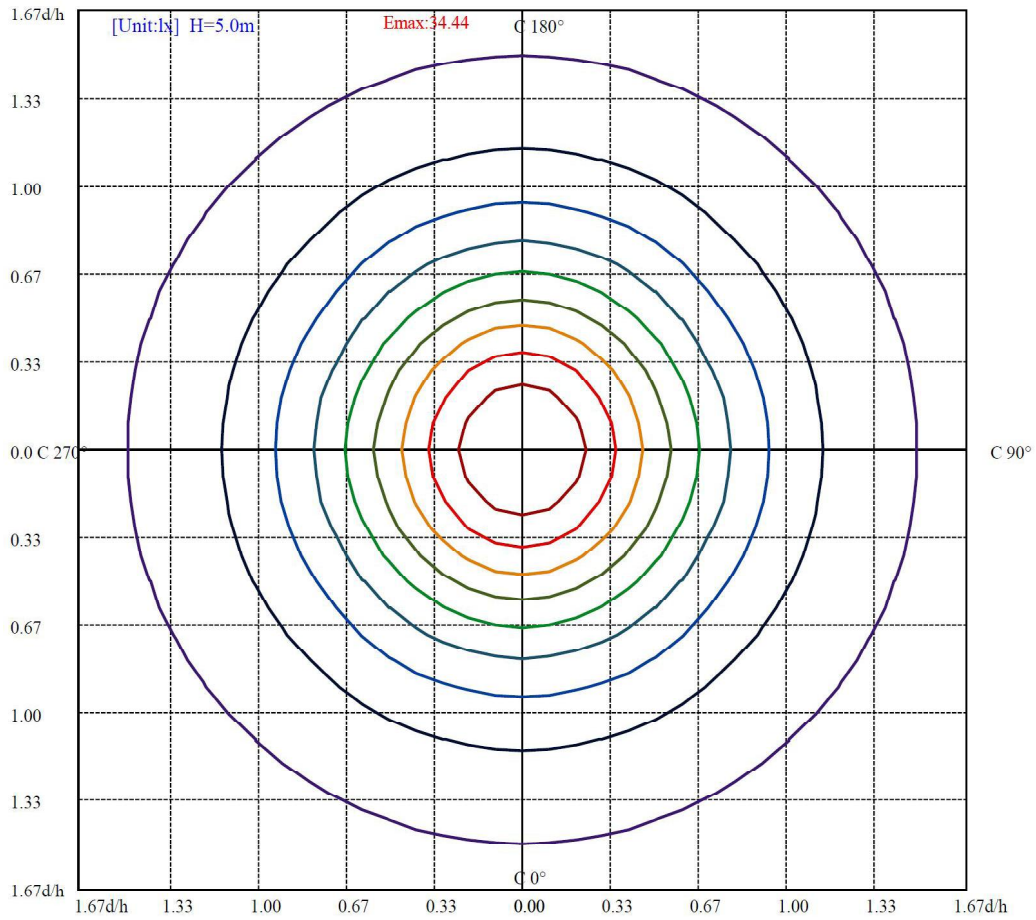


Beam angle of C60plane121.72



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4.7 ISO illuminance diagram



(10%Emax) 3.443564	—
(20%Emax) 6.88712	—
(30%Emax) 10.33068	—
(40%Emax) 13.77424	—
(50%Emax) 17.2178	—
(60%Emax) 20.6614	—
(70%Emax) 24.10496	—
(80%Emax) 27.54852	—
(90%Emax) 30.99208	—

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>	860.891	860.891	860.891	860.891	860.891	860.891	860.891
<b>5</b>	856.389	856.822	857.279	857.512	858.421	859.100	859.529
<b>10</b>	850.535	853.205	851.414	851.649	849.649	851.209	852.718
<b>15</b>	850.986	850.492	844.651	840.591	835.696	834.741	838.642
<b>20</b>	838.378	837.832	828.641	824.124	816.348	814.890	820.026
<b>25</b>	814.965	814.546	804.501	797.519	793.188	790.766	797.323
<b>30</b>	783.897	781.313	772.236	765.958	759.899	761.895	768.718
<b>35</b>	746.076	740.167	735.010	725.371	719.867	725.808	730.577
<b>40</b>	696.097	693.144	690.792	679.364	672.862	683.641	681.085
<b>45</b>	644.318	640.469	641.157	626.151	623.829	630.649	625.236
<b>50</b>	583.533	581.915	581.818	570.679	570.296	570.190	568.479
<b>55</b>	517.345	515.223	514.587	511.154	509.793	506.590	502.641
<b>60</b>	443.953	445.140	442.843	444.641	442.098	436.700	435.440
<b>65</b>	369.211	370.762	370.876	371.136	369.916	368.846	365.062
<b>70</b>	291.767	292.766	294.398	294.699	295.263	295.354	295.137
<b>75</b>	216.574	216.805	219.951	221.646	221.955	219.599	219.309
<b>80</b>	145.433	146.270	148.210	154.003	152.018	150.386	151.655
<b>85</b>	85.549	85.908	87.075	89.969	87.706	85.448	87.179
<b>90</b>	52.680	53.806	53.465	54.117	51.724	49.370	49.038
<b>95</b>	37.822	40.241	38.576	39.011	38.910	36.982	36.325
<b>100</b>	27.015	28.259	27.751	28.182	28.785	28.625	27.697
<b>105</b>	21.612	23.060	22.561	22.097	22.265	22.322	21.341
<b>110</b>	16.660	18.086	17.823	17.363	17.317	17.361	17.708
<b>115</b>	14.408	15.147	15.115	14.883	15.068	14.884	14.984
<b>120</b>	11.707	12.208	12.407	12.402	12.368	12.850	12.260
<b>125</b>	10.356	10.852	11.053	10.824	10.570	10.597	10.897
<b>130</b>	10.356	10.399	10.377	10.598	10.120	10.146	9.989
<b>135</b>	9.455	9.947	9.926	9.921	9.670	9.919	9.535
<b>140</b>	9.455	9.495	9.475	9.470	9.670	9.244	9.081
<b>145</b>	9.005	8.817	9.024	9.019	8.770	8.793	8.627
<b>150</b>	8.105	8.139	8.122	8.117	7.871	7.891	8.173
<b>155</b>	7.204	7.234	7.445	7.666	7.422	7.442	7.719
<b>160</b>	7.654	7.687	7.670	7.441	7.422	7.667	7.719
<b>165</b>	7.204	7.008	6.993	7.215	7.197	7.440	7.265
<b>170</b>	6.304	6.782	6.768	6.764	6.972	6.991	7.265
<b>175</b>	6.304	5.878	5.866	5.863	5.847	5.863	5.903
<b>180</b>	4.578	4.578	4.578	4.578	4.578	4.578	4.578

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