



Testing Lab.

Shenzhen LCS Compliance Testing Laboratory Ltd.



TESTING  
NVLAP LAB CODE 600112-0

Report No.:LCS171221040BS

### TEST REPORT of IES LM-79-08

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

Client..... : Shenzhen Sinoco Lighting Technologies Co.,Ltd.

Address..... : G building, Shasi, High-Tec, Industrial park, Shajing Town, Bao' an District,  
Shenzhen, Guangdong, China

Brand Name..... : Sinoco

Testing laboratory..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address..... : B Area, 2F, Building B, Zhongyu Green Wenge Road, Heshuikou, Gongming  
Street, Guangming New District, Shenzhen, Guangdong Prov .518000 China

Product description .. : LED street light

Models..... : ST-52-60W-4000K

Rating..... : 100-240Vac, 50/60Hz, 60W, 4000K

Test by: William Lian

Signature: *William*

Reviewed by: Hart Qiu

Signature: *Hart Qiu*



Test date: January 04, 2018

Reviewed date: January 12, 2018

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## Table of Contents

<b>1. Test Method.....</b>	<b>3</b>
<b>2.Product Information.....</b>	<b>4</b>
<b>3.Test equipment list:.....</b>	<b>4</b>
<b>4. Integrating Sphere Test Results: .....</b>	<b>5</b>
<b>4.1 Test Data.....</b>	<b>5</b>
<b>4.2 Spectrum.....</b>	<b>5</b>
<b>5. Goniophotometer Test results.....</b>	<b>6</b>
<b>5.1 Test Data.....</b>	<b>6</b>
<b>5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux     Diagram (Unit : lx).....</b>	<b>6</b>
<b>5.3 Zonal Flux Diagram.....</b>	<b>7</b>
<b>5.4 Isocandela Diagram.....</b>	<b>8</b>
<b>5.5 Luminous Distribution Intensity Data.....</b>	<b>9</b>
<b>6. Photo of sample:.....</b>	<b>10</b>

## 1. Test Method

Test Item.....	: Integrating Sphere Test
Ambient Condition .....	: 25.1°C
Number of hours operated prior to Measurement .....	: 0h
Stabilization time .....	: 0.5h
Orientation(burning position) of SSL product during test .....	: down
Test Method .....	: The sample was tested according to the IES LM-79-2008.  The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.
Test Item.....	: Goniophotometer Test
Ambient Condition.....	: 25.1°C
Total operated time of the product for measurements including stabilization..... (h):	: 2.5h
Correction factors applied.....	: Intensity distribution
Orientation(burning position) of SSL product during test .....	: down
Test Method.....	: The sample was tested according to the IES LM-79-2008.  Photometric paramters were measured using a type C goniophotometer and software. The sample reference plane was located at the center of the sample goniometer at a test distance of 26m from the detectors. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

## 2.Product Information

Product description.....:	LED street light
Model Number.....:	ST-52-60W-4000K
Rated Inputs.....:	100-240VAC, 50/60Hz
Rated Power.....:	60W
Declared CCT.....:	4000K
LED Manufacturer.....:	N/A
LED Model.....:	N/A
LED Package, Array or Module.....:	N/A
Forward current of the LED chip.....:	N/A
Date of Receipt Samples.....:	January 03, 2018
Quantity of Receipt Samples.....:	1 unit

## 3.Test equipment list:

Manufacturer	Description	Equipment ID	Model	Calibration Date	Calibration Due Date
EVERFINE	Full-field Speed Goniophotometer	SLCS-S-112	GO-R5000	2017/08/15	2018/08/14
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2017/08/15	2018/08/14
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2017/08/15	2018/08/14
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2017/08/14	2018/08/13
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2017/08/15	2018/08/14
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2017/08/15	2018/08/14
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2017/08/15	2018/08/14
SENSING	Standard Lamp	SLCS-S-118	S11010017	2017/08/14	2018/08/13

## 4. Integrating Sphere Test Results:

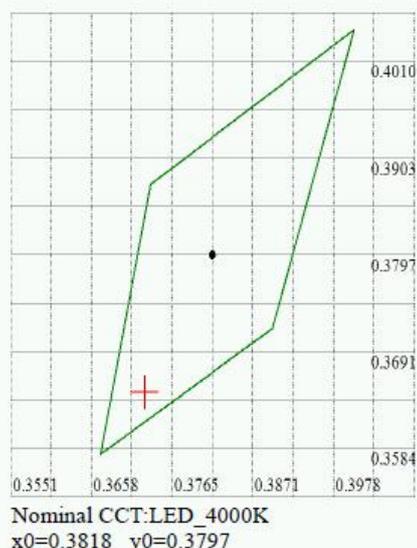
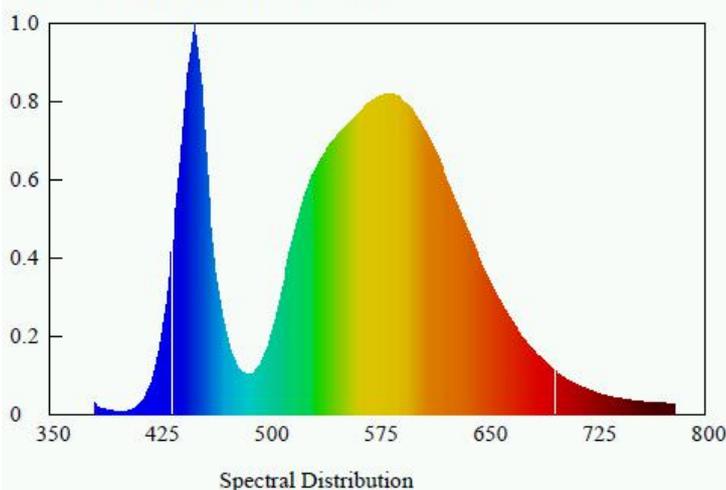
### 4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.0	0.303	0.915	61.1

Test type	CCT (K)	CRI	Luminous flux (lm)	Luminous efficacy(lm/w)
Output	4130	72.7	6623.74	108.5

### 4.2 Spectrum

#### Spectroradiometric Parameters



Chromaticity Coordinates:  $x=0.3728$   $y=0.3646$   $u'=0.2249$   $v'=0.495$

Correlated Color Temperature: 4130 K

Dominant Wavelength: 579.0 nm(E)

Colour Fidelity Index:  $R_f=69$

Gamut Index:  $R_g=95$

Luminous Flux: 6623.74 lm

Purity: 0.2137

Chromaticity Difference:  $-0.0035Duv$

Peak Wavelength: 450.0 nm

Color Ratio:  $K_r=37.0\%$   $K_g=56.5\%$   $K_b=6.5\%$

Bandwidth: 27.2nm

Radiant Flux: 18.151 W

Photosynthetically Active Radiation(PAR): 17.63W

Photosynthetic Photon Flux(PPF):82.45 $\mu$ mol/s

Rendering Index:  $R_a=72.7$

$R_1=71$   $R_2=79$   $R_3=83$   $R_4=72$   $R_5=70$   $R_6=68$   $R_7=82$   $R_8=57$

$R_9=-17$   $R_{10}=48$   $R_{11}=66$   $R_{12}=40$   $R_{13}=73$   $R_{14}=89$   $R_{15}=68$   $R_e=63$

TRF No. LM-79-2008

Page 5 of 10

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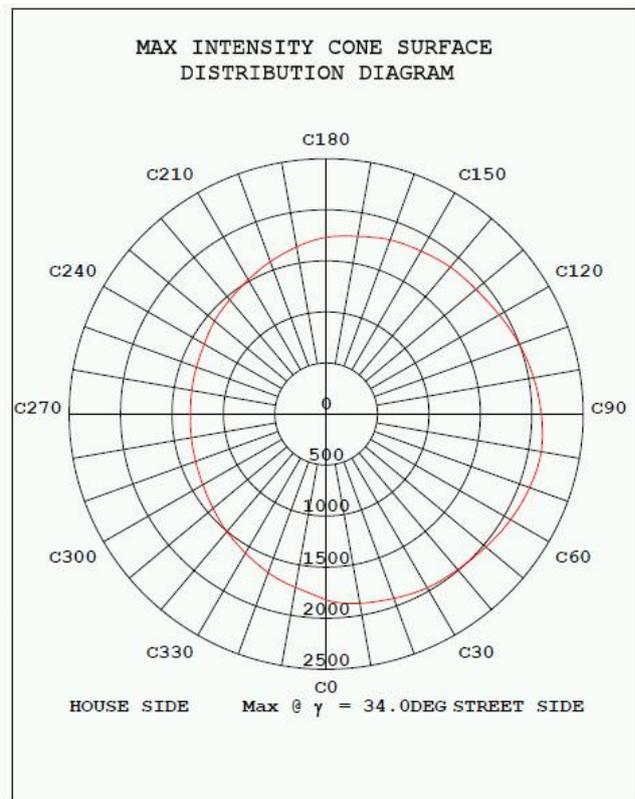
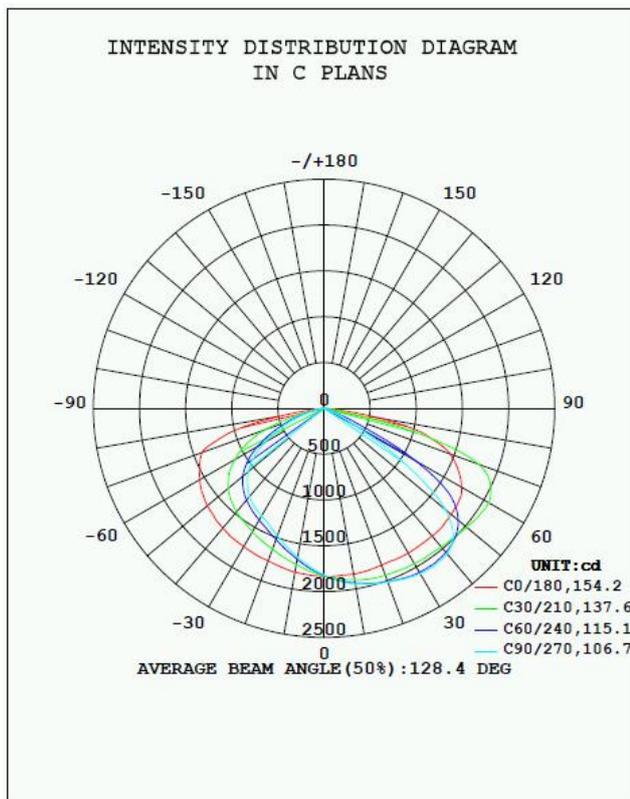
## 5. Goniophotometer Test results

### 5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.01	0.3028	0.9158	60.99

Test type	Total Flux (lm)	Luminous efficacy(lm/w)	ZL (0~90° )	ZL (80~90° )
Output	6609.06	108.37	99.90%	0.70%

### 5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux Diagram (Unit : lx)





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### 5.3 Zonal Flux Diagram

y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	lum, lamp
10	1837	1924	1945	1886	1815	1699	1651	1697	0- 10	173.0	173.0	2.62,2.62
20	1820	1977	2015	1906	1772	1575	1481	1593	10- 20	505.4	678.3	10.3,10.3
30	1823	2000	2085	1898	1743	1471	1356	1505	20- 30	809.0	1487	22.5,22.5
40	1820	2009	2072	1873	1707	1384	1257	1419	30- 40	1076	2563	38.8,38.8
50	1799	1978	1711	1819	1653	1236	1073	1283	40- 50	1270	3834	58,58
60	1720	1792	473.2	1608	1554	961.1	741.8	1028	50- 60	1271	5104	77.2,77.2
70	1452	694.2	85.59	637.2	1406	486.0	327.7	576.1	60- 70	979.8	6084	92.1,92.1
80	584.2	16.16	0.9723	11.33	466.0	79.92	91.81	100.9	70- 80	473.2	6557	99.2,99.2
90	1.433	0.4358	0	0.1202	1.115	0	0	0.0398	80- 90	42.71	6600	99.9,99.9
100	1.111	0.0791	0	0	1.749	0.6734	0	0.5591	90-100	0.4908	6601	99.9,99.9
110	1.111	0.0791	0	0.0398	2.222	1.830	0.3170	1.672	100-110	0.7821	6601	99.9,99.9
120	1.111	0.1189	0	0.0797	2.218	2.143	1.585	2.468	110-120	1.086	6603	99.9,99.9
130	1.349	0.7929	0.5576	0.6742	2.143	2.022	2.377	2.508	120-130	1.245	6604	99.9,99.9
140	2.138	1.390	1.582	1.348	2.143	2.183	2.853	2.549	130-140	1.411	6605	99.9,99.9
150	2.699	2.300	2.140	2.071	2.542	2.816	3.170	3.108	140-150	1.472	6607	100,100
160	2.699	2.498	2.457	2.468	3.019	3.331	3.170	3.185	150-160	1.276	6608	100,100
170	3.173	3.093	2.932	2.865	3.413	3.529	3.170	3.185	160-170	0.8411	6609	100,100
180	3.810	3.609	3.011	3.145	3.730	3.529	3.170	3.185	170-180	0.3101	6609	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



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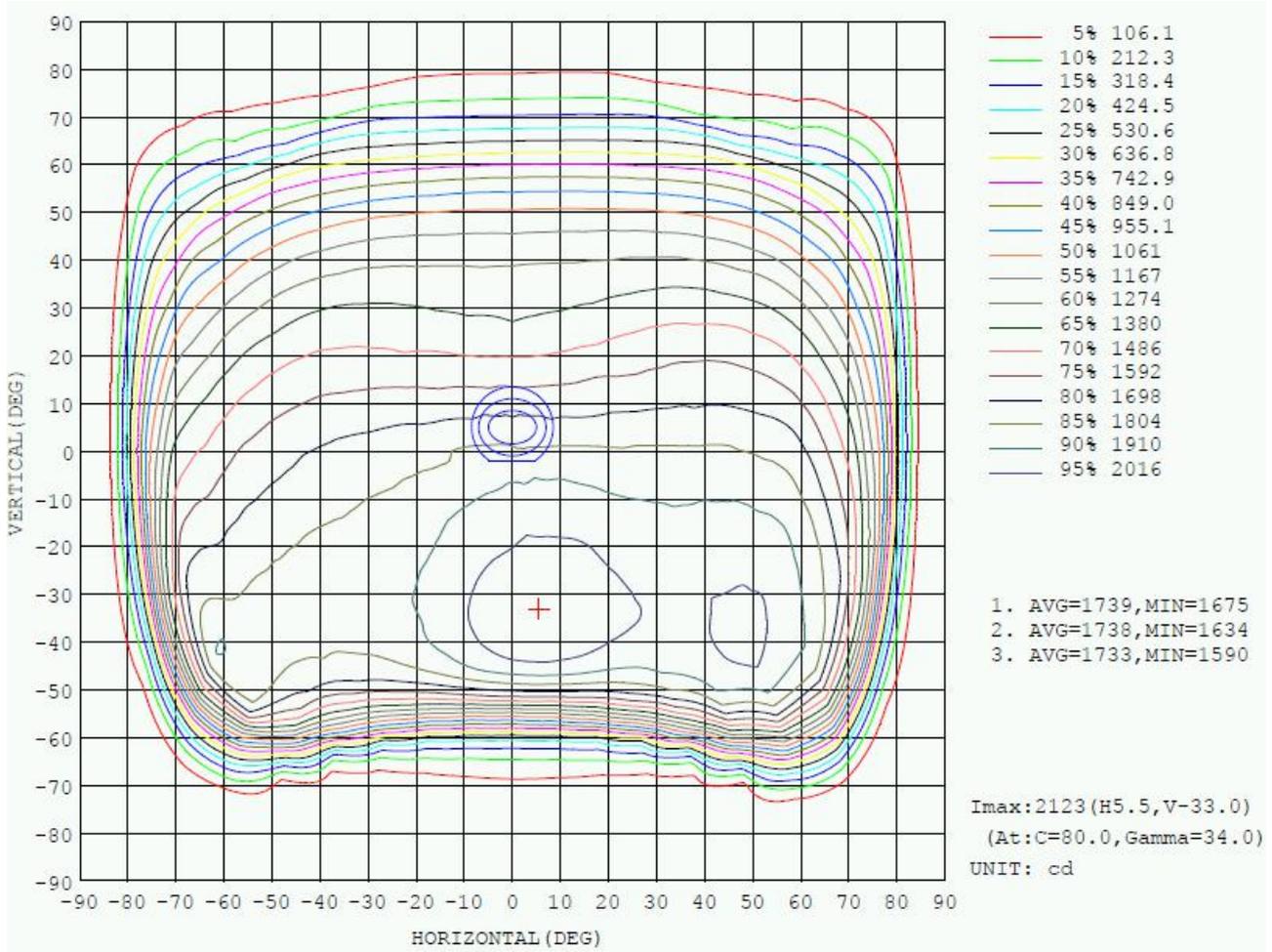
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### 5.4 Isocandela Diagram





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### 5.5 Luminous Distribution Intensity Data

Table--1 UNIT: cd

C (DEG) y (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	1835	1834	1831	1829	1827	1826	1824	1823	1821	1819	1817	1818	1816	1814	1812	1811	1810	1808	1835
5	1833	1851	1858	1867	1872	1888	1886	1888	1891	1890	1890	1872	1864	1862	1851	1839	1832	1813	1827
10	1837	1862	1879	1902	1915	1934	1935	1937	1947	1945	1936	1922	1909	1895	1878	1851	1842	1811	1815
15	1832	1864	1886	1926	1948	1971	1976	1983	1994	1984	1969	1951	1929	1910	1896	1861	1839	1801	1793
20	1820	1863	1899	1939	1958	1996	2012	2026	2034	2015	1999	1974	1942	1919	1893	1860	1829	1796	1772
25	1822	1874	1905	1946	1970	2016	2044	2071	2078	2054	2028	1991	1947	1912	1887	1854	1820	1785	1760
30	1823	1874	1916	1956	1977	2023	2066	2100	2112	2085	2045	2000	1950	1908	1888	1842	1819	1777	1743
35	1819	1884	1921	1962	1989	2026	2071	2103	2122	2090	2048	1996	1939	1899	1878	1842	1814	1767	1729
40	1820	1897	1944	1974	1991	2027	2052	2080	2094	2072	2024	1965	1910	1883	1862	1841	1813	1761	1707
45	1818	1906	1965	1988	1992	2008	2003	2012	2006	1980	1945	1898	1874	1853	1844	1841	1818	1751	1681
50	1799	1914	1984	2017	1989	1966	1898	1826	1753	1711	1710	1738	1777	1807	1832	1831	1816	1734	1653
55	1779	1915	2006	2046	1994	1885	1678	1405	1202	1126	1179	1345	1554	1718	1809	1834	1815	1724	1612
60	1720	1892	1997	2060	1952	1633	1146	738	524	473	517	711	1069	1466	1751	1847	1823	1707	1554
65	1606	1822	1958	1990	1758	1080	426	262	208	196	201	245	393	986	1586	1872	1866	1703	1489
70	1452	1717	1880	1780	1133	255	114	90.1	85.3	85.6	82.0	82.7	97.5	217	1058	1742	1891	1697	1406
75	1159	1394	1473	1063	233	61.2	38.0	28.7	26.1	24.9	24.2	25.5	31.7	47.2	186	827	1230	1252	1089
80	584	487	487	217	24.8	7.55	3.14	1.80	1.12	0.97	0.90	1.20	2.12	5.15	17.5	127	222	245	466
85	62.3	19.9	7.81	2.79	1.43	0.79	0.40	0.08	0.00	0.00	0.00	0.00	0.08	0.33	0.96	1.93	3.83	9.26	36.2
90	1.43	1.51	1.35	0.96	0.63	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.72	1.04	1.35	1.11
95	1.11	1.03	0.88	0.56	0.24	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.64	1.11	1.35
100	1.11	0.95	0.71	0.48	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.56	0.88	1.75
105	1.11	0.95	0.71	0.40	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.24	0.56	0.88	2.23
110	1.11	0.95	0.71	0.40	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.24	0.56	0.88	2.22
115	1.11	0.95	0.71	0.40	0.16	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.24	0.56	1.18	2.22
120	1.11	0.95	0.71	0.40	0.16	0.08	0.08	0.00	0.16	0.00	0.08	0.00	0.08	0.08	0.08	0.24	0.56	1.19	2.22
125	1.27	1.03	0.71	0.40	0.31	0.40	0.23	0.24	0.31	0.31	0.24	0.16	0.23	0.32	0.40	0.64	1.12	1.35	2.14
130	1.35	1.27	1.03	0.95	0.87	0.72	0.63	0.63	0.64	0.56	0.48	0.63	0.56	0.56	0.79	1.19	1.28	1.51	2.14
135	1.59	1.43	1.27	1.27	1.19	1.19	1.27	1.11	1.12	1.19	1.27	1.12	1.19	1.03	1.20	1.35	1.51	1.67	2.14
140	2.14	1.90	1.74	1.67	1.43	1.35	1.59	1.58	1.43	1.58	1.50	1.43	1.43	1.35	1.35	1.67	2.00	2.31	2.14
145	2.54	2.47	2.14	1.90	1.82	1.91	2.06	1.99	1.83	1.83	1.75	1.83	1.75	1.91	1.75	1.75	2.23	2.47	2.22
150	2.70	2.55	2.46	2.30	2.22	2.38	2.45	2.38	2.07	2.14	2.06	2.07	1.99	2.15	1.99	2.07	2.39	2.47	2.54
155	2.70	2.63	2.54	2.46	2.45	2.54	2.46	2.38	2.46	2.38	2.38	2.46	2.31	2.39	2.47	2.39	2.55	2.62	2.79
160	2.70	2.63	2.62	2.46	2.45	2.54	2.62	2.54	2.54	2.46	2.53	2.46	2.46	2.39	2.55	2.47	2.55	2.55	3.02
165	3.09	2.94	2.77	2.78	2.69	2.86	2.77	2.69	2.62	2.69	2.62	2.47	2.77	2.55	2.63	2.78	2.72	2.87	3.10
170	3.17	3.02	3.16	3.10	3.01	3.18	3.01	2.94	2.94	2.93	2.86	2.87	3.10	2.78	2.95	2.86	3.03	3.02	3.41
175	3.73	3.58	3.33	3.25	3.56	3.58	3.17	3.09	3.18	3.02	3.10	3.10	3.26	3.10	3.11	3.10	3.20	3.11	3.65
180	3.81	3.58	3.49	3.57	3.48	3.74	3.25	3.09	3.18	3.01	3.10	3.18	3.26	3.10	3.19	3.18	3.19	3.19	3.73

6. Photo of sample:



----- End of test report-----