



Testing Lab.

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.



TESTING
NVLAP LAB CODE 600112-07

Report No.: LCS200518073BS

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,Baoan District,Shenzhen,
Guangdong,China
Brand Name..... : **SINOCO**[®]
Testing laboratory..... : Shenzhen Southern 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..... : AC220V, 50/60Hz, 60W, 4000K
Date of Test..... : May 21, 2020
Date of Issue..... : May 22, 2020

Test by:

William Lian

William Lian/ Project Engineer

Check by:

Ian Luo

Ian Luo/ Director

Approved by:



Jesse Liu/ Manager

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1. Test Method

Test Item.....	Integrating Sphere Test
Ambient Condition	25.1℃
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℃
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.

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2. Product Information

Product description.....:	LED Street Light
Model Number.....:	ST-52-60W-4000K
Rated Inputs.....:	AC220V, 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.....:	May 20, 2020
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	2019/07/01	2020/07/01
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2019/07/01	2020/07/01
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2019/07/01	2020/07/01
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2019/07/08	2020/07/08
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2019/07/01	2020/07/01
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2019/07/01	2020/07/01
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2019/07/01	2020/07/01
SENSING	Standard Lamp	SLCS-S-118	S11010017	2019/07/08	2020/07/08



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4. Integrating Sphere Test Results:

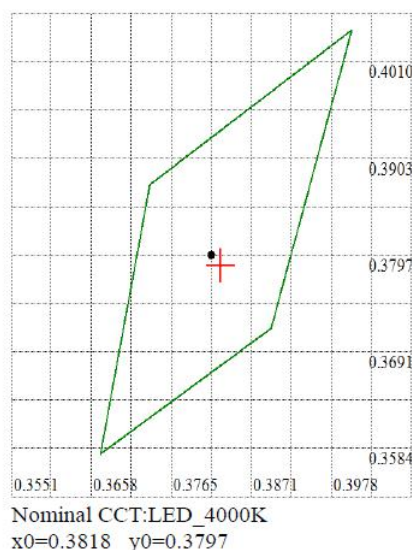
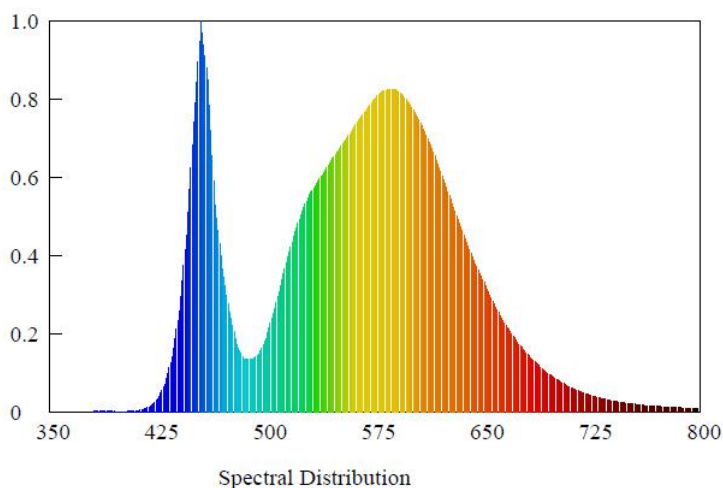
4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.0	0.280	0.983	60.5

Test type	CCT (K)	CRI	Duv	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3943	73.7	+0.00005	8802.75	145.5

4.2 Spectrum

Spectroradiometric Parameters



Chromaticity Coordinates: x=0.3830 y=0.3785 u'=0.2261 v'=0.5027

Correlated Color Temperature: 3943 K

Colour Fidelity Index: Rf=71

Luminous Flux: 8802.75 lm

Chromaticity Difference: +0.00005Duv

Color Ratio: Kr=38.1% Kg=54.8% Kb=7.0%

Bandwidth: 23.3nm

Photosynthetically Active Radiation(PAR): 27.31W

Rendering Index: Ra=73.7

R1=71 R2=83 R3=90 R4=69 R5=69 R6=74 R7=81 R8=52

R9=-26 R10=57 R11=63 R12=40 R13=74 R14=94 R15=65 Re=64

Dominant Wavelength: 578.0 nm(E)

Gamut Index: Rg=91

Purity: 0.2856

Peak Wavelength: 455.0 nm

Radiant Flux: 27.923 W

Photosynthetic Photon Flux(PPF):128.63μmol/s



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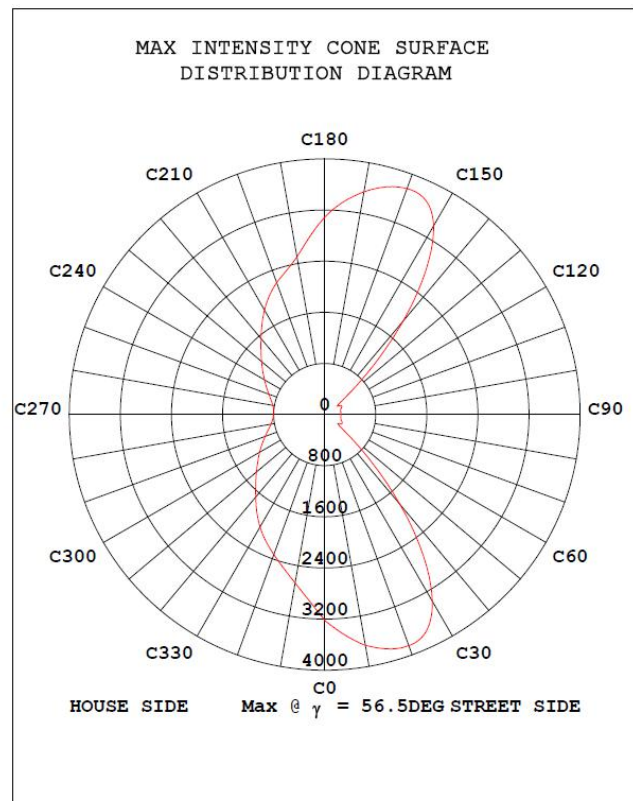
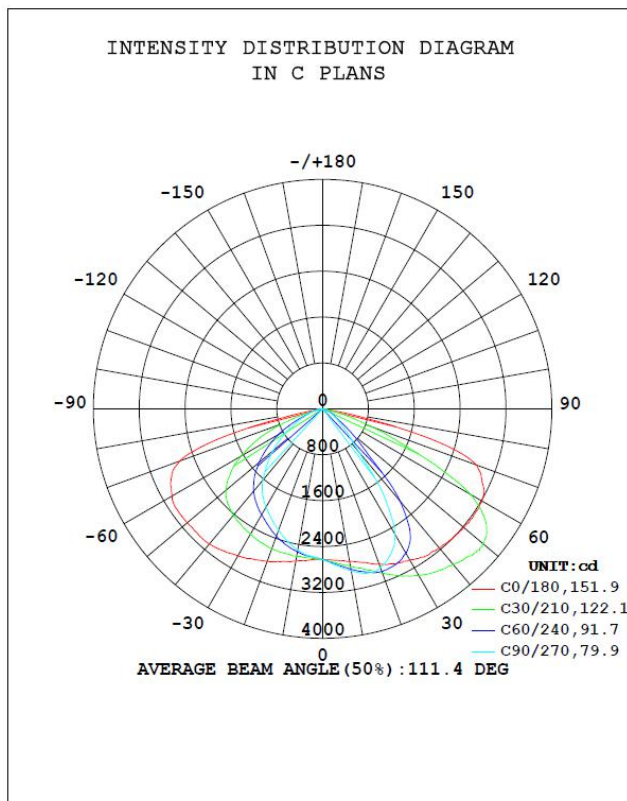
5. Goniophotometer Test results

5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.1	50.01	0.2796	0.9835	60.52

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	ZL (0~90°)	ZL (80~90°)
Output	8802.37	145.44	100.0%	0.3%

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





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5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Φ lum, lamp
10	2701	2816	2865	2805	2694	2573	2499	2564	0- 10	254.3	254.3	2.89, 2.89
20	2881	3052	2944	3039	2826	2464	2255	2482	10- 20	772.7	1027	11.7, 11.7
30	3042	3179	2526	3157	2958	2318	1980	2361	20- 30	1263	2290	26, 26
40	3169	3102	995.4	3075	3074	2135	1623	2198	30- 40	1614	3904	44.4, 44.4
50	3217	2080	423.9	2198	3089	1793	1135	1888	40- 50	1695	5599	63.6, 63.6
60	3214	580.9	201.7	638.9	3036	1198	628.8	1316	50- 60	1567	7166	81.4, 81.4
70	2853	139.8	65.36	144.7	2648	417.8	279.4	500.6	60- 70	1162	8328	94.6, 94.6
80	286.3	12.90	1.355	8.995	213.7	114.8	114.5	126.2	70- 80	444.4	8773	99.7, 99.7
90	0	0	0	0	0	0	0	0	80- 90	29.49	8802	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	8802	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	8802	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	8802	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	8802	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	8802	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	8802	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	8802	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	8802	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	8802	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



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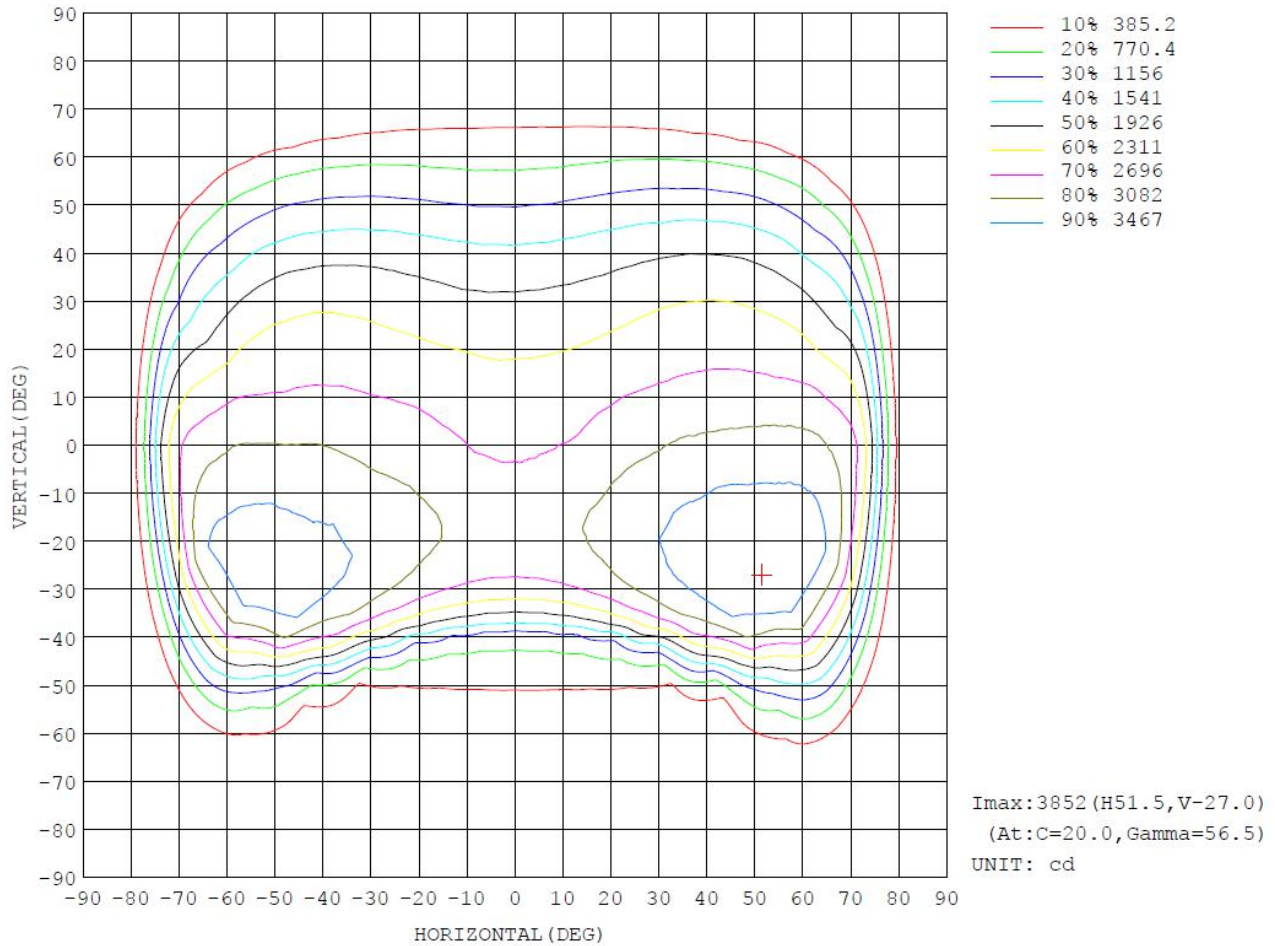
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5.4 Isocandela Diagram





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5.5 Luminous Distribution Intensity Data

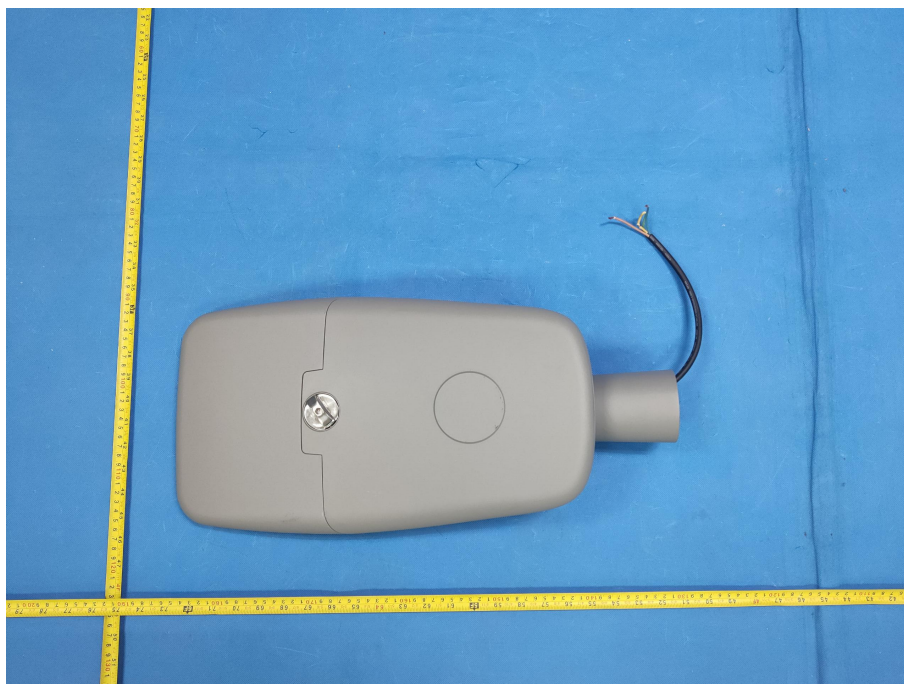
Table--1

UNIT: cd

C (DEG) γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627	2627
5	2653	2660	2682	2692	2702	2711	2717	2726	2729	2734	2727	2725	2722	2705	2697	2691	2685	2660	2646
10	2701	2728	2758	2786	2804	2828	2838	2851	2853	2865	2854	2840	2840	2814	2796	2788	2761	2729	2694
15	2770	2816	2874	2900	2928	2942	2944	2954	2947	2968	2945	2944	2944	2929	2915	2892	2869	2810	2754
20	2881	2942	3017	3049	3064	3040	3016	2982	2939	2944	2933	2963	3009	3038	3040	3037	2990	2912	2826
25	2982	3088	3168	3212	3184	3092	2998	2900	2823	2802	2820	2879	2978	3092	3158	3167	3129	3008	2889
30	3042	3203	3308	3351	3269	3090	2906	2714	2572	2526	2571	2705	2885	3072	3243	3294	3251	3103	2958
35	3131	3318	3452	3462	3316	3052	2665	2249	1965	1887	1978	2277	2663	3027	3282	3399	3367	3212	3021
40	3169	3401	3563	3544	3363	2840	2107	1410	1054	995	1058	1458	2144	2838	3313	3472	3458	3305	3074
45	3198	3507	3661	3624	3248	2350	1124	787	674	647	671	791	1193	2367	3239	3549	3539	3371	3080
50	3217	3574	3733	3655	2875	1285	667	507	441	424	440	504	678	1492	2903	3598	3628	3452	3089
55	3220	3643	3837	3484	2171	549	354	305	285	280	280	296	342	587	2228	3494	3743	3530	3087
60	3214	3714	3779	2979	908	254	230	220	207	202	205	214	224	252	1025	2980	3668	3567	3036
65	3078	3610	3325	1797	307	179	161	150	135	129	134	144	155	174	394	1720	3176	3526	2917
70	2853	2985	2318	899	169	110	92.6	78.3	68.7	65.4	67.3	75.0	87.7	104	185	831	2070	2778	2648
75	1751	1551	1062	357	75.2	48.2	35.1	24.0	18.0	16.4	17.5	22.3	32.3	42.6	69.5	298	767	1182	1550
80	286	263	209	77.0	18.7	7.06	2.75	1.93	1.48	1.36	1.41	1.65	2.24	4.60	13.4	43.9	123	152	214
85	23.2	19.9	12.5	5.64	2.51	0.89	0.30	0.37	0.22	0.22	0.30	0.30	0.22	0.30	1.11	3.07	7.40	12.6	19.9
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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6. Photo of sample:



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