




# TEST REPORT

## Of IES LM-79-08

<b>Kunde:</b> <i>Client:</i>	AOK Industrial Company Limited
<b>Adresse:</b> <i>Address:</i>	East Suite (2/F, Plant 4, St George's Science and Technology Industrial Park) 3/F, Building 1, St George's Science and Technology Industrial Park North Side of Xinyu Road, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
<b>Hersteller:</b> <i>Manufacturer:</i>	AOK Industrial Company Limited
<b>Adresse:</b> <i>Address:</i>	East Suite (2/F, Plant 4, St George's Science and Technology Industrial Park) 3/F, Building 1, St George's Science and Technology Industrial Park North Side of Xinyu Road, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
<b>Name der Marke:</b> <i>Brand Name:</i>	
<b>Beschreibung des Produkts:</b> <i>Product Description:</i>	SOLAR STREET LIGHT
<b>Modelle:</b> <i>Models:</i>	AOK-20WsE-DC-S5-00-4070-T3-A
<b>Bewertung:</b> <i>Rating:</i>	Input: DC12V, 20W(Whole light) DC24V, 20W, 4000K(Light board)
<b>Verfahren:</b> <i>Method:</i>	IES LM-79-08: Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass

**Datum der Prüfung:**  
*Date of Test:*

2021-11-22

**Datum der Emission:**  
*Date of Issue:*

2021-11-27

**Klassifizierung:**  
*Classification:*

Commission Test

**Gegenstand der Prüfung:**  
*Test item:*

IES LM-79-08

**Prüflabor (Testlabor) / Testing Laboratory:**  
Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

**Compiled von/Compiled by:**

Zero Huang

Zero Huang/ Project Engineer

**Check von/Check by:**



Ian Luo/ Director

**Genehmigt von/Approved by:**



Jesse Liu/ Manager

**Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.**

*Remark: The duplication of this report or parts of it and its use for advertising purposes is only allowed with permission of the testing laboratory. This report contains the result of examination of the product sample submitted by the appliance. A general statement concerning the quality of the products from the series manufacturer cannot be derived therefore.*



## 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>
4.1 Test Data.....	5
4.2 Spectrum.....	5
<b>5. Goniophotometer Test results.....</b>	<b>6</b>
5.1 Test Data.....	6
5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux Diagram (Unit : lx).....	6
5.3 Zonal Flux Diagram.....	7
5.4 Isocandela Diagram.....	8
5.5 Luminous Distribution Intensity Data.....	9
<b>6. Photo of sample.....</b>	<b>10</b>



## 1. Test Method

Test Item.....	: Integrating Sphere Test
Ambient Condition.....	: 25.1°C
Stabilization time .....	(h): 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): 1.0h
Orientation(burning position) of SSL product during test .....	: down
Test Method.....	: The sample was tested according to the IES LM-79-2008. Photometric parameters 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.....:	SOLAR STREET LIGHT
Model Number.....:	AOK-20WsE-DC-S5-00-4070-T3-A
Rated Inputs.....:	Input: DC12V(Whole light) DC24V(Light board)
Rated Power.....:	20W
Declared CCT.....:	4000K
LED Manufacturer.....:	Seoul Semiconductor Co.,LTD
LED Model.....:	STW7L8PA
LED Package, Array or Module.....:	N/A
Forward current of the LED chip.....:	570mA
Date of Receipt Samples.....:	November 03, 2021
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	2021/06/21	2022/06/20
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2021/06/21	2022/06/20
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2021/06/21	2022/06/20
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2021/07/02	2022/07/01
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2021/06/21	2022/06/20
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2021/06/21	2022/06/20
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2021/06/21	2022/06/20
SENSING	Standard Lamp	SLCS-S-118	S11010017	2021/07/02	2022/07/01



## 4. Integrating Sphere Test Results

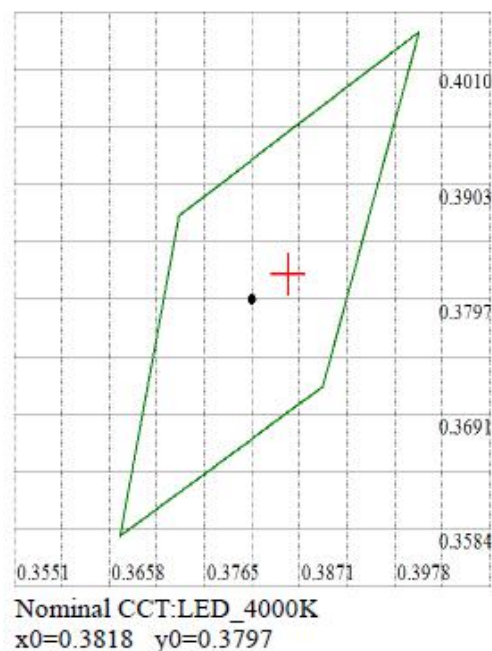
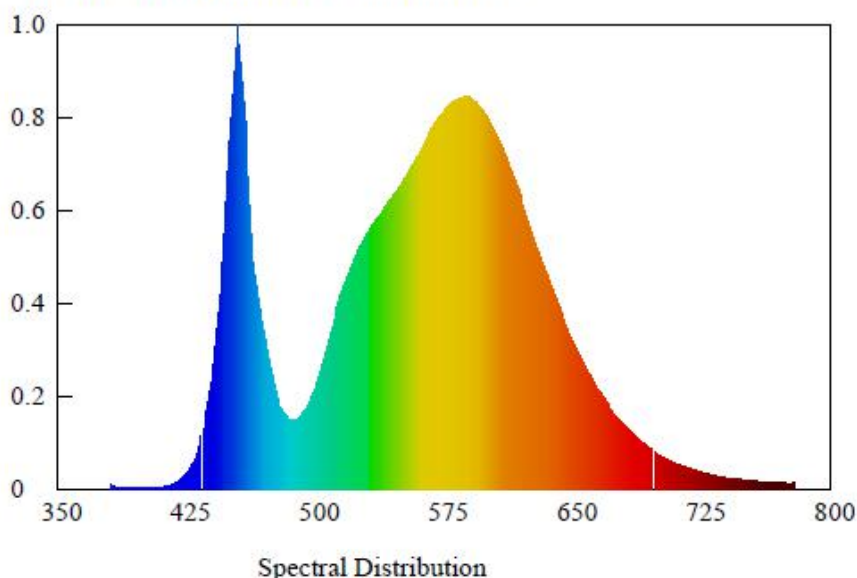
### 4.1 Test Data

Test type	Voltage (V DC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	21.59	-	0.9262	1.0000	20.00

Test type	CCT (K)	CRI	Duv	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3894	73.7	+0.00089	3868.00	193.4

### 4.2 Spectrum

#### Spectroradiometric Parameters



Chromaticity Coordinates:  $x=0.3859$   $y=0.3820$   $u'=0.2266$   $v'=0.5047$

Correlated Color Temperature: 3894 K

Colour Fidelity Index:  $R_f=72$

Luminous Flux: 3868.00 lm

Chromaticity Difference: +0.00089Duv

Color Ratio:  $K_r=38.5\%$   $K_g=54.1\%$   $K_b=7.4\%$

Bandwidth: 14nm

Photosynthetically Active Radiation(PAR): 8.49W

Rendering Index:  $R_a=73.7$

Dominant Wavelength: 578.0 nm(E)

Gamut Index:  $R_g=90$

Purity: 0.3047

Peak Wavelength: 455.0 nm

Radiant Flux: 8.645 W

Photosynthetic Photon Flux(PPF): 39.97  $\mu\text{mol/s}$

$R_1=71$   $R_2=83$   $R_3=92$   $R_4=69$   $R_5=69$   $R_6=75$   $R_7=81$   $R_8=50$

$R_9=-30$   $R_{10}=59$   $R_{11}=64$   $R_{12}=42$   $R_{13}=74$   $R_{14}=95$   $R_{15}=64$   $R_e=64$



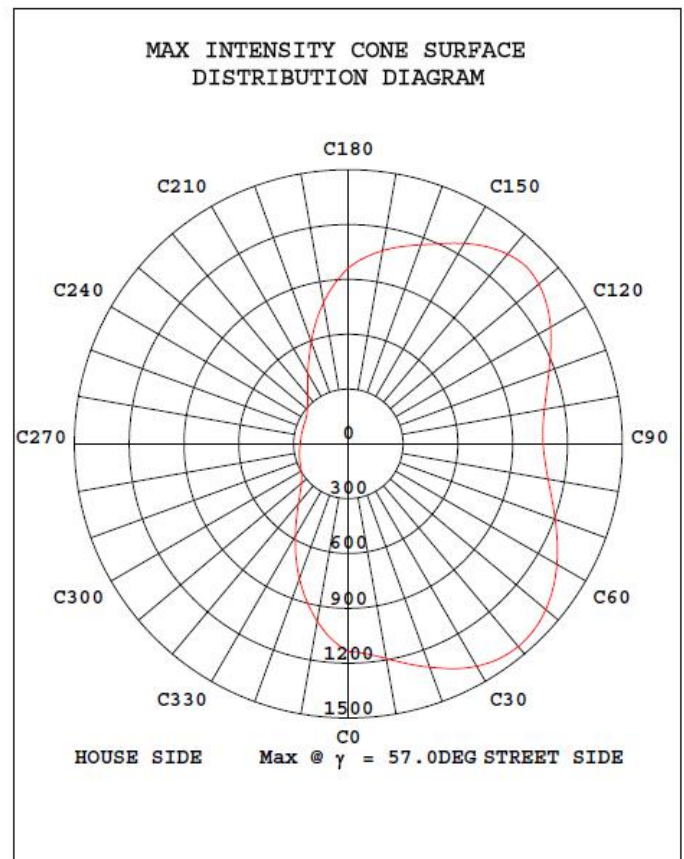
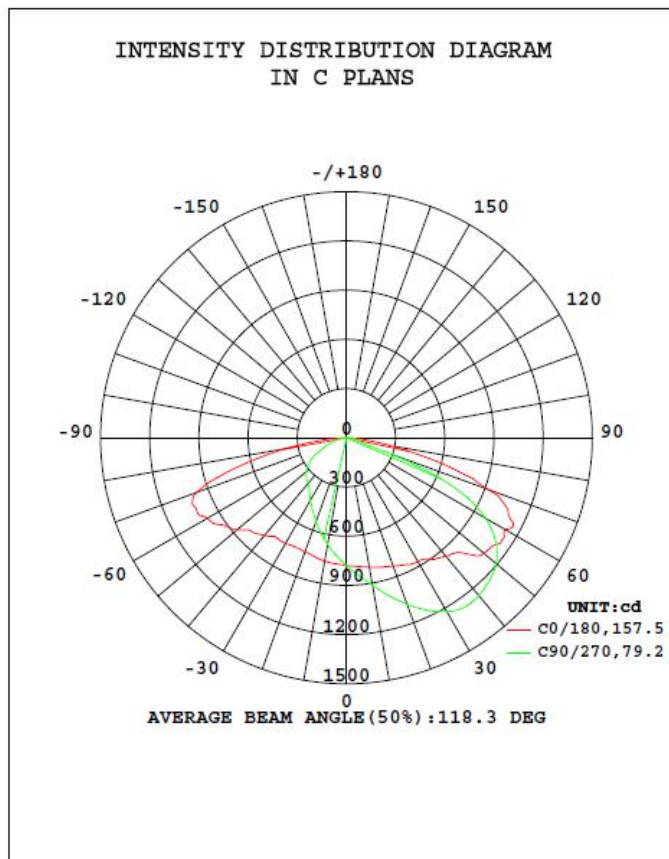
## 5. Goniophotometer Test results

### 5.1 Test Data

Test type	Voltage (V DC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	21.46	-	0.9361	1.000	20.09

Test type	Total Flux (lm)	Luminous efficacy (lm/W)	ZL (0~90°)	ZL (80~90°)
Output	3888.88	193.54	99.6%	1.7%

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





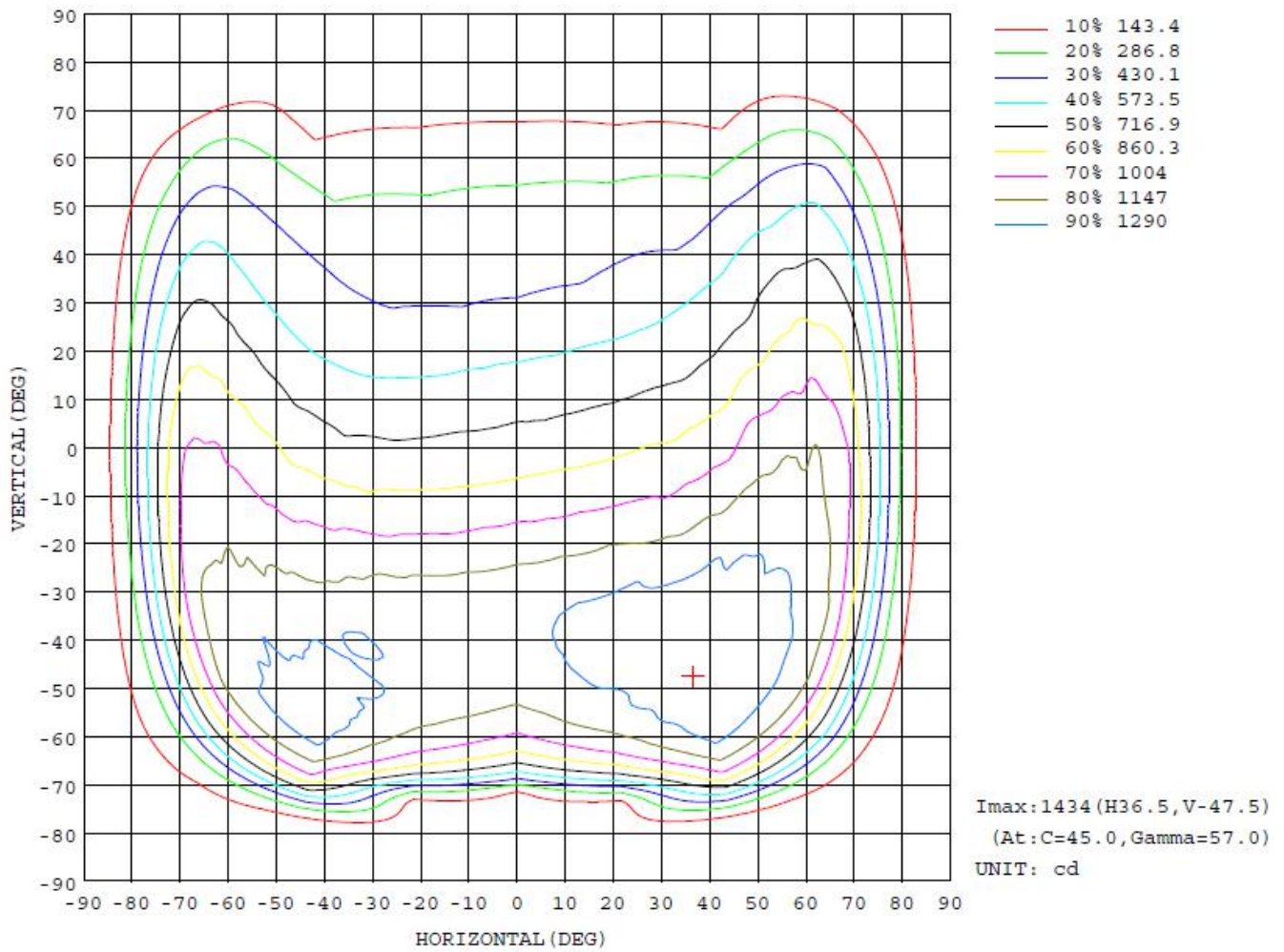
## 5.3 Zonal Flux Diagram

y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	lum, lamp
10	802.5	890.2	913.6	854.9	763.1	678.1	662.3	702.8	0- 10	74.47	74.47	1.91,1.91
20	832.5	1025	1081	950.6	739.8	581.2	544.5	641.0	10- 20	224.1	298.5	7.68,7.68
30	872.9	1189	1224	1085	744.4	490.5	439.6	577.0	20- 30	376.1	674.7	17.3,17.3
40	941.3	1314	1256	1217	777.2	415.9	363.2	511.9	30- 40	525.9	1201	30.9,30.9
50	1096	1390	1193	1323	872.6	361.9	318.7	437.0	40- 50	665.7	1866	48,48
60	1117	1408	977.7	1368	980.9	289.7	233.8	343.6	50- 60	768.5	2635	67.8,67.8
70	917.5	1247	279.0	1263	972.8	155.6	120.1	190.4	60- 70	758.9	3394	87.3,87.3
80	272.7	174.7	53.71	195.4	371.9	46.73	48.12	53.25	70- 80	414.7	3808	97.9,97.9
90	13.89	31.07	11.08	31.59	7.066	7.037	11.07	10.05	80- 90	64.62	3873	99.6,99.6
100	2.503	3.240	3.817	4.483	1.934	2.672	2.758	2.723	90-100	5.532	3879	99.7,99.7
110	1.290	1.537	2.761	1.762	1.934	2.591	1.624	2.803	100-110	2.609	3881	99.8,99.8
120	1.290	4.046	1.950	3.443	1.934	2.501	1.624	2.483	110-120	2.162	3883	99.9,99.9
130	1.450	2.672	1.137	2.482	1.934	1.700	1.462	1.922	120-130	1.745	3885	99.9,99.9
140	1.693	1.538	1.059	1.762	1.934	1.619	1.462	1.922	130-140	1.373	3886	99.9,99.9
150	1.773	1.457	0.8121	1.762	1.934	1.619	1.462	1.922	140-150	1.042	3888	100,100
160	1.854	1.457	0.8121	1.762	1.934	1.619	1.462	1.441	150-160	0.7480	3888	100,100
170	1.854	1.457	1.296	1.762	1.934	1.619	1.462	1.441	160-170	0.4430	3889	100,100
180	1.854	1.457	1.381	1.762	1.934	1.619	1.381	1.441	170-180	0.1518	3889	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		





## 5.4 Isocandela Diagram





## 5.5 Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	778	778	778	778	778	778	778	778	778	778	778	778	778	778	778	778			
5	788	815	835	841	840	831	816	794	771	743	727	717	719	724	739	766			
10	803	850	890	910	914	891	855	808	763	710	678	657	662	676	703	752			
15	817	886	954	985	995	961	899	828	750	678	629	602	603	626	672	738			
20	832	933	1025	1070	1081	1036	951	849	740	646	581	547	544	578	641	730			
25	854	984	1107	1156	1158	1111	1011	878	734	615	533	493	490	530	609	718			
30	873	1035	1189	1236	1224	1179	1085	913	744	590	490	441	440	484	577	712			
35	904	1089	1278	1294	1261	1230	1140	967	742	572	452	394	394	438	544	695			
40	941	1169	1314	1319	1256	1255	1217	1019	777	559	416	361	363	404	512	691			
45	991	1258	1384	1321	1234	1257	1240	1081	811	548	387	339	346	376	479	697			
50	1096	1299	1390	1306	1193	1227	1323	1117	873	547	362	316	319	346	437	712			
55	1131	1333	1427	1237	1115	1216	1354	1197	926	552	331	282	281	304	392	721			
60	1117	1356	1408	1173	978	1144	1368	1228	981	550	290	239	234	256	344	734			
65	1089	1294	1386	1006	746	998	1366	1274	1013	540	232	178	169	188	277	687			
70	918	1172	1247	640	279	630	1263	1210	973	509	156	121	120	126	190	636			
75	601	780	845	113	84.3	99.2	899	843	684	420	88.5	74.2	79.5	80.1	107	497			
80	273	234	175	75.8	53.7	72.0	195	275	372	213	46.7	44.7	48.1	47.9	53.2	252			
85	78.3	58.6	67.6	42.0	29.4	41.3	73.7	59.6	126	42.8	19.5	21.9	23.3	25.1	23.6	70.4			
90	13.9	15.8	31.1	17.8	11.1	17.1	31.6	13.5	7.07	7.69	7.04	9.92	11.1	11.6	10.0	11.5			
95	3.30	5.28	5.10	3.24	1.78	3.75	4.09	5.39	2.42	1.93	2.02	3.08	4.30	4.20	2.64	2.57			
100	2.50	3.47	3.24	2.92	3.82	2.67	4.48	4.18	1.93	1.93	2.67	2.51	2.76	2.98	2.72	2.17			
105	1.85	2.89	1.62	2.44	3.17	2.18	2.50	4.34	1.93	1.93	2.67	2.11	1.62	2.75	2.80	2.17			
110	1.29	1.05	1.54	2.51	2.76	2.10	1.76	1.53	1.93	1.93	2.59	2.11	1.62	2.75	2.80	2.17			
115	1.21	0.96	3.97	2.68	2.19	1.70	3.68	1.37	1.93	1.93	2.59	2.11	1.62	2.75	2.80	2.17			
120	1.29	1.36	4.05	2.44	1.95	2.83	3.44	1.29	1.93	1.93	2.50	1.95	1.62	2.50	2.48	2.17			
125	1.29	1.44	2.92	2.19	1.63	1.94	3.12	1.29	1.93	1.93	1.70	1.78	1.46	1.70	1.92	2.09			
130	1.45	1.45	2.67	2.28	1.14	1.94	2.48	1.37	1.93	1.85	1.70	1.70	1.46	1.70	1.92	2.09			
135	1.53	1.53	2.19	2.27	1.14	1.94	2.16	1.37	1.93	1.85	1.70	1.70	1.46	1.70	1.92	2.09			
140	1.69	1.60	1.54	1.79	1.06	1.78	1.76	1.45	1.93	1.85	1.62	1.70	1.46	1.70	1.92	2.09			
145	1.77	1.61	1.46	1.70	0.81	1.70	1.76	1.45	1.93	1.85	1.62	1.70	1.46	1.70	1.92	2.09			
150	1.77	1.61	1.46	1.38	0.81	1.70	1.76	1.45	1.93	1.85	1.62	1.70	1.46	1.70	1.92	2.09			
155	1.85	1.61	1.46	1.38	0.81	1.70	1.76	1.45	1.93	1.85	1.62	1.70	1.46	1.62	1.68	2.17			
160	1.85	1.61	1.46	1.38	0.81	1.46	1.76	1.45	1.93	1.85	1.62	1.54	1.46	1.69	1.44	1.77			
165	1.85	1.61	1.46	1.38	0.81	1.45	1.76	1.45	1.93	1.85	1.62	1.54	1.46	1.53	1.44	1.77			
170	1.85	1.61	1.46	1.38	1.30	1.45	1.76	1.45	1.93	1.85	1.62	1.54	1.46	1.53	1.44	1.77			
175	1.85	1.61	1.46	1.38	1.38	1.45	1.76	1.45	1.93	1.85	1.62	1.54	1.46	1.53	1.44	1.77			
180	1.85	1.61	1.46	1.38	1.38	1.45	1.76	1.45	1.93	1.85	1.62	1.55	1.38	1.45	1.44	1.77			



6. Photo of sample

Photo document

Photos of AOK-20WsE-DC-S5-00-4070-T3-A



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