



Report No.: GZE160842-C

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

BEYOND LED TECHNOLOGY

(Brand Name: Beyond LED)

1939 Parker Ct Suite C
Stone Mountain, GA 30047

HD FPB Series - High Definition Outdoor Corn Bulb Decorative Luminaires (Type B)

Model name(s): BLTCLW60WE3957K

Representative (Tested) Model: SNC-CLW-60WB1E39

Model Different: All construction and rating are the same, except
CCT

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Sept.01,2016

Review By:

Tommy Liang

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

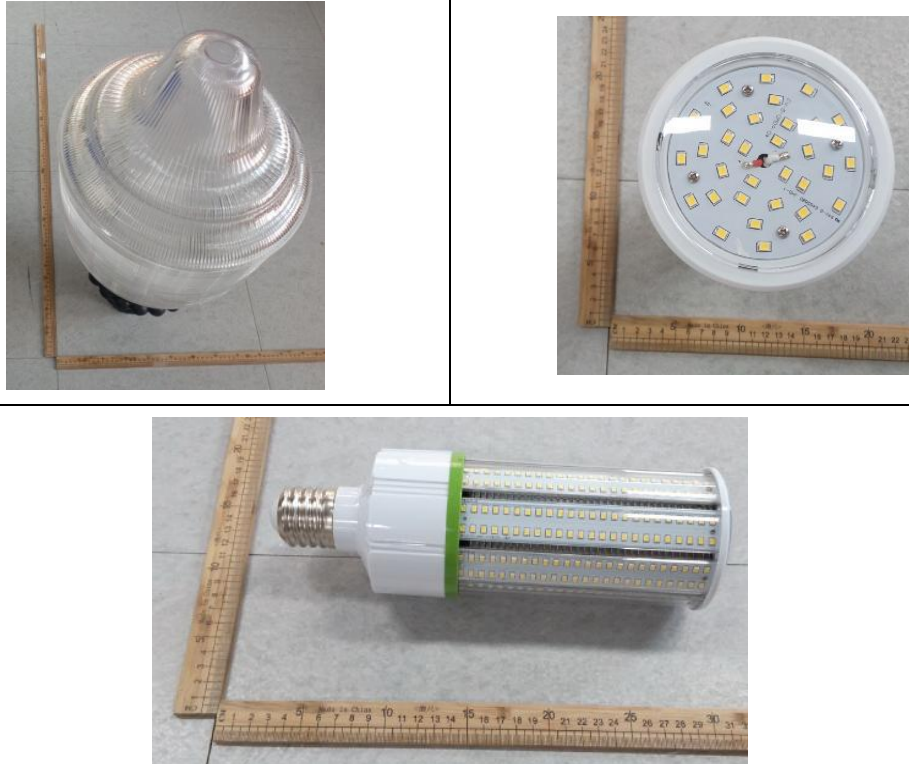
Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320 Fax: 8620-32290422 <http://www.standard-tech.com>

1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED	
Model Number	BLTCLW60WE3957K	
SKU (if available)	106609	
Type of Luminaire (for integral lamps, list base type and lamp type)	HD FPB Series - High Definition Outdoor Corn Bulb Decorative Luminaires (Type B)	
Rated Voltage / Frequency	100-277Vac,60 Hz	
Nominal Power	60W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,4500K,5000K,5700K	
LED Manufacturer	Shenzhen WeiXingXin Electronics Technology Co.,Ltd.	
LED Model	2835 0.5W White SMD LED	
Sample Number	GZE160842-C1(4000K),C2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		

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1.2 Test Specifications:

Date of Receipt	Aug.26,2016
Date of Test	Aug.28,2016
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</p> <p>Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p>3) Electrical Measurements:</p> <p>Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2016-08-28	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLTCLW60WE3957K		

Electrical Measurement in LEXALITE LINDY MODEL 424:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160842-	120.0	60	0.4927	58.37	0.9873	12.06
C1	277.0	60	0.2277	56.91	0.9021	17.57
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

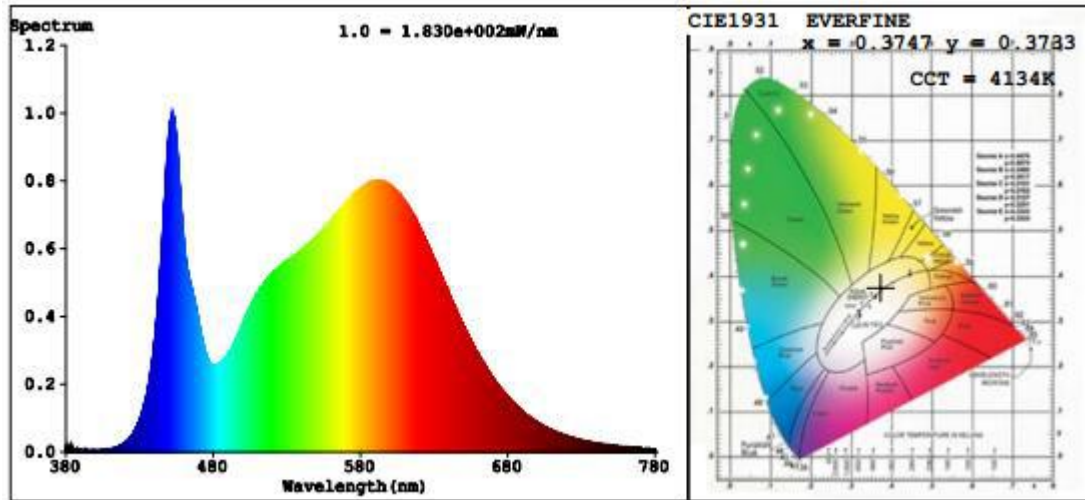
Chromaticity Measurement - Sphere-Spectroradiometer Method in LEXALITE LINDY MODEL 424:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	2
Frequency (Hz)	60	R2	90	R10	75
CCT (K)	4134	R3	95	R11	78
Duv	0.0001	R4	80	R12	59
Chromaticity (x, y)	x=0.3747 y=0.3733	R5	80	R13	83
Chromaticity (u', v')	u'=0.2227 v'=0.4992	R6	85	R14	98
Color Rendering Index (CRI)	82.1	R7	85	R15	74
R9	2	R8	62	--	--

Photometric Measurement – Goniophotometer Method in LEXALITE LINDY MODEL 424:

Parameter	Result		DLC V4.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	6473.2	6299.6	In luminaire: 5000-10000(±10%)
Luminous Efficacy (lm/W)	110.90	110.69	In luminaire:>=90(-3%)
Zonal lumens in the 0-90° zone (%)	87	--	>= 65(-3)
Beam Angle (°)	180.2	--	--
Center Beam Candle Power (cd)	336	--	--

Spectral Power Distribution & Chromaticity Diagram

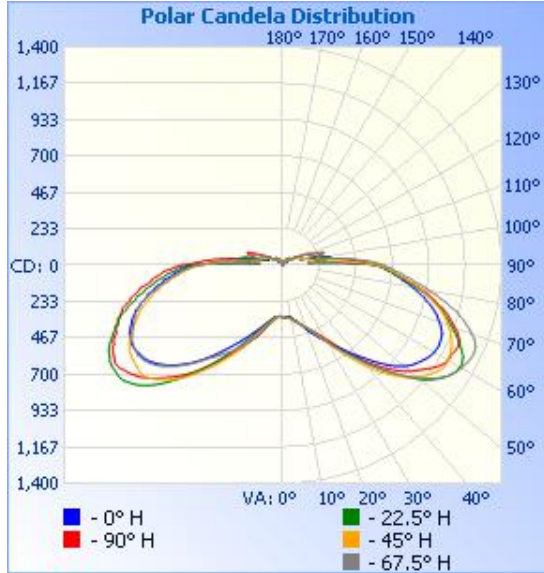


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	385.6	6%
0-40	837.1	12.9%
0-60	2,621.6	40.5%
60-90	3,010.0	46.5%
70-100	2,232.7	34.5%
90-120	700.4	10.8%
0-90	5,631.5	87%
90-180	841.7	13%
0-180	6,473.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	32.4	0.5%	90-100	377.5	5.8%
10-20	112.3	1.7%	100-110	194.7	3%
20-30	240.9	3.7%	110-120	128.2	2%
30-40	451.5	7.0%	120-130	64.9	1%
40-50	749.7	11.6%	130-140	40.3	0.6%
50-60	1,034.8	16.0%	140-150	23.0	0.4%
60-70	1,154.7	17.8%	150-160	9.6	0.1%
70-80	1,056.3	16.3%	160-170	2.9	0%
80-90	798.9	12.3%	170-180	0.6	0%

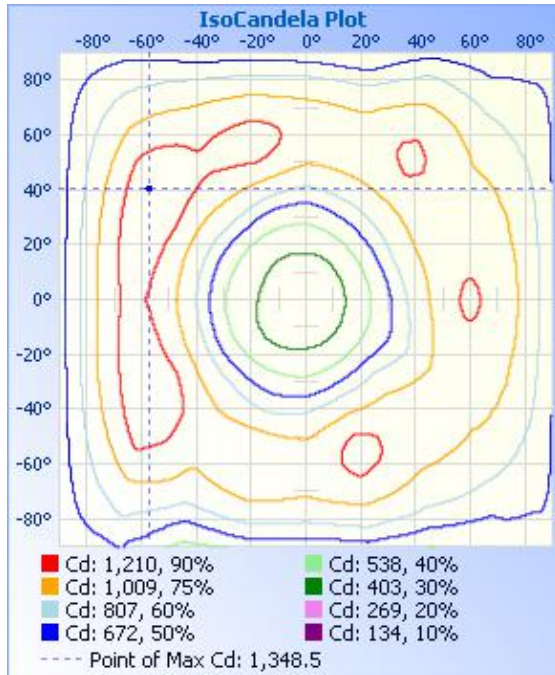
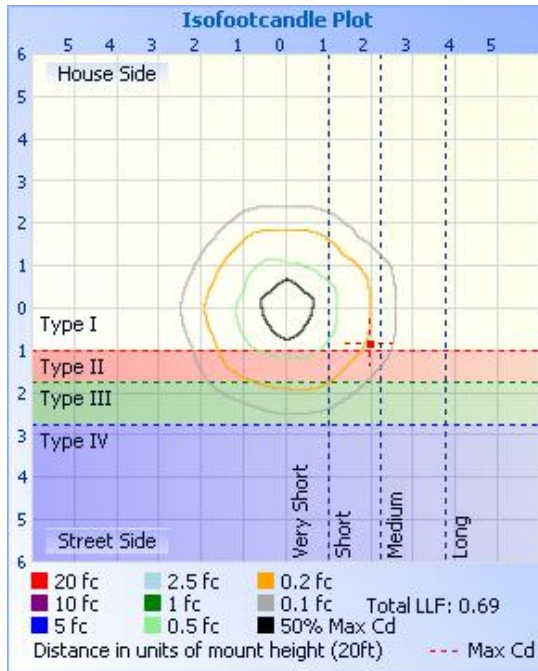
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	1.16 fc	506.0 ft 1,195.8 ft
34.0ft	0.29 fc	1,012.1 ft 2,391.5 ft
51.0ft	0.13 fc	1,518.1 ft 3,587.3 ft
68.0ft	0.07 fc	2,024.2 ft 4,783.1 ft
85.0ft	0.05 fc	2,530.2 ft 5,978.9 ft
102.0ft	0.03 fc	3,036.3 ft 7,174.6 ft

■ Vert. Spread: 172.3°
■ Horiz. Spread: 176.7°



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Table--1

UNIT: cd

Y (DEG)	C (DEG)															
	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336
5	329	330	330	330	334	337	342	335	331	332	333	330	329	328	331	332
10	364	363	357	348	348	348	358	354	358	345	341	336	343	347	354	363
15	415	413	405	385	381	380	383	388	380	366	359	369	380	388	400	412
20	487	491	477	451	439	428	419	423	423	407	402	419	432	447	467	477
25	565	575	566	528	497	486	480	477	470	465	466	483	495	527	557	553
30	658	689	669	616	569	564	578	564	544	543	560	566	576	632	673	630
35	770	825	779	721	656	671	706	678	656	658	676	653	673	761	798	706
40	898	940	886	842	764	811	855	816	795	815	801	743	788	908	925	797
45	1016	1049	1011	957	892	976	997	968	937	971	920	869	898	1065	1036	908
50	1127	1105	1125	1047	1007	1136	1115	1124	1060	1133	1015	1014	994	1197	1123	1006
55	1204	1117	1204	1078	1077	1255	1197	1252	1153	1271	1076	1135	1062	1266	1142	1073
60	1243	1104	1252	1100	1119	1309	1221	1319	1219	1326	1083	1204	1088	1269	1128	1092
65	1192	1066	1231	1084	1120	1260	1192	1349	1237	1338	1052	1188	1081	1224	1074	1064
70	1127	1014	1152	1005	1068	1150	1124	1286	1172	1297	977	1098	1031	1140	995	1009
75	1066	954	1060	912	977	1036	1031	1156	1058	1199	880	990	941	1029	903	943
80	938	828	932	783	854	887	898	959	904	1008	753	857	832	894	795	811
85	809	705	791	655	722	735	744	780	741	824	615	721	708	755	670	682
90	656	571	637	528	602	607	605	650	608	677	485	562	563	594	537	552
95	433	386	324	153	165	185	303	457	424	469	225	159	150	169	290	365
100	241	218	188	235	305	297	165	243	244	240	172	232	266	271	144	190
105	186	191	171	133	184	184	160	262	235	261	144	137	153	162	148	174
110	242	220	166	103	116	121	128	233	222	229	116	109	93.0	112	141	196
115	159	151	126	111	123	127	106	173	161	171	94.2	110	102	112	109	134
120	108	103	97.6	92.9	108	112	78.2	118	110	111	76.5	93.4	89.5	98.3	84.8	94.6
125	68.6	66.7	75.7	69.2	68.1	76.7	66.1	64.2	73.2	65.6	66.5	65.6	66.4	67.6	63.6	60.3
130	57.2	54.8	63.7	54.4	61.6	60.7	61.3	54.1	59.5	54.9	60.6	53.9	57.8	54.7	55.7	54.9
135	62.0	58.6	55.0	48.1	37.5	49.7	52.7	57.8	61.5	61.1	53.0	47.2	34.4	44.7	48.1	60.6
140	61.9	57.6	45.7	37.6	35.8	38.2	42.9	58.0	60.9	59.9	44.8	37.2	32.7	32.9	38.9	57.9
145	51.8	49.6	34.6	25.6	23.8	24.0	33.7	49.7	52.6	52.0	37.7	24.0	18.0	19.1	29.6	49.0
150	39.1	37.2	25.9	19.9	11.1	19.8	28.0	38.8	41.2	40.9	31.2	20.6	9.86	13.6	22.4	35.5
155	26.3	25.2	18.9	14.1	10.8	15.3	22.6	28.2	30.3	30.1	24.0	17.1	10.7	9.63	15.7	23.0
160	15.5	15.2	12.3	10.3	10.0	10.5	16.9	20.5	21.1	21.5	17.2	12.9	9.24	8.03	9.03	12.0
165	9.75	10.4	8.72	8.39	8.50	10.2	12.0	14.5	14.3	14.3	11.1	7.89	5.83	4.93	5.36	5.89
170	7.28	7.70	7.15	6.98	6.88	8.54	9.74	11.5	9.80	9.58	8.29	6.06	3.83	2.79	3.18	3.79
175	5.03	5.95	5.98	5.73	5.50	6.70	7.21	7.41	6.92	6.28	5.39	5.05	4.51	3.86	3.63	3.62
180	5.11	4.96	4.15	5.82	5.25	5.86	5.11	5.38	5.53	5.11	5.39	4.98	5.67	5.61	5.79	5.22

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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-28	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLTCLW60WE3957K		

Electrical Measurement in LEXALITE LINDY MODEL 424:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160842-	120.0	60	0.4983	58.91	0.9852	13.18
C2	277.0	60	0.2309	57.59	0.9003	18.94
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

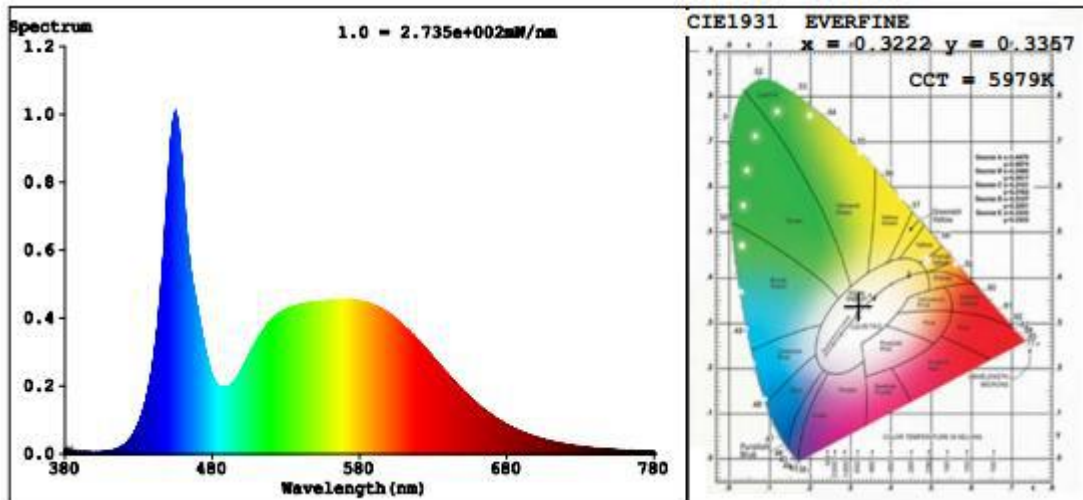
Chromaticity Measurement - Sphere-Spectroradiometer Method in LEXALITE LINDY MODEL 424:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	9
Frequency (Hz)	60	R2	89	R10	71
CCT (K)	5979	R3	91	R11	78
Duv	0.0020	R4	80	R12	53
Chromaticity (x, y)	x=0.3222 y=0.3357	R5	81	R13	84
Chromaticity (u', v')	u'=0.2019 v'=0.4733	R6	82	R14	95
Color Rendering Index (CRI)	82.6	R7	87	R15	78
R9	9	R8	69	--	--

Photometric Measurement – Sphere-Spectroradiometer Method in LEXALITE LINDY MODEL 424:

Parameter	Result		DLC V4.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	6705	6546	In luminaire: 5000-10000(±10%)
Luminous Efficacy (lm/W)	113.81	113.67	In luminaire:>=90(-3%)

Spectral Power Distribution & Chromaticity Diagram



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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF REPORT *******

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