



OCTA LIGHT BULGARIA Plc



BULLSTAR SERIES

**HIGH POWER
LED**

**TEST RELIABILITY AND
SENSITIVITY CLASSIFICATION**

LOW TEMPERATURE STORAGE TEST

INTRODUCTION

This document contains information about the reliability classification level of Octa Light BullStar series, that are sensitive to moisture-induced stress. Once identified they can be properly packaged, stored and handled to avoid thermal and mechanical damage during assembly and/or repair operations. Passing the criteria in these tests shows that LEDs are sufficient by itself to provide assurance of long term reliability. Most of them are considered and recommended by JEDEC and ASSIST.

BACKGROUND

Octa Light LEDs exhibit very long operational life characteristics, typically 50,000 hours or longer. Like all light sources, LEDs slowly decrease in light output over time. Because they rarely fail, situations can occur where LEDs are emitting less light than intended by the specifier, yet still appear to be operating. LEDs can also undergo gradual shifts in color that result in an unacceptable appearance.



TESTING PROCEDURE:

This experiment is made to provide the information and data after thermal stress on high temperature. The product is storage at freezer on -40°C ($\pm 5^{\circ}\text{C}$) for 1000 hours, they are powered off.

CONDITIONS:

Temperature = -40°C

Time = 1000 hours

FAILURE CRITERIA:

Visual failures:

Dimensions out of tolerance

Broken or damaged package

Electrical criteria:

Lead Vf shift $\geq 10\%$



Low Storage Temperature Test - Data Before test

Sample - Premold UNIT	Body leads	Body width	Body thickness	Lens thickness	Lens width	Lead length 1	Lead length 2	VF 1(V)	x	y	CCT(K)	CRI	Et(W)	Fv(lm)
Sample-1	7.9148	8.9090	2.4153	2.9977	5.1841	2.7743	2.7661	3.3487	0.3588	0.4070	4758.4858	63.6635	0.2953	122.1799
Sample-2	7.9102	8.9114	2.4106	2.9953	5.2031	2.7698	2.7681	3.1895	0.3545	0.3989	4848.4574	64.3226	0.2959	120.7559
Sample-3	7.9056	8.9114	2.4106	2.9953	5.2031	2.7698	2.7681	3.2812	0.3505	0.3889	4937.9653	63.6326	0.2937	117.7983
Sample-4	7.9182	8.9018	2.4058	2.9941	5.1758	2.7776	2.7780	3.2894	0.3575	0.4030	4779.4662	63.1112	0.2974	122.0328
Sample-5	7.9114	8.9092	2.4118	2.9870	5.1758	2.7732	2.7582	3.2716	0.3579	0.4047	4773.4336	63.5353	0.2887	119.1571
Sample-6	7.9171	8.9000	2.4094	2.9965	5.1770	2.7930	2.7659	3.2998	0.3520	0.3913	4899.5843	63.1508	0.2968	119.3051
Sample-7	7.9136	8.9000	2.4094	2.9965	5.1770	2.7930	2.7659	3.2721	0.3564	0.4018	4805.6756	63.5212	0.2995	122.6667
Sample-8	7.9079	8.9114	2.4106	3.0048	5.1817	2.7776	2.7548	3.2661	0.3546	0.3992	4846.7356	64.2241	0.2997	122.3021
Sample-9	7.9079	8.9068	2.4153	2.9953	5.1817	2.7809	2.7604	3.3231	0.3579	0.4054	4775.3151	63.7083	0.2933	121.0610
Sample-10	7.9125	8.9098	2.4082	2.9786	5.1781	2.7654	2.7582	3.2588	0.3557	0.4011	4822.4281	63.9000	0.2958	121.1492
Sample-11	7.9079	8.9022	2.4082	3.0143	5.1876	2.7489	2.7361	3.2804	0.3270	0.3465	5762.1720	68.5391	0.3063	113.3470
Sample-12	7.9205	8.9020	2.4082	3.0060	5.1758	2.7467	2.7460	3.2860	0.3229	0.3379	5977.9553	69.0227	0.3357	121.3221
Sample-13	7.9217	8.9075	2.4094	3.0060	5.1924	2.7368	2.7372	3.2894	0.3228	0.3360	5993.8363	67.9245	0.3285	118.3734
Sample-14	7.9159	8.9038	2.4118	3.0132	5.1995	2.7389	2.7426	3.2717	0.3229	0.3377	5981.0633	68.5892	0.3335	120.4979
Sample-15	7.9091	8.9127	2.4141	2.9858	5.1722	2.7511	2.7328	3.2208	0.3248	0.3429	5869.9865	68.9481	0.3102	113.9929
Sample-16	7.9034	8.9094	2.4141	3.0001	5.1983	2.7389	2.7452	3.2382	0.3244	0.3419	5891.4833	68.9913	0.3237	118.3610
Sample-17	7.9159	8.9092	2.4058	2.9941	5.1924	2.7445	2.7276	3.2353	0.3268	0.3458	5774.1632	68.5656	0.3291	120.8954
Sample-18	7.9068	8.9092	2.4058	2.9941	5.1924	2.7445	2.7276	3.2670	0.3270	0.3466	5760.0852	68.4269	0.3114	115.0797
Sample-19	7.9114	8.9066	2.4118	3.0001	5.1841	2.7544	2.7382	3.2358	0.3252	0.3434	5853.6327	69.0726	0.3197	117.3167
Sample-20	7.9068	8.8985	2.4118	2.9941	5.1770	2.7511	2.7383	3.2676	0.3236	0.3397	5939.9201	68.9146	0.3085	112.6170
Sample-21	7.9239	8.8980	2.4201	3.0132	5.2019	2.7610	2.7503	3.3249	0.3560	0.4010	4815.3751	63.0663	0.2535	104.9848
Sample-22	7.9102	8.8940	2.4213	3.0072	5.1983	2.7579	2.7460	3.3221	0.3580	0.4045	4770.7820	62.7757	0.2742	113.5863
Sample-23	7.9102	8.8924	2.4141	3.0179	5.2031	2.7632	2.7790	3.2799	0.3575	0.4029	4778.2495	62.6296	0.2724	112.5087
Sample-24	7.9022	8.8564	2.4213	3.0108	5.2007	2.8360	2.8458	3.2723	0.3540	0.3969	4857.7752	63.3176	0.2675	109.9563
Sample-25	7.9148	8.9060	2.4082	3.0001	5.1805	2.7566	2.7404	3.2840	0.3562	0.4018	4810.1023	63.3514	0.2750	113.4304
Sample-26	7.9217	8.8981	2.4213	3.0096	5.1912	2.7555	2.7582	3.2783	0.3587	0.4059	4756.6948	62.8595	0.2395	101.0120
Sample-27	7.9125	8.8930	2.4165	3.0001	5.2007	2.7434	2.7492	3.2720	0.3590	0.4081	4755.5400	63.5512	0.2659	111.4729
Sample-28	7.9034	8.8930	2.4156	3.0082	5.2007	2.7452	2.7864	3.2723	0.3567	0.4010	4793.9733	62.5965	0.2619	108.1956
Sample-29	7.9205	8.8982	2.4215	3.0045	5.2012	2.7398	2.7852	3.2983	0.3555	0.4000	4825.1117	63.0407	0.2569	106.5163
Sample-30	7.9194	8.8885	2.4237	3.0179	5.2054	2.7566	2.7581	3.2765	0.3574	0.4037	4783.9562	62.9571	0.2661	110.2360
Sample-31	7.8999	8.8943	2.4094	3.0155	5.1864	2.7544	2.7536	3.2388	0.3386	0.3599	5273.0826	66.7991	0.2571	99.2214
Sample-32	7.9114	8.9021	2.4118	3.0013	5.1924	2.7445	2.7592	3.2950	0.3437	0.3714	5109.9831	66.3376	0.2724	106.5818
Sample-33	7.8988	8.9063	2.4034	3.0060	5.2043	2.7467	2.7316	3.2397	0.3415	0.3676	5178.9013	66.8647	0.2802	108.6487
Sample-34	7.8988	8.8941	2.4070	3.0084	5.1936	2.7490	2.7545	3.2437	0.3401	0.3626	5220.9770	66.1340	0.2778	106.6664
Sample-35	7.9091	8.8980	2.4058	3.0060	5.1841	2.7544	2.7437	3.2504	0.3445	0.3729	5085.2941	66.3300	0.2722	106.8431
Sample-36	7.9034	8.9117	2.4106	3.0036	5.1758	2.7356	2.7493	3.2206	0.3415	0.3661	5178.6540	66.3039	0.2738	106.1156
Sample-37	7.9079	8.9117	2.4058	2.9941	5.1722	2.7478	2.7437	3.3307	0.3198	0.3242	6212.7681	69.5162	0.3006	105.9547
Sample-38	7.9045	8.9111	2.4082	3.0013	5.1793	2.7411	2.7448	3.2148	0.3208	0.3273	6137.4398	69.9881	0.2967	105.4702
Sample-39	7.9022	8.9150	2.4022	2.9929	5.1864	2.7456	2.7394	3.2654	0.3180	0.3210	6341.4537	70.1383	0.2887	101.8069
Sample-40	7.9068	8.9066	2.4082	2.9870	5.1853	2.7500	2.7471	3.2813	0.3196	0.3249	6216.6177	70.2769	0.2994	105.8748
Sample-41	7.9102	8.9086	2.4141	2.9953	5.1971	2.7390	2.7459	3.2652	0.3228	0.3526	5935.2675	66.3287	0.2531	97.7936
Sample-42	7.9045	8.8998	2.4213	3.0084	5.2054	2.7367	2.7559	3.2874	0.3282	0.3651	5685.3594	65.7840	0.2508	99.4165
Sample-43	7.9011	8.8958	2.4118	2.9905	5.1841	2.7511	2.7526	3.2405	0.3293	0.3685	5639.4907	66.2361	0.2561	101.7789
Sample-44	7.9011	8.9038	2.4141	3.0036	5.1983	2.7544	2.7470	3.2708	0.3251	0.3573	5825.8512	65.6085	0.2595	100.6489
Sample-45	7.9136	8.8987	2.4129	2.9894	5.1900	2.7478	2.7492	3.2784	0.3304	0.3709	5596.8296	65.9356	0.2573	102.5754
Sample-46	7.9091	8.9026	2.4141	2.9870	5.1876	2.7378	2.7525	3.2646	0.3293	0.3673	5642.0373	65.8245	0.2641	104.3046
Sample-47	7.8965	8.9036	2.4141	2.9895	5.1871	2.7302	2.7482	3.2591	0.3241	0.3555	5871.0363	65.7185	0.2630	101.4767
Sample-48	7.9045	8.8992	2.4058	2.9846	5.1793	2.7544	2.7437	3.2206	0.3283	0.3656	5683.3140	65.8712	0.2636	103.7839
Sample-49	7.9079	8.9048	2.4046	2.9905	5.2078	2.7533	2.7382	3.2281	0.3288	0.3668	5661.6830	66.0127	0.2580	102.1171
Sample-50	7.9205	8.9045	2.4177	2.9917	5.1948	2.7555	2.7449	3.2792	0.3292	0.3673	5644.6447	66.0865	0.2590	102.4597
Sample-51	7.8999	8.9046	2.4011	2.9715	5.1485	2.7491	2.7394	3.2982	0.3206	0.3274	6145.2713	70.2131	0.3096	109.9054
Sample-52	7.9079	8.9054	2.4058	2.9894	5.1651	2.7656	2.7510	3.2622	0.3343	0.3533	5438.4582	67.6312	0.3016	113.1393
Sample-53	7.9022	8.9034	2.4011	2.9775	5.1746	2.7643	2.7437	3.2699	0.3427	0.3671	5134.4118	64.9988	0.2941	112.8818



Sample-54	7.9091	8.9039	2.4058	2.9941	5.1781	2.7621	2.7364	3.2502	0.3514	0.3843	4892.6496	64.9191	0.2848	113.1366
Sample-55	7.9114	8.8980	2.4046	2.9882	5.1770	2.7566	2.7515	3.2378	0.3396	0.3619	5239.0871	66.0805	0.2795	107.1699
Sample-56	7.9228	8.9061	2.4058	3.0013	5.2375	2.7412	2.7670	3.2691	0.3688	0.4165	4537.2561	62.8354	0.2726	114.5461
Sample-57	7.9022	8.9068	2.4058	2.9870	5.1710	2.7467	2.7404	3.2658	0.3782	0.4328	4386.8139	62.0938	0.2678	115.4981
Sample-58	7.9068	8.9062	2.4129	2.9917	5.1781	2.7412	2.7606	3.2644	0.3836	0.4423	4313.0457	61.7195	0.2557	112.4638
Sample-59	7.9068	8.9084	2.4011	2.9965	5.1651	2.7623	2.7371	3.2657	0.3849	0.4451	4298.6570	61.9412	0.2467	109.3110
Sample-60	7.9148	8.9123	2.4141	2.9953	5.3004	2.7511	2.7361	3.2719	0.3922	0.4594	4218.9961	61.9334	0.2453	111.2044
Min	7.8965	8.8564	2.4011	2.9715	5.1485	2.7302	2.7276	3.1895	0.3180	0.3210	4218.9961	61.7195	0.2395	97.7936
Max	7.9239	8.9150	2.4237	3.0179	5.3004	2.8360	2.8458	3.3487	0.3922	0.4594	6341.4537	70.2769	0.3357	122.6667
Average	7.9096	8.9029	2.4109	2.9980	5.1897	2.7553	2.7520	3.2684	0.3429	0.3762	5279.0789	65.6062	0.2826	111.0151

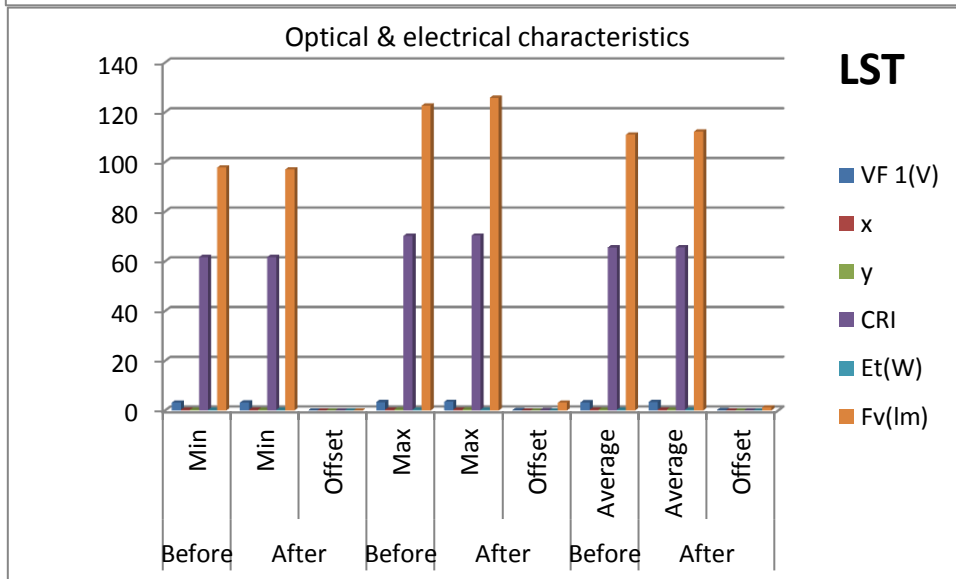
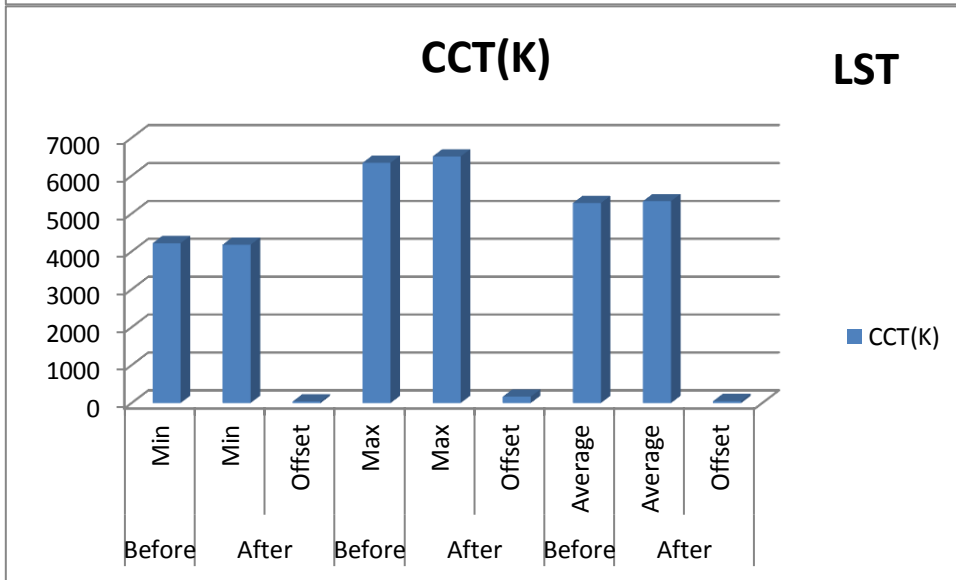
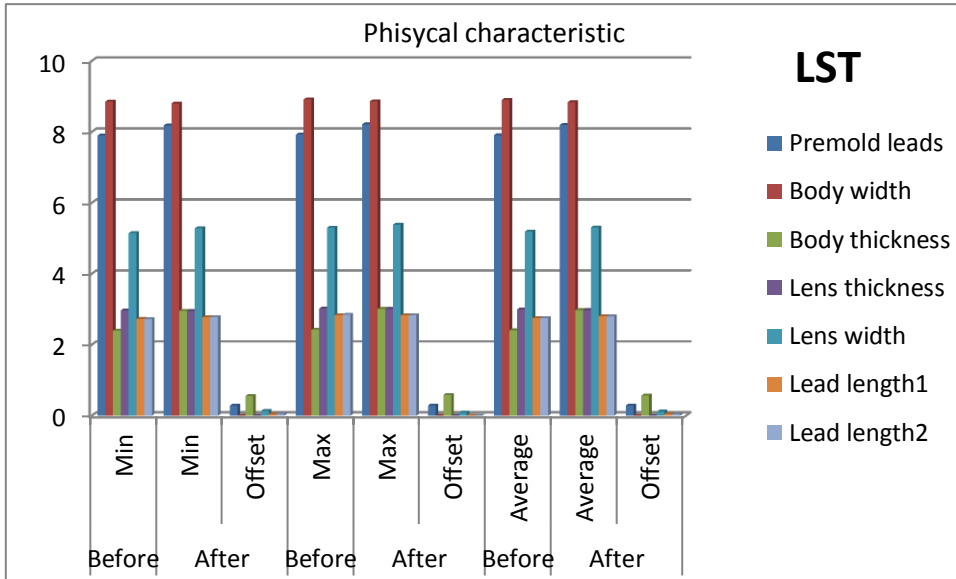


Low Storage Temperature Test - Data After test

Sample - Premold UNIT	leads	Body width	Body thickness	Lens thickness	Lens width	Lead length 1	Lead length 2	VF (V)	x	y	CCT(K)	CRI	Ef(W)	Fv(lm)
Sample-1	8.199	8.8508	2.976	2.976	5.2892	2.8237	2.8188	3.4353	0.3587	0.4073	4762.5529	63.6746	0.2948	125.256
Sample-2	8.1903	8.8452	2.976	2.976	5.3122	2.8207	2.8305	3.4114	0.3541	0.3987	4862.8751	64.3289	0.2949	123.4806
Sample-3	8.2078	8.8475	2.9661	2.9661	5.3045	2.8317	2.8163	3.3707	0.3499	0.3884	4956.7369	63.6403	0.2933	120.247
Sample-4	8.1925	8.8469	2.9792	2.9792	5.3002	2.8257	2.8225	3.3213	0.3573	0.403	4784.4797	63.0783	0.2965	125.0394
Sample-5	8.2034	8.8461	2.9683	2.9683	5.3024	2.8307	2.8095	3.3665	0.3578	0.405	4777.4543	63.5502	0.2885	121.9557
Sample-6	8.2001	8.8451	2.9738	2.9738	5.3056	2.8368	2.8153	3.4053	0.3513	0.391	4919.116	63.1538	0.296	121.7805
Sample-7	8.1925	8.8409	2.9617	2.9617	5.2969	2.8287	2.8115	3.4374	0.3561	0.4014	4814.9406	63.5395	0.2994	125.8081
Sample-8	8.2023	8.8425	2.9858	2.9858	5.2881	2.8237	2.8213	3.3344	0.3541	0.3989	4861.5128	64.1831	0.2989	125.2931
Sample-9	8.1925	8.8297	2.9792	2.9792	5.2969	2.8341	2.8155	3.3539	0.3578	0.4055	4780.5995	63.7086	0.2927	123.9476
Sample-10	8.2088	8.8496	2.9584	2.9584	5.2859	2.8126	2.8093	3.4197	0.3554	0.4009	4831.1683	63.8971	0.2947	123.7752
Sample-11	8.1914	8.8302	2.9957	2.9957	5.2848	2.8056	2.7874	3.4439	0.3249	0.3442	5858.0638	68.6708	0.3059	115.009
Sample-12	8.2045	8.8354	2.9913	2.9913	5.3451	2.7986	2.7814	3.448	0.3206	0.3353	6097.2815	69.0559	0.3348	123.9694
Sample-13	8.2088	8.8389	2.9913	2.9913	5.298	2.7916	2.7884	3.4303	0.3205	0.3333	6109.617	68.0035	0.3274	120.5092
Sample-14	8.2034	8.8312	2.9891	2.9891	5.3188	2.7959	2.7954	3.424	0.3208	0.3352	6088.865	68.6881	0.332	122.7805
Sample-15	8.1958	8.8337	2.9716	2.9716	5.2859	2.808	2.7843	3.437	0.3226	0.3405	5977.888	68.9948	0.3093	115.5546
Sample-16	8.1979	8.8368	2.9814	2.9814	5.298	2.7946	2.7974	3.4909	0.3223	0.3395	5995.1532	69.0674	0.3231	120.6896
Sample-17	8.2067	8.8357	2.9781	2.9781	5.3002	2.8036	2.7803	3.4705	0.3247	0.3435	5871.9638	68.711	0.3281	123.4628
Sample-18	8.2132	8.8417	2.9869	2.9869	5.2914	2.7939	2.7954	3.4648	0.325	0.3444	5855.0168	68.463	0.3105	116.8319
Sample-19	8.2034	8.8419	3.0055	3.0055	5.3045	2.8006	2.7794	3.4442	0.3232	0.3413	5948.7222	69.0653	0.3187	119.4428
Sample-20	8.1958	8.8266	2.976	2.976	5.3045	2.805	2.7894	3.4639	0.3214	0.3373	6047.2659	68.998	0.3068	113.8487
Sample-21	8.1958	8.8198	3.0033	3.0033	5.3177	2.809	2.7917	3.3894	0.3556	0.4009	4824.3891	63.0537	0.2534	105.671
Sample-22	8.2012	8.8167	2.9814	2.9814	5.2958	2.8036	2.8037	3.3992	0.3577	0.4042	4777.6531	62.7919	0.2744	115.5792
Sample-23	8.199	8.8181	2.988	2.988	5.3133	2.8217	2.8215	3.2164	0.3571	0.4025	4790.0027	62.5837	0.2724	114.2862
Sample-24	8.2001	8.8251	2.9891	2.9891	5.298	2.7959	2.7944	3.3991	0.3537	0.3969	4867.2853	63.3835	0.2679	111.6169
Sample-25	8.199	8.8191	2.976	2.976	5.3067	2.814	2.7894	3.3893	0.3563	0.4022	4810.7028	63.3181	0.2759	115.9197
Sample-26	8.2001	8.8252	3.011	3.011	5.2991	2.8074	2.7964	3.3807	0.3595	0.4073	4740.086	62.7975	0.236	99.8034
Sample-27	8.1914	8.8177	2.9781	2.9781	5.3045	2.8006	2.7884	3.3216	0.3587	0.4084	4764.8393	63.5134	0.2664	113.3884
Sample-28	8.199	8.8166	2.9858	2.9858	5.3013	2.7986	2.7984	3.4075	0.3566	0.4009	4797.0281	62.6375	0.2626	109.66
Sample-29	8.1892	8.8076	2.9957	2.9957	5.3078	2.7989	2.7884	3.3974	0.3555	0.4004	4825.8353	63.0455	0.2583	108.1636
Sample-30	8.2001	8.8016	2.9924	2.9924	5.3122	2.8006	2.8005	3.3997	0.3569	0.4034	4798.0751	63.0279	0.2657	111.5055
Sample-31	8.1816	8.8504	2.9968	2.9968	5.2925	2.7875	2.8005	3.49	0.3373	0.3585	5323.9663	66.8185	0.2563	98.7597
Sample-32	8.199	8.8608	2.9825	2.9825	5.3111	2.7916	2.7913	3.426	0.3426	0.37	5149.8007	66.3653	0.27	106.5339
Sample-33	8.1979	8.8508	2.9858	2.9858	5.31	2.7936	2.7864	3.4289	0.3403	0.3665	5223.7786	66.9245	0.2785	109.2128
Sample-34	8.1958	8.8508	2.9858	2.9858	5.3286	2.7916	2.7993	3.4274	0.3385	0.3608	5279.3252	66.1798	0.2755	106.6335
Sample-35	8.2001	8.8506	2.9924	2.9924	5.321	2.7966	2.7903	3.4774	0.3436	0.3718	5118.6478	66.3943	0.2704	107.1079
Sample-36	8.1925	8.8573	2.9803	2.9803	5.3177	2.7853	2.7914	3.4503	0.3401	0.3647	5227.1025	66.3315	0.272	106.1479
Sample-37	8.2034	8.8579	2.9694	2.9694	5.2881	2.7896	2.7943	3.4572	0.317	0.3208	6376.0769	69.511	0.2981	105.7401
Sample-38	8.1979	8.8602	2.9749	2.9749	5.3056	2.7889	2.7893	3.4725	0.3183	0.3242	6279.5776	70.0491	0.2941	105.2241
Sample-39	8.1947	8.8562	2.9727	2.9727	5.2936	2.7926	2.7924	3.4746	0.3152	0.3177	6508.5673	70.2453	0.287	101.2231
Sample-40	8.2088	8.8576	2.9661	2.9661	5.2914	2.7943	2.7893	3.4735	0.3171	0.3219	6365.2153	70.3791	0.2968	105.6399
Sample-41	8.1947	8.8454	2.9836	2.9836	5.31	2.7825	2.7983	3.4395	0.3206	0.351	6039.869	66.2689	0.252	97.0482
Sample-42	8.1979	8.8459	2.9858	2.9858	5.3013	2.7936	2.7873	3.5121	0.3261	0.363	5778.79	65.8747	0.2492	98.4569
Sample-43	8.199	8.8449	2.9716	2.9716	5.2947	2.8006	2.7923	3.4788	0.3275	0.3672	5717.5696	66.2432	0.2552	101.5808
Sample-44	8.199	8.8353	2.9913	2.9913	5.3188	2.8046	2.7933	3.4635	0.323	0.3554	5923.8444	65.6888	0.2586	100.2723
Sample-45	8.1936	8.8373	2.9639	2.9639	5.2936	2.7949	2.7884	3.3615	0.3286	0.3695	5672.913	65.8775	0.2551	102.0124
Sample-46	8.2132	8.8459	2.976	2.976	5.3253	2.7788	2.7973	3.4617	0.3272	0.3659	5728.6996	65.8934	0.2625	104.1382
Sample-47	8.199	8.8388	2.9694	2.9694	5.3024	2.7906	2.7995	3.3991	0.322	0.3539	5969.5611	65.7587	0.2615	100.9716
Sample-48	8.1936	8.8485	2.9705	2.9705	5.3013	2.7818	2.7894	3.4752	0.3263	0.364	5767.4468	65.9451	0.2624	103.7144
Sample-49	8.199	8.8431	2.9661	2.9661	5.298	2.7959	2.7844	3.4494	0.3268	0.3653	5746.8772	66.0258	0.2563	101.623
Sample-50	8.2056	8.8479	2.9705	2.9705	5.3002	2.8056	2.7824	3.4678	0.3272	0.3656	5731.2797	66.1126	0.2577	102.0131
Sample-51	8.1958	8.8329	2.953	2.953	5.3013	2.7993	2.7993	3.4468	0.3184	0.3245	6269.096	70.3585	0.31	111.3581
Sample-52	8.2001	8.8329	2.9792	2.9792	5.2925	2.818	2.8045	3.4516	0.333	0.3517	5492.7346	67.6893	0.3017	115.156
Sample-53	8.1936	8.8203	2.953	2.953	5.2881	2.8231	2.8005	3.4785	0.3418	0.3654	5167.5789	65.2386	0.2943	114.6634



Sample-54	8.1936	8.8203	2.9836	2.9836	5.3056	2.8267	2.7943	3.4735	0.3515	0.3848	4892.7292	64.8866	0.2848	115.2944
Sample-55	8.199	8.8195	2.9716	2.9716	5.2947	2.8267	2.7947	3.4221	0.3403	0.3639	5218.4139	65.9043	0.2776	108.1722
Sample-56	8.1936	8.827	2.9814	2.9814	5.3571	2.8026	2.8103	3.4426	0.3693	0.4169	4521.1002	62.9695	0.2731	116.9005
Sample-57	8.1947	8.8295	2.9639	2.9639	5.3691	2.7959	2.8025	3.4052	0.3791	0.4339	4364.8448	62.1064	0.2679	117.8457
Sample-58	8.2023	8.8396	2.9781	2.9781	5.3024	2.8096	2.8033	3.456	0.385	0.4437	4279.0986	61.7329	0.2565	114.6875
Sample-59	8.199	8.8193	2.9749	2.9749	5.2969	2.8324	2.8025	3.2709	0.3862	0.4465	4267.2784	61.9337	0.2472	110.8333
Sample-60	8.2001	8.8289	2.9705	2.9705	5.3856	2.8207	2.7864	3.4529	0.394	0.4614	4178.8985	62.0053	0.2448	112.6485
Min	8.1816	8.8016	2.953	2.953	5.2848	2.7788	2.7794	3.2164	0.3152	0.3177	4178.8985	61.7329	0.236	97.0482
Max	8.2132	8.8608	3.011	3.011	5.3856	2.8368	2.8305	3.5121	0.394	0.4614	6508.5673	70.3791	0.3348	125.8081
Average	8.198718	8.836995	2.97928	2.97928	5.306133	2.80519	2.79762	3.424336	0.34183	0.3752	5329.6309	65.63895	0.281773	112.26482





COMPANY INFORMATION

Octa Light Bulgaria Plc is the first Bulgarian Manufacturer of High Power Light Emitting Diodes for general lighting applications. The long year company experience in artificial lighting on LED basis has made possible the creation of the first European LED specially designed for reaching best performance in light output, optical efficacy and thermal management. Octa Light Products help reduce CO₂ emissions and reduce the need for power plant expansion.

Thanks to its advanced optical properties, the BullStar series enable never before possible applications in outdoor, indoor, industrial, architectural and general lighting when pure white light is necessary. The sophisticated optical properties allow strong package light concentration suitable for most general lighting applications without the need of any secondary optics.

Octa Light is a fully integrated supplier, offering core Light emitting devices in all three base colors - Red, Green, Blue and white, as well as exotic colors as Pink, Cyan, Yellow, Purple and other on basis of client requirements. Octa Light Bulgaria PLC is entirely based within Europe, with R&D and manufacturing center in Bulgaria. Founded in 2010, Octa Light commits to continuously rise the lumen efficiency of its products and to bring its light emitting diodes closer to mass usage within next years.

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