



OCTA LIGHT BULGARIA Plc



BULLSTAR SERIES

**HIGH POWER
LED**

**TEST RELIABILITY AND
SENSITIVITY CLASSIFICATION**

HIGH 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 oven on 110°C (+/-5°C) for 1000 hours, they are powered off.

CONDITIONS:

Temperature = 110°C

Time = 1000 hours

FAILURE CRITERIA:

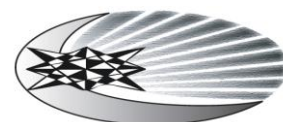
Visual failures:

Dimensions out of tolerance

Broken or damaged package

Electrical criteria:

Lead Vf shift $\geq 10\%$



High Storage Temperature Test - Data Before test

Sample - UNIT	Premold leads	Body width	Body thickness	Lens thickness	Lens width	Lead length 1	Lead length 2	VF (V)	x	y	CCT(K)	CRI	Et(W)	Fv(lm)
Sample-1	7.9079	8.8884	2.4129	3.0084	5.1912	2.7864	2.7802	3.2337	0.3545	0.3984	4847.4901	63.6988	0.3023	122.9458
Sample-2	7.9205	8.8848	2.4058	2.9775	5.1722	2.7942	2.7581	3.2176	0.3583	0.4062	4768.8270	64.0751	0.2873	119.0789
Sample-3	7.9217	8.8765	2.4058	2.9965	5.2043	2.8041	2.7680	3.2316	0.3540	0.3969	4856.3450	63.4882	0.2994	121.5128
Sample-4	7.9159	8.8780	2.4141	2.9870	5.1770	2.7996	2.7736	3.1924	0.3589	0.4075	4757.3985	63.5076	0.2870	119.1951
Sample-5	7.9091	8.8807	2.4165	3.0036	5.1948	2.7942	2.7815	3.2030	0.3556	0.4000	4823.1612	63.6185	0.2878	117.8557
Sample-6	7.9034	8.8773	2.4094	2.9763	5.1615	2.8029	2.7526	3.2825	0.3535	0.3962	4868.7927	63.4389	0.2813	114.6928
Sample-7	7.9159	8.8807	2.4189	2.9917	5.1948	2.8041	2.7615	3.2516	0.3563	0.4014	4807.6946	63.2279	0.2887	118.5550
Sample-8	7.9068	8.8773	2.4177	3.0132	5.1995	2.8118	2.7637	3.2143	0.3586	0.4081	4768.0438	63.7156	0.2868	119.3637
Sample-9	7.9114	8.8777	2.4165	2.9775	5.1864	2.8008	2.7703	3.2626	0.3562	0.4007	4808.5865	63.0352	0.2931	120.0138
Sample-10	7.9068	8.8779	2.4058	2.9953	5.1770	2.7974	2.7680	3.4197	0.3581	0.4057	4773.0830	63.6327	0.2982	123.0707
Sample-11	7.9239	8.8827	2.4118	3.0036	5.1876	2.7654	2.7273	3.2246	0.3280	0.3490	5712.2330	68.1650	0.3065	114.2186
Sample-12	7.9102	8.8683	2.4058	3.0013	5.1829	2.7754	2.7339	3.2975	0.3248	0.3408	5878.4923	68.1489	0.3346	121.4925
Sample-13	7.9102	8.8800	2.4011	3.0001	5.1853	2.7721	2.7361	3.2297	0.3282	0.3488	5702.2924	68.1111	0.3169	117.4683
Sample-14	7.9022	8.8811	2.4046	3.0072	5.1936	2.7665	2.7371	3.2344	0.3255	0.3437	5838.6692	68.5726	0.3072	113.2798
Sample-15	7.9148	8.8711	2.3987	2.9965	5.2838	2.7710	2.7471	3.2611	0.3263	0.3456	5796.1962	68.5374	0.3016	112.0006
Sample-16	7.9217	8.8853	2.4141	2.9858	5.1746	2.7812	2.7536	3.2994	0.3243	0.3410	5899.5019	68.6203	0.3324	121.0449
Sample-17	7.9125	8.8853	2.4225	3.0108	5.1912	2.7732	2.7317	3.2421	0.3231	0.3386	5969.3452	68.6019	0.3161	114.8300
Sample-18	7.9034	8.8737	2.3987	2.9917	5.1746	2.7864	2.7339	3.2323	0.3223	0.3374	6012.6872	69.0771	0.3060	111.4296
Sample-19	7.9205	8.8793	2.4106	3.0179	5.1912	2.7798	2.7350	3.2581	0.3257	0.3425	5830.1361	67.6891	0.3247	118.7235
Sample-20	7.9194	8.8773	2.4034	2.9786	5.1853	2.7820	2.7295	3.2548	0.3275	0.3468	5739.7201	67.9567	0.3210	118.4745
Sample-21	7.9148	8.8819	2.4213	3.0001	5.1829	2.7820	2.7294	3.2750	0.3588	0.4065	4755.1523	62.8972	0.2748	114.2191
Sample-22	7.9102	8.8732	2.4189	3.0179	5.2149	2.7897	2.7251	3.2831	0.3579	0.4045	4772.0665	62.8257	0.2604	108.6338
Sample-23	7.9056	8.8732	2.4189	3.0179	5.2149	2.7897	2.7251	3.2652	0.3579	0.4052	4775.3824	62.7794	0.2530	106.0943
Sample-24	7.9182	8.8845	2.4189	3.0108	5.1971	2.7665	2.7394	3.3155	0.3594	0.4083	4747.0094	62.8901	0.2741	114.2261
Sample-25	7.9114	8.8607	2.4106	2.9941	5.1722	2.7787	2.7460	3.2977	0.3562	0.4018	4811.1910	63.2140	0.2807	115.5646
Sample-26	7.9171	8.8607	2.4106	2.9941	5.1722	2.7787	2.7460	3.3073	0.3566	0.4021	4802.0043	62.8741	0.2620	108.7908
Sample-27	7.9136	8.8773	2.4189	3.0001	5.2078	2.7743	2.7427	3.2697	0.3592	0.4071	4747.9465	62.7644	0.2711	112.8030
Sample-28	7.9079	8.8856	2.4094	3.0072	5.1983	2.7776	2.7284	3.3079	0.3573	0.4033	4785.9065	62.8259	0.2768	114.2130
Sample-29	7.9079	8.8805	2.4082	3.0096	5.1948	2.7754	2.7448	3.2668	0.3584	0.4058	4764.2477	62.7286	0.2610	108.9931
Sample-30	7.9125	8.8603	2.4225	3.0203	5.2007	2.8063	2.7349	3.2864	0.3559	0.4010	4817.1699	63.2128	0.2522	104.5845
Sample-31	7.8999	8.8747	2.4118	2.9905	5.1722	2.7755	2.7353	3.2170	0.3283	0.3667	5679.3669	65.8346	0.2551	101.4611
Sample-32	7.9114	8.8800	2.4118	3.0001	5.1770	2.7665	2.7471	3.2209	0.3422	0.3683	5155.0337	65.9057	0.2758	107.1353
Sample-33	7.8988	8.8827	2.4094	2.9953	5.1770	2.7787	2.7353	3.2241	0.3406	0.3643	5207.4170	65.9735	0.2720	105.1632
Sample-34	7.8988	8.8770	2.4153	2.9989	5.1793	2.7654	2.7449	3.2419	0.3419	0.3670	5166.0078	65.7599	0.2737	106.1929
Sample-35	7.9091	8.8737	2.4022	2.9882	5.1675	2.7897	2.7529	3.2201	0.3426	0.3687	5143.8289	65.7754	0.2708	105.5260
Sample-36	7.9034	8.8782	2.4118	2.9929	5.1817	2.7654	2.7372	3.2355	0.3289	0.3419	5680.2822	67.8182	0.2740	101.3543
Sample-37	7.9079	8.8867	2.4070	2.9858	5.1663	2.7588	2.7427	3.2307	0.3208	0.3282	6132.5859	69.7815	0.2956	105.3306
Sample-38	7.9045	8.8853	2.4058	2.9858	5.1770	2.7665	2.7372	3.2482	0.3220	0.3299	6059.0817	69.4719	0.2948	105.5750
Sample-39	7.9022	8.8794	2.4046	2.9822	5.1722	2.8199	2.7972	3.2504	0.3181	0.3206	6336.6313	68.9396	0.2957	103.6958
Sample-40	7.9068	8.8757	2.4058	2.9989	5.2090	2.7687	2.7394	3.2956	0.3165	0.3174	6460.8768	69.3565	0.2907	101.5015
Sample-41	7.8999	8.8833	2.4201	3.0120	5.1888	2.7632	2.7471	3.2170	0.3283	0.3667	5679.3669	66.1506	0.2454	97.8341
Sample-42	7.9079	8.8757	2.4165	2.9870	5.1983	2.7533	2.7559	3.2832	0.3264	0.3615	5761.5580	65.5610	0.2477	97.6519
Sample-43	7.9022	8.8966	2.4165	3.0001	5.2054	2.7676	2.7383	3.2741	0.3294	0.3700	5633.3954	66.0571	0.2565	102.2709
Sample-44	7.9091	8.8765	2.4189	2.9882	5.1948	2.7710	2.7474	3.2415	0.3283	0.3669	5681.2189	65.9658	0.2575	101.9669
Sample-45	7.9114	8.8861	2.4094	2.9965	5.1959	2.7643	2.7397	3.2331	0.3237	0.3543	5890.1034	65.3530	0.2469	95.9050
Sample-46	7.9228	8.8779	2.4129	2.9882	5.2411	2.7566	2.7515	3.2689	0.3277	0.3656	5703.7854	66.0754	0.2517	99.6653
Sample-47	7.9022	8.8796	2.4094	2.9965	5.1948	2.7721	2.7515	3.2172	0.3297	0.3692	5623.3682	65.8346	0.2551	101.4611
Sample-48	7.9068	8.8796	2.4094	2.9965	5.1948	2.7721	2.7515	3.2876	0.3234	0.3540	5904.2977	65.5946	0.2452	95.3427
Sample-49	7.9068	8.8950	2.4082	2.9977	5.1971	2.7820	2.7273	3.2127	0.3281	0.3667	5689.9072	66.1855	0.2595	102.6068
Sample-50	7.9148	8.8950	2.4082	2.9977	5.1971	2.7820	2.7273	3.2190	0.3296	0.3700	5625.3419	66.3013	0.2574	102.6144



Sample-51	7.9102	8.8872	2.4070	2.9882	5.1722	2.7665	2.7469	3.2559	0.3233	0.3311	5986.1367	68.6290	0.2979	106.4403
Sample-52	7.9045	8.9075	2.4022	2.9739	5.1580	2.7544	2.7470	3.2112	0.3393	0.3624	5253.0000	66.5694	0.2950	112.7955
Sample-53	7.9011	8.9031	2.4070	2.9858	5.1698	2.7632	2.7419	3.2126	0.3452	0.3739	5064.5663	65.6827	0.2850	111.1658
Sample-54	7.9011	8.8856	2.4153	2.9786	5.1698	2.7796	2.7372	3.2196	0.3566	0.3937	4771.1594	63.9673	0.2522	103.3110
Sample-55	7.9136	8.8995	2.4094	2.9882	5.1817	2.7676	2.7493	3.2353	0.3717	0.4221	4491.0249	62.8658	0.2467	105.7564
Sample-56	7.9091	8.8997	2.4070	2.9870	5.1793	2.7623	2.7558	3.2049	0.3757	0.4302	4431.6949	62.6412	0.2650	114.0649
Sample-57	7.8965	8.8838	2.4058	2.9894	5.1805	2.7654	2.7537	3.2743	0.3848	0.4469	4310.1566	62.2850	0.2576	114.0132
Sample-58	7.9045	8.8833	2.4094	2.9846	5.1627	2.7700	2.7496	3.2159	0.3826	0.4412	4330.5482	61.8593	0.2515	110.4342
Sample-59	7.9079	8.8804	2.4005	2.9514	5.1805	2.7887	2.7441	3.3122	0.3864	0.4491	4287.0727	61.6538	0.2433	108.7299
Sample-60	7.9205	8.8804	2.3946	2.9704	5.1627	2.7887	2.7441	3.2239	0.3887	0.4523	4253.6320	61.3354	0.2499	111.6122
Min	7.8965	8.8603	2.3946	2.9514	5.1580	2.7533	2.7251	3.1924	0.3165	0.3174	4253.6320	61.3354	0.2433	95.3427
Max	7.9239	8.9075	2.4225	3.0203	5.2838	2.8199	2.7972	3.4197	0.3887	0.4523	6460.8768	69.7815	0.3346	123.0707
Average	7.9096	8.8812	2.4104	2.9945	5.1878	2.7786	2.7463	3.2520	0.3438	0.3787	5260.4870	65.3186	0.2785	110.0991

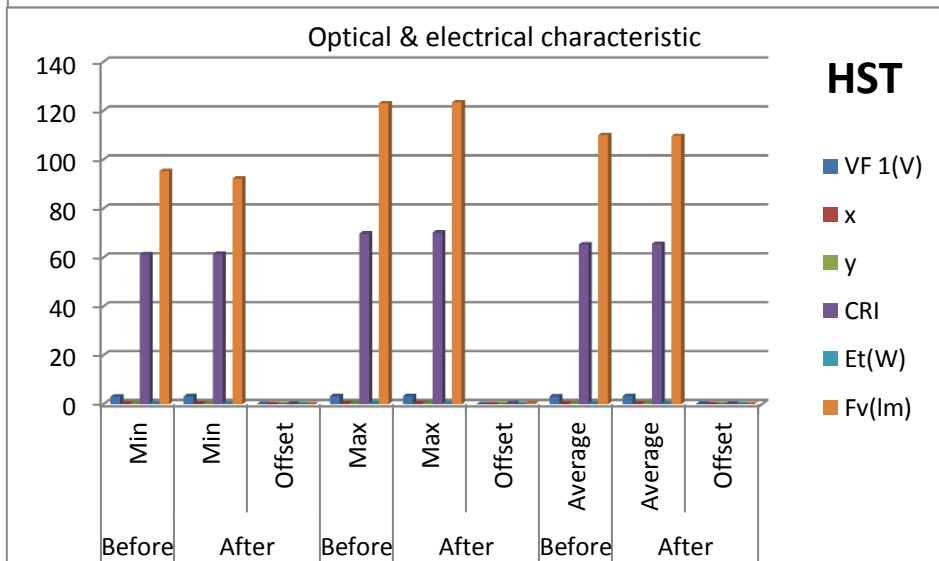
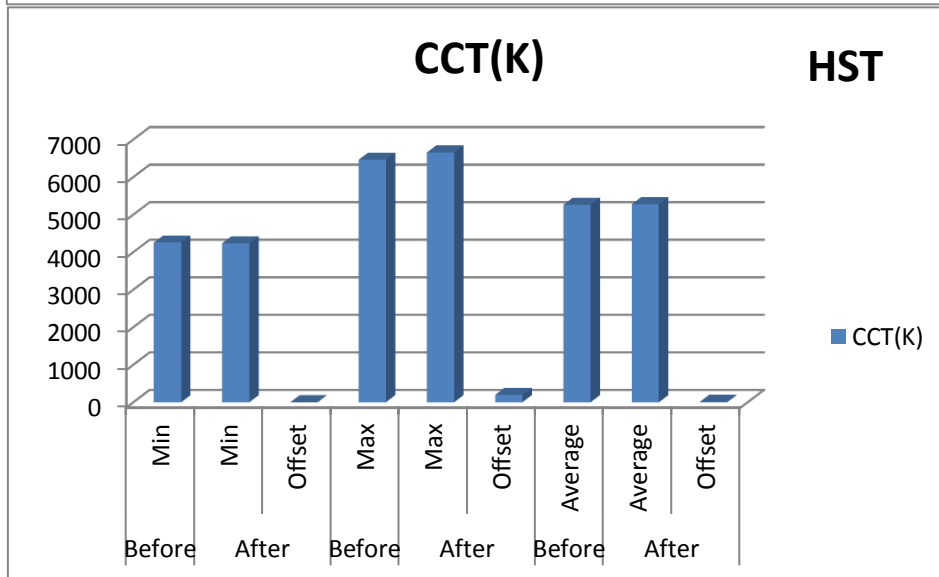
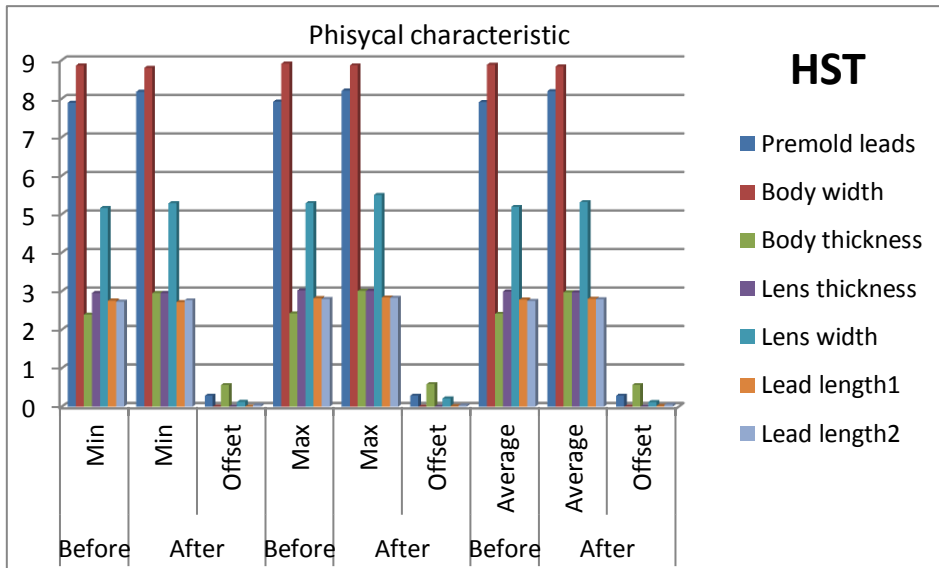


High Storage Temperature Test - Data After test

Sample - UNIT	Premold leeds	Body width	Body thickness	Lens thickness	Lens width	Lead length 1	Lead length 2	VF l(V)	x	y	CCT(K)	CRI	Eff(W)	Fv(lm)
Sample-1	8.1925	8.8414	2.977	2.977	5.2903	2.8287	2.8275	3.3891	0.3543	0.3979	4853.8211	63.9117	0.2981	123.0176
Sample-2	8.2012	8.8454	2.954	2.954	5.2903	2.815	2.8005	3.4144	0.3583	0.4062	4769.002	64.2309	0.2846	119.4294
Sample-3	8.2012	8.8323	2.9694	2.9694	5.3527	2.8231	2.8265	3.3989	0.3542	0.3968	4853.9078	63.6943	0.2968	122.2146
Sample-4	8.1925	8.8442	2.9595	2.9595	5.2914	2.8217	2.8093	3.4186	0.3586	0.407	4763.0533	63.8142	0.2856	119.854
Sample-5	8.1947	8.8406	2.9738	2.9738	5.4228	2.8257	2.8173	3.3912	0.3556	0.4003	4823.5523	63.8234	0.2857	118.4496
Sample-6	8.1979	8.8347	2.953	2.953	5.2991	2.8317	2.8093	3.404	0.3534	0.3957	4872.682	63.6458	0.2784	114.5554
Sample-7	8.199	8.8347	2.9661	2.9661	5.2936	2.8347	2.8045	3.3817	0.3564	0.4014	4805.9387	63.4343	0.2858	118.7681
Sample-8	8.1979	8.8389	2.9836	2.9836	5.3002	2.8362	2.8123	3.3987	0.3587	0.4078	4764.0477	64.0856	0.2837	119.4384
Sample-9	8.1936	8.8302	2.9562	2.9562	5.298	2.8374	2.8163	3.3928	0.3563	0.4007	4805.6875	63.2274	0.2903	120.4244
Sample-10	8.199	8.8386	2.9727	2.9727	5.3002	2.8197	2.8213	3.3973	0.358	0.4053	4774.216	63.879	0.295	123.4366
Sample-11	8.1903	8.8443	2.976	2.976	5.3166	2.7949	2.7794	3.4135	0.328	0.3488	5720.1132	68.3456	0.3019	113.6368
Sample-12	8.199	8.8379	2.9738	2.9738	5.2947	2.7946	2.7844	3.4111	0.3248	0.3408	5884.044	68.2981	0.3297	121.7549
Sample-13	8.2045	8.8356	2.9683	2.9683	5.2958	2.7936	2.7984	3.3959	0.3286	0.3493	5692.3838	68.225	0.3118	117.2269
Sample-14	8.1947	8.8479	2.976	2.976	5.3024	2.7926	2.7826	3.4146	0.3254	0.3436	5846.1151	68.7904	0.3028	112.8259
Sample-15	8.2067	8.8306	2.9628	2.9628	5.4984	2.7926	2.8025	3.3886	0.3261	0.3454	5810.2849	68.726	0.2964	111.0776
Sample-16	8.2034	8.8461	2.954	2.954	5.2903	2.8112	2.8035	3.3959	0.3239	0.3397	5930.0207	68.6214	0.33	121.7481
Sample-17	8.199	8.8425	2.9814	2.9814	5.3067	2.8016	2.7903	3.4	0.3229	0.3381	5982.0102	68.7989	0.3119	114.6278
Sample-18	8.1892	8.8386	2.9595	2.9595	5.2947	2.8056	2.7894	3.4069	0.3222	0.3371	6024.5702	69.2936	0.302	110.9735
Sample-19	8.1936	8.8452	2.9606	2.9606	5.4031	2.7986	2.7874	3.4012	0.3258	0.3425	5829.424	67.8749	0.3218	119.2653
Sample-20	8.1925	8.844	2.9519	2.9519	5.3078	2.7986	2.7804	3.3884	0.3275	0.347	5745.0651	68.0375	0.3174	118.8769
Sample-21	8.1968	8.8442	2.9738	2.9738	5.3045	2.7979	2.7834	3.3665	0.3586	0.4051	4757.449	62.9566	0.265	110.8211
Sample-22	8.2045	8.8492	2.9924	2.9924	5.3002	2.7939	2.7823	3.3869	0.3583	0.4051	4765.4031	62.9948	0.2582	108.3129
Sample-23	8.1881	8.8353	2.9781	2.9781	5.4206	2.8094	2.7793	3.3977	0.3584	0.4055	4762.8154	63.0273	0.2504	105.337
Sample-24	8.1947	8.8391	2.988	2.988	5.3013	2.7949	2.7874	3.3812	0.3602	0.4089	4728.7624	63.1743	0.2726	114.514
Sample-25	8.199	8.8418	2.9716	2.9716	5.2991	2.7986	2.7904	3.3689	0.3565	0.402	4804.2155	63.4654	0.2785	115.8306
Sample-26	8.199	8.8409	2.9694	2.9694	5.3024	2.7969	2.7924	3.3767	0.3565	0.4014	4803.4043	63.1379	0.2596	108.074
Sample-27	8.1979	8.8454	2.9738	2.9738	5.321	2.7936	2.7854	3.3941	0.3596	0.4074	4739.3203	62.968	0.2683	112.6389
Sample-28	8.2056	8.8402	2.9869	2.9869	5.2969	2.7986	2.7904	3.3378	0.3577	0.4036	4775.9678	63.0597	0.2737	114.0486
Sample-29	8.2023	8.8348	2.9891	2.9891	5.3024	2.805	2.7894	3.3568	0.3589	0.4061	4751.7418	62.8904	0.257	107.9811
Sample-30	8.2067	8.8294	3.0044	3.0044	5.3122	2.8284	2.7796	3.38	0.3563	0.4018	4809.2276	63.3725	0.2496	103.8313
Sample-31	8.1783	8.832	2.9661	2.9661	5.2892	2.8044	2.7823	3.267	0.3419	0.3122	4803.4043	66.1616	0.2731	99.2802
Sample-32	8.1892	8.8237	2.9858	2.9858	5.2848	2.7996	2.7974	3.4127	0.3417	0.3667	5177.4387	66.323	0.2782	108.2568
Sample-33	8.1936	8.8391	2.9825	2.9825	5.298	2.803	2.7843	3.4012	0.3388	0.3598	5274.0429	66.335	0.2687	103.0846
Sample-34	8.1958	8.8219	2.9869	2.9869	5.2958	2.7996	2.7993	3.4031	0.3404	0.3629	5218.3958	66.1616	0.2711	104.7457
Sample-35	8.2056	8.8276	2.9803	2.9803	5.2881	2.8297	2.7993	3.4193	0.3419	0.3666	5168.0517	66.235	0.2731	106.2402
Sample-36	8.1903	8.8353	2.9792	2.9792	5.2848	2.7899	2.7967	3.3867	0.3268	0.3371	5795.422	68.2562	0.2713	99.1897
Sample-37	8.1881	8.8308	2.9683	2.9683	5.2881	2.8036	2.7904	3.4082	0.3189	0.3239	6263.9524	70.1734	0.2947	104.5113
Sample-38	8.2023	8.8437	2.9694	2.9694	5.2859	2.7956	2.7843	3.4037	0.3201	0.3259	6185.7818	69.8424	0.2942	104.8029
Sample-39	8.1947	8.8565	2.9573	2.9573	5.2848	2.7896	2.7654	3.4059	0.316	0.3155	6510.9958	69.1242	0.2927	101.6561
Sample-40	8.2012	8.824	2.9781	2.9781	5.3396	2.7999	2.7924	3.3975	0.3143	0.3122	6655.5659	69.6795	0.2881	99.2802
Sample-41	8.1979	8.8066	2.9924	2.9924	5.2969	2.7457	2.7904	3.4077	0.3274	0.3651	5726.2328	66.4875	0.2472	97.7482
Sample-42	8.1979	8.8099	2.9672	2.9672	5.2859	2.7196	2.8085	3.4198	0.3254	0.3594	5814.8184	65.9261	0.247	96.4689
Sample-43	8.1849	8.8075	2.9738	2.9738	5.2914	2.8247	2.7844	3.393	0.3287	0.3682	5671.6764	66.4455	0.2589	102.8711
Sample-44	8.1947	8.811	2.9705	2.9705	5.3067	2.7376	2.7924	3.3907	0.3271	0.3624	5741.0489	66.7835	0.2488	97.6289
Sample-45	8.2088	8.8219	2.9825	2.9825	5.3034	2.7437	2.7874	3.4037	0.3219	0.3501	5989.8986	65.7873	0.2454	93.6797
Sample-46	8.199	8.801	2.9683	2.9683	5.3779	2.7544	2.7984	3.4019	0.3261	0.3619	5781.2314	66.5772	0.2498	97.8866
Sample-47	8.1903	8.8047	2.9792	2.9792	5.3002	2.8211	2.7934	3.4092	0.3276	0.3641	5719.0308	66.1573	0.2497	98.1421
Sample-48	8.1925	8.8066	2.9727	2.9727	5.31	2.8327	2.7884	3.3937	0.3215	0.3492	6011.3343	65.9373	0.2417	92.2627
Sample-49	8.1979	8.8139	2.9781	2.9781	5.3002	2.817	2.7754	3.4109	0.3259	0.3619	5789.3561	66.6078	0.2573	100.7735
Sample-50	8.2034	8.8003	2.9617	2.9617	5.2826	2.7625	2.7854	3.4066	0.3291	0.3694	5654.3528	66.6057	0.2607	103.7955
Sample-51	8.1827	8.8619	2.9672	2.9672	5.298	2.7889	2.8025	3.3906	0.3218	0.3274	6081.4783	68.772	0.2959	105.3006



Sample-52	8.1881	8.8576	2.954	2.954	5.2848	2.7835	2.7944	3.4204	0.3389	0.361	5270.7676	66.8014	0.2967	114.1455
Sample-53	8.1892	8.8571	2.9683	2.9683	5.3002	2.7986	2.7913	3.3989	0.3449	0.3724	5074.9323	66.0142	0.2873	112.5532
Sample-54	8.1958	8.84	2.9617	2.9617	5.2936	2.8106	2.7864	3.4169	0.3578	0.3946	4738.5218	64.2035	0.254	104.2857
Sample-55	8.1914	8.8501	2.9683	2.9683	5.3078	2.7939	2.8015	3.4052	0.3721	0.4209	4473.5304	63.0876	0.2471	105.8468
Sample-56	8.1979	8.8483	2.9639	2.9639	5.2903	2.7913	2.8155	3.3855	0.3763	0.4302	4413.6462	62.8626	0.2677	116.1061
Sample-57	8.1914	8.8365	2.9727	2.9727	5.31	2.8024	2.7993	3.4033	0.3859	0.4483	4285.5698	62.4237	0.26	116.2081
Sample-58	8.1903	8.8406	2.9705	2.9705	5.2848	2.7973	2.7983	3.4012	0.3832	0.4414	4312.6632	62.0372	0.2522	111.431
Sample-59	8.2023	8.8475	2.965	2.965	5.3221	2.8084	2.7923	3.4004	0.3876	0.4498	4259.1736	61.8702	0.2465	110.5312
Sample-60	8.199	8.8388	2.9792	2.9792	5.2892	2.8013	2.7973	3.4091	0.3893	0.4521	4233.4369	61.4569	0.2485	111.6705
Min	8.1783	8.8003	2.9519	2.9519	5.2826	2.7196	2.7654	3.267	0.3143	0.3122	4233.4369	61.4569	0.2417	92.2627
Max	8.2088	8.8619	3.0044	3.0044	5.4984	2.8374	2.8275	3.4204	0.3893	0.4521	6655.5659	70.1734	0.33	123.4366
Average	8.1961917	8.83484	2.972136	2.972136	5.309746	2.80042	2.79463	3.39539	0.34365	0.37651	5272.4	65.58235	0.27683	109.7229





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 advances 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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