Part	Description	350ma					500ma					700ma					1000ma					1500ma				
		Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.
LuxV Star	**WW0T**						7060	**154.2**	6.51	3.26	2169	8790	**192.0**	6.71	4.70	1871	11240	**245.5**	6.95	6.95	1617					
LuxV Star	**WY0S**						6450	**140.9**	5.90	2.95	2186	8260	**180.4**	6.09	4.26	1938	10380	**226.7**	6.34	6.34	1637					
LuxV Star	**WX0S**						5650	**123.4**	6.25	3.13	1808	7310	**159.7**	6.45	4.52	1619	9400	**205.3**	6.70	6.70	1403					
LuxV Star	**VY0T**						5060	**110.5**	6.23	3.12	1624	6550	**143.1**	6.45	4.52	1451	8030	**175.4**	6.73	6.73	1193					
LuxV Emitter	**VY0S**	3440	**75.1**	5.85	2.05	1680	4680	**102.2**	6.02	3.01	1555	6130	**133.9**	6.21	4.35	1410	7750	**169.3**	6.46	6.46	1200					
LuxV Star	**U4S**						4780	**104.4**	6.21	3.11	1539	6050	**132.2**	6.42	4.49	1346	7580	**165.6**	6.64	6.64	1142					
LuxIII Star	**UW0K**	2820	**61.6**	3.47	1.21	2322	3650	**79.7**	3.63	1.82	2011	4590	**100.3**	3.82	2.67	1717	5700	**124.5**	4.06	4.06	1404					
LuxI Star	**SX0H** (2)	2690	**58.8**	3.28	1.15	2343	3530	**77.1**	3.41	1.71	2070	4390	**95.9**	3.55	2.49	1767	5400	**118.0**	3.76	3.76	1436					
LuxI Star	**SX0H** (1)	2670	**58.3**	3.25	1.14	2347	3450	**75.4**	3.37	1.69	2047	4320	**94.4**	3.53	2.47	1748										
LuxI Star	**SX0H** (3)	2650	**57.9**	3.28	1.15	2308	3420	**74.7**	3.40	1.70	2012	4330	**94.6**	3.56	2.49	1738	5330	**116.4**	3.77	3.77	1414					
LuxIII Star	**UX0J**	2540	**55.5**	3.29	1.15	2206	3320	**72.5**	3.41	1.71	1947	4180	**91.3**	3.55	2.49	1682	5220	**114.0**	3.75	3.75	1392					
LuxIII Star	**UYAJ**	2510	**54.8**	3.30	1.16	2173	3300	**72.1**	3.44	1.72	1919	4170	**91.1**	3.60	2.52	1655	5210	**113.8**	3.81	3.81	1367					
LuxIII Star	**UX1J**	2540	**55.5**	3.38	1.18	2147	3330	**72.7**	3.51	1.76	1897	4150	**90.6**	3.66	2.56	1620	5150	**112.5**	3.86	3.86	1334					
LuxIII Star	**UW0J**	2480	**54.2**	3.35	1.17	2115	3280	**71.6**	3.49	1.75	1880	4130	**90.2**	3.65	2.56	1616	5160	**112.7**	3.87	3.87	1333					
LuxIII Emitter	**UX1L**	2670	**58.3**	3.62	1.27	2107	3340	**73.0**	3.77	1.89	1772	4080	**89.1**	3.93	2.75	1483	5120	**111.8**	4.06	4.06	1261					
LuxI Emitter	**SX0H**	2460	**53.7**	3.18	1.11	2210	3210	**70.1**	3.21	1.61	2000	4040	**88.2**	3.45	2.42	1673	5000	**109.2**	3.64	3.64	1374					
LuxI Emitter	**SW0H**	2420	**52.9**	3.29	1.15	2102	3170	**69.2**	3.39	1.70	1870	3920	**85.6**	3.54	2.48	1582	4910	**107.2**	3.73	3.73	1316					
LuxI Star	**RX0H**	2410	**52.6**	3.21	1.12	2145	3140	**68.6**	3.33	1.67	1886	3910	**85.4**	3.46	2.42	1614										
LuxI Star	**SV1J** - LD	2430	**53.1**	3.44	1.20	2018	3130	**68.4**	3.59	1.80	1744	3840	**83.9**	3.75	2.63	1463										
LuxIII Star	**TX1K**	2330	**50.9**	3.42	1.20	1947	2860	**62.5**	3.53	1.77	1620	3760	**82.1**	3.79	2.65	1417	4610	**100.7**	4.04	4.04	1141					
LuxIII Emitter	**TW0H** (*)	2370	**51.8**	3.18	1.11	2129	3010	**65.7**	3.31	1.66	1819	3720	**81.3**	3.45	2.42	1540	4560	**99.6**	3.65	3.65	1249					
LuxI Emitter	**RX0H**	2290	**50.0**	3.30	1.16	1983	2960	**64.7**	3.43	1.72	1726	3710	**81.0**	3.58	2.51	1480	4620	**100.9**	3.77	3.77	1225					
LuxIII Emitter	**TX0H**	2280	**49.8**	3.13	1.10	2081	2920	**63.8**	3.27	1.64	1786	3660	**79.9**	3.42	2.39	1529	4530	**98.9**	3.64	3.64	1245					
LuxIII Star	**TW0H**	2040	**44.6**	3.11	1.09	1874	2700	**59.0**	3.23	1.62	1672	3460	**75.6**	3.38	2.37	1462	4430	**96.8**	3.58	3.58	1237					
K2 Emmiter	**UYAN**	2040	**44.6**	4.02	1.41	1450	2690	**58.8**	4.23	2.12	1272	3430	**74.9**	4.43	3.10	1106	4120	**90.0**	5.19	5.19	794	5120	**111.8**	5.43	5.43	943
LuxIII Emitter	**SW0J** (B42XR)	1950	**42.6**	3.29	1.15	1693	2560	**55.9**	3.45	1.73	1484	3190	**69.7**	3.64	2.55	1252	3960	**86.5**	3.89	3.89	1018					
LuxIII Star	**SY0K**	2020	**44.1**	3.43	1.20	1683	2560	**55.9**	3.57	1.79	1434	3170	**69.2**	3.74	2.62	1211	3880	**84.8**	3.97	3.97	977					
LuxI Star	**QYAG**	2010	**43.9**	3.08	1.08	1865	2570	**56.1**	3.20	1.60	1606	3140	**68.6**	3.34	2.34	1343										
LuxI Emitter	**PX1L** - LD (*)	1500	**32.8**	3.65	1.28	1174	1950	**42.6**	3.82	1.91	1021	2420	**52.9**	3.97	2.78	871										
LuxI Emitter	**NY0H** (*)	1270	**27.7**	3.28	1.15	1106	1640	**35.8**	3.41	1.71	962	2000	**43.7**	3.57	2.50	800										
LuxI Emitter	**NW0K** (*)	1260	**27.5**	3.48	1.22	1034	1650	**36.0**	3.64	1.82	907	2090	**45.7**	3.83	2.68	780										

(*) Actual bin code unknown; listed bin based on previous testing.

06-03-2006, 07:12 PM #1

DFiorentino
Flashaholic*

Join Date: Dec 2004
Location: MD
Posts: 993

My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Due to the fact that I have several mods I'm getting ready to work on, I wanted to sort out my LED supplies based on performance. Using the bin code just wasn't enough for me, so I home brewed myself a budget "test box". It is simply a 1/2 gallon milk carton with the exterior painted metallic silver then covered in electrical tape to prevent light infiltration. I have my eBay light meter attached to the "bottom" (in use this becomes the side) again covered in electrical tape to affix it and prevent light from entering. On one "side" (in use this becomes the bottom) I have cut a hole that fits around a 2" diameter stepped and finned CPU heatsink. I tested only Luxeon stars and they were stuck to the heatsink using Ceramatique and wires were soldered to provide the electrical connection. I powered the stars with a bench power supply and monitored the voltage and current with two Fluke DMMs (don't have the model numbers handy). It's too embarassing to take pics of, but suffice to say that it's good enough to compare LEDs I have at hand. All of my light readings were taken in LUX. I tested at 350mA, 500mA, 700mA, and 1000mA. And here are the results:

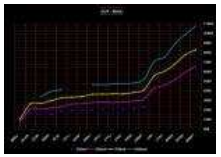
Part	Description	350ma					500ma					700ma					1000ma					1500ma				
		Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.
LuxV Star	WW0T						7060	**154.2**	6.51	3.26	2169	8790	**192.0**	6.71	4.70	1871	11240	**245.5**	6.95	6.95	1617					
LuxV Star	WY0S						6450	**140.9**	5.90	2.95	2186	8260	**180.4**	6.09	4.26	1938	10380	**226.7**	6.34	6.34	1637					
LuxV Star	WX0S						5650	**123.4**	6.25	3.13	1808	7310	**159.7**	6.45	4.52	1619	9400	**205.3**	6.70	6.70	1403					
LuxV Star	VY0T						5060	**110.5**	6.23	3.12	1624	6550	**143.1**	6.45	4.52	1451	8030	**175.4**	6.73	6.73	1193					
LuxV Emitter	VY0S	3440	**75.1**	5.85	2.05	1680	4680	**102.2**	6.02	3.01	1555	6130	**133.9**	6.21	4.35	1410	7750	**169.3**	6.46	6.46	1200					
LuxV Star	U4S						4780	**104.4**	6.21	3.11	1539	6050	**132.2**	6.42	4.49	1346	7580	**165.6**	6.64	6.64	1142					
LuxIII Star	UW0K	2820	**61.6**	3.47	1.21	2322	3650	**79.7**	3.63	1.82	2011	4590	**100.3**	3.82	2.67	1717	5700	**124.5**	4.06	4.06	1404					
LuxI Star	SX0H (2)	2690	**58.8**	3.28	1.15	2343	3530	**77.1**	3.41	1.71	2070	4390	**95.9**	3.55	2.49	1767	5400	**118.0**	3.76	3.76	1436					
LuxI Star	SX0H (1)	2670	**58.3**	3.25	1.14	2347	3450	**75.4**	3.37	1.69	2047	4320	**94.4**	3.53	2.47	1748										
LuxI Star	SX0H (3)	2650	**57.9**	3.28	1.15	2308	3420	**74.7**	3.40	1.70	2012	4330	**94.6**	3.56	2.49	1738	5330	**116.4**	3.77	3.77	1414					
LuxIII Star	UX0J	2540	**55.5**	3.29	1.15	2206	3320	**72.5**	3.41	1.71	1947	4180	**91.3**	3.55	2.49	1682	5220	**114.0**	3.75	3.75	1392					
LuxIII Star	UYAJ	2510	**54.8**	3.30	1.16	2173	3300	**72.1**	3.44	1.72	1919	4170	**91.1**	3.60	2.52	1655	5210	**113.8**	3.81	3.81	1367					
LuxIII Star	UX1J	2540	**55.5**	3.38	1.18	2147	3330	**72.7**	3.51	1.76	1897	4150	**90.6**	3.66	2.56	1620	5150	**112.5**	3.86	3.86	1334					
LuxIII Star	UW0J	2480	**54.2**	3.35	1.17	2115	3280	**71.6**	3.49	1.75	1880	4130	**90.2**	3.65	2.56	1616	5160	**112.7**	3.87	3.87	1333					
LuxII Emitter	UX1L	2670	**58.3**	3.62	1.27	2107	3340	**73.0**	3.77	1.89	1772	4080	**89.1**	3.93	2.75	1483	5120	**111.8**	4.06	4.06	1261					
LuxI Emitter	SX0H	2460	**53.7**	3.18	1.11	2210	3210	**70.1**	3.21	1.61	2000	4040	**88.2**	3.45	2.42	1673	5000	**109.2**	3.64	3.64	1374					
LuxI Emitter	SW0H	2420	**52.9**	3.29	1.15	2102	3170	**69.2**	3.39	1.70	1870	3920	**85.6**	3.54	2.48	1582	4910	**107.2**	3.73	3.73	1316					
LuxI Star	RX0H	2410	**52.6**	3.21	1.12	2145	3140	**68.6**	3.33	1.67	1886	3910	**85.4**	3.46	2.42	1614										
LuxI Star	SV1J - LD	2430	**53.1**	3.44	1.20	2018	3130	**68.4**	3.59	1.80	1744	3840	**83.9**	3.75	2.63	1463										
LuxIII Star	TX1K	2330	**50.9**	3.42	1.20	1947	2860	**62.5**	3.53	1.77	1620	3760	**82.1**	3.79	2.65	1417	4610	**100.7**	4.04	4.04	1141					
LuxII Emitter	TW0H (*)	2370	**51.8**	3.18	1.11	2129	3010	**65.7**	3.31	1.66	1819	3720	**81.3**	3.45	2.42	1540	4560	**99.6**	3.65	3.65	1249					
LuxI Emitter	RX0H	2290	**50.0**	3.30	1.16	1983	2960	**64.7**	3.43	1.72	1726	3710	**81.0**	3.58	2.51	1480	4620	**100.9**	3.77	3.77	1225					
LuxII Emitter	TX0H	2280	**49.8**	3.13	1.10	2081	2920	**63.8**	3.27	1.64	1786	3660	**79.9**	3.42	2.39	1529	4530	**98.9**	3.64	3.64	1245					
LuxIII Star	TW0H	2040	**44.6**	3.11	1.09	1874	2700	**59.0**	3.23	1.62	1672	3460	**75.6**	3.38	2.37	1462	4430	**96.8**	3.58	3.58	1237					
K2 Emmiter	UYAN	2040	**44.6**	4.02	1.41	1450	2690	**58.8**	4.23	2.12	1272	3430	**74.9**	4.43	3.10	1106	4120	**90.0**	5.19	5.19	794	5120	**111.8**	5.43	5.43	943
LuxII Emitter	SW0J (B42XR)	1950	**42.6**	3.29	1.15	1693	2560	**55.9**	3.45	1.73	1484	3190	**69.7**	3.64	2.55	1252	3960	**86.5**	3.89	3.89	1018					
LuxIII Star	SY0K	2020	**44.1**	3.43	1.20	1683	2560	**55.9**	3.57	1.79	1434	3170	**69.2**	3.74	2.62	1211	3880	**84.8**	3.97	3.97	977					
LuxI Star	QYAG	2010	**43.9**	3.08	1.08	1865	2570	**56.1**	3.20	1.60	1606	3140	**68.6**	3.34	2.34	1343										
LuxI Emitter	PX1L - LD (*)	1500	**32.8**	3.65	1.28	1174	1950	**42.6**	3.82	1.91	1021	2420	**52.9**	3.97	2.78	871										
LuxI Emitter	NY0H (*)	1270	**27.7**	3.28	1.15	1106	1640	**35.8**	3.41	1.71	962	2000	**43.7**	3.57	2.50	800										
LuxI Emitter	NW0K (*)	1260	**27.5**	3.48	1.22	1034	1650	**36.0**	3.64	1.82	907	2090	**45.7**	3.83	2.68	780										

(*) Actual bin code unknown; listed bin based on previous testing.

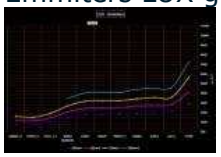
BLC = **B**ogus **L**umen **C**onversion

Seperated stars and emitters:

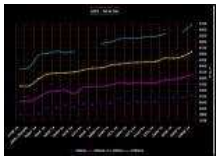
Stars LUX graph:



Emmiters LUX graph:

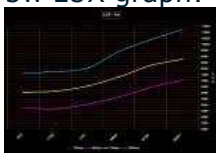


Mixed 1w & 3w LUX graph:



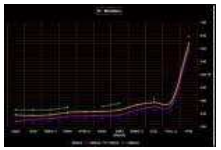
This sort of helps explain the LuxI/LuxIII battle. For the most part it seems R-bin LuxIs and T-bin LuxIIIs are comparable as well as S-bin LuxIs and U-bin LuxIIIs. However, it is more likely that the underdriven LuxIII will suffer from a shift in tint when driven at below spec power levels. Food for thought.

5w LUX graph:

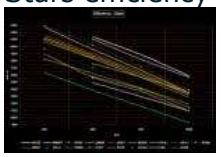


Stars Vf graph:

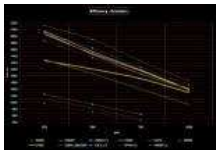
Emmiters Vf graph:



Stars efficiency (LUX / Watt) graph:



Emmiters efficiency (LUX / Watt) graph:



Temperature Data:

Temperature readings were done by affixing the emmiter to a D size O-sink via Ceramatique. Temperature was taken in Celcius via contact probe at the raised platform for the emmiter to get the closest junction temperature possible. The O-sink was placed on a 2" CPU heatsink to simulate being installed in an actual flashlight. This last part was critical as I found out. I tested the luxV on the O-sink alone out of curiousity and saw temps of 110 degrees Celcius (230 deg.F) after 5 minutes. (Don't even think of using thermal paste at this high of a temperature. It basically turns into a liquid. Use Thermal epoxy at this point.) I chose to test at 1 minute as it seemed to be a maximum on time for momentary type action. I also tested at 5 minutes as it seemed the O-sink stabilzed within this time period.

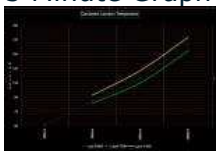
Calculated junction temperatures were based on actual Vf and current inputs. Thermal resistance values taken from Lumileds documentation for emmiters.

Lux	Therm. Resist. (°C/W)	Description	350mA**		700mA**		1000mA**		1500mA**		1500mA (1)	
			1 minute	5 minutes	1 minute	5 minutes	1 minute	5 minutes	1 minute	5 minutes	1 minute	5 minutes
LuxV VY0S	8	Actual Emitter Base Temp.			47.7	58.1	68.3	75.3	83.9	91.6	44.3	49.3
		Calculated Junction Temp.			82.5	92.9	120.0	127.0	165.5	173.2	125.9	134.6
LuxIII TX0H	13	Actual Emitter Base Temp.			44.1	50.5	57.3	62.5	72.4	78.3	33.5	37.0
		Calculated Junction Temp.			75.2	81.6	104.6	109.8	148.5	154.4	111.5	118.9
LuxI RX0H	15	Actual Emitter Base Temp.	31.7	34.2	38.9	46.7	50.5	60.3	70.9	77.1	33.6	37.6
		Calculated Junction Temp.	49.0	51.5	76.5	84.3	107.1	116.9	158.7	164.9	130.4	135.5

* All readings taken with contact probe on raised emmiter platform of D size O-sink.
** O-sink sitting on 2" CPU heatsink to simulate flashlight body.
(1) Readings taken with O-sink installed in 3D Mag with head attached.

135°C Maximum Rated Junction Temperature

5 Minute Graph (Calculated Junction Temperature; out of Mag):



The O-sink in a Mag is a great heatsink. In the last set of test data, with the O-sink installed in the Mag, the light was basically in candle mode. With a hand holding the light, things would be marginally better. Looks like 1500mA is the bleeding edge for the luxI and luxV. For a show light or as a burst mode its *feasible*, but for sustained use, I'd keep things at 1300mA or below. And that is with this optimally heatsinked test setup. Looks Like the luxIII was still fairly stable though, even at 1500mA.

-DF

Disclaimer: I have conducted this testing on my own behalf for my own benefit. If others find this useful, that is great. However, please take into account that this is a comparative analysis and not absolute findings. YMMV

"When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge." - A.E.

Last edited by DFiorentino : 07-16-2006 at 04:19 PM.

Quote

06-03-2006, 07:57 PM #2

wquiles
Flashaholic*

Join Date: Jan 2005
Location: Texas, USA, Earth
Posts: 2,767

Re: My comparative LED performance measurments...

Excellent. Thanks much for the hard work. I guess I am not the only one who has been interested in doing these types of tests

Will

_____
Light Box for LED/Lights ... LED Data from Light Box ... Testing of PhotonFanatic's LED's
McE2S for C/M bodies ... Bench testing of incandecent soft start circuit
Night beamshots - various lights ... Night beamshots - Revision 2 ...
Stippled Reflector Beamshots ...
DIY guide to upgrade BOG 3W drop-in module ... DIY upgrade for BOG 3W drop-in module - part 2 ...

Quote

06-03-2006, 08:02 PM #3

xochi
Flashaholic*

Join Date: Nov 2003
Posts: 1,799

Re: My comparative LED performance measurments...

DiFiorentino, 

, very nice! Excellent information!

My only concern is that in another thread someone mentioned that there is a difference in how the lux1 and the lux3 handle heat. I don't know if it's outdated information or not, to be honest I'd be surprised if there is any difference between a lux1 and a lux3 other than Bin current but if there is the benefits of the lux1 may boil away without the advantage of a heavy duty heatsink.

Also, do you have more than one of the lux1 SXOH to test? I've got two on the way and would love to be reassured that the example you tested is characteristic of the batch!.

Also, did you ever test the current your HDS is feeding the emitter?

Quote

06-03-2006, 08:07 PM #4

nakahoshi
Flashaholic*

Join Date: Feb 2006
Location: Ulster Ny
Posts: 678

Re: My comparative LED performance measurments...

Your results on the WWOT leds is very good news for me. I just sold my TYOJ hd45 and placed an order for a new WWOT version. I read the thread and everyone sold their WWOT binned models for the X ones, but i think ill have a more noticable upgrade from the TYOJ to the WWOT. I cant wait, i hope this will be brighter then my U2. (poor thing, seams to not get much attention anymore)
Oh well, Does anyone have any beam shots between the 2? So what is the tint like the on the WWOT? (IIRC someone said it was near green on lower vf)
very informative chart! THANK YOU

Ti-PD UVIJ McLux PD-Slate UWOJ (Milkyspit Custom) **27LT-UX1K**HD45-WWOT*

MLR<3

Quote

06-03-2006, 11:55 PM #5

chimo
Flashaholic*

Join Date: Sep 2004
Location: Ottawa, Canada
Posts: 1,304

Re: My comparative LED performance measurments...

Great job on this! It's nice to see the SX0Hs and the UX0Js behave very similarly. Thanks for doing these tests.

Paul

Quote

06-04-2006, 12:05 AM #6

DFiorentino
Flashaholic*

Join Date: Dec 2004
Location: MD
Posts: 993

Re: My comparative LED performance measurments...

First post updated.

I tested the other two SX0Hs I had. They seem to be on par with the first. This also proves, within reason, the repeatability of my crazy set up. In addition, I cranked the two SX0Hs up to 1000mA . Pretty interesting. I'll bring my contact thermo probe home from work this week, but my calibrated hand says that the SX0H at 1000mA is WAY cooler that any of the luxVs at 700mA+.

Will: I take that as high praise coming from you. Your light box was the motivation it took for me to get off my a__ to finally do this .

xochi: I'll see what I can do about my HDS. As you can see, at least my small batch of SX0Hs are pretty consistent. As far as heat is concerned, I'll get scientific measurments later this week. Given the fair to average heatsink I was using, I was more concerned with the LuxVs at 700mA-1000mA then the LuxI SX0Hs at 1000mA.

nakahoshi: There should be a night and day difference going between a TY0J and a WW0T in the HD45. Almost incomparably so. The LuxV will not only output way more lumens, but the beam pattern is so different. Most W0s I see are white. Only when compared to other tints can I tell that most W0s are on the slightly warm side. WAVE_PARTICLE did an excellent comparison with beamshots between a WW0T HD45, WX1S TM in a SF-M6, and a SF U2.

-DF

"When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge." - A.E.

Quote

06-04-2006, 12:15 AM #7

nakahoshi
Flashaholic*

Join Date: Feb 2006
Location: Ulster Ny
Posts: 678

Re: My comparative LED performance measurments...

DF, thanks! That is the thread i have been looking for, i think i skipped over it before i made the decision to buy the WWOT HD45, so thanks for pointing it out. I will let you know how it turns out when it shows up, this is some really great info, i feel alot better now!
-bobby

Ti-PD UVIJ McLux PD-Slate UWOJ (Milkyspit Custom) **27LT-UX1K**HD45-WWOT*
MLR<3

Quote

06-04-2006, 03:35 AM #8

AW

CPF Supporting Dealer

Join Date: Oct 2004
Location: Hong Kong
Posts: 2,654

Re: My comparative LED performance measurments...

Excellent info. I 'll start replacing all my Lux IIIs to Lux I SXOH stars I have

***Protected LiIon Cells Available Here
***Protected R123 Charger Kit

Quote

06-04-2006, 02:44 PM #9

HarryN
Flashaholic*

Join Date: Jan 2004
Location: Pleasanton (Bay Area), CA, USA
Posts: 1,928

Re: My comparative LED performance measurments...

Nice info - Thanks for all of that testing.

It is very interesting how the higher Vf tracks with higher output, not just in your tests, but others as well (maybe it was Will's data). Almost seems like watts are more important than current, making constant current drive slightly less important for constant output in some cases.

Please guys, don't flame me on that comment.

_____
"BREEZE" RCR2 side x side (under development)

http://www.candlepowerforums.com/vb...ead.php?t=91460

Quote

06-04-2006, 08:16 PM #10

evan9162
Flashaholic*

Join Date: Apr 2002
Location: Boise, ID
Posts: 2,132

Re: My comparative LED performance measurments...

I dont think you can make any such claims based on such a small number of samples. I think there are enough cases in the above data alone that support such a premise, and there is plenty of data to negate it. Besides, nothing is being controlled for. A higher Vf could cause a spectral shift which would cause the light meter to read higher, but optical output power would be the same or lower. Until you control for a single variable (Vf) with a large number of samples, I don't think you can make such a claim.

Quote

06-04-2006, 08:42 PM #11

Kiessling
Super Moderator
CPF Gold Supporter

Join Date: Nov 2002
Location: Germany, Old World
Posts: 10,403

Re: My comparative LED performance measurments...

Thanx for all the hard work there !!!

And the result is ... LuxV RULEZ !!!

bernie

_____
It's always darkest just before it goes pitch black.

My shoes are too tight. But it doesn't matter, because I have forgotten how to dance.

Quote

06-05-2006, 02:10 AM #12

AuroraLite
Flashaholic*

Join Date: Nov 2004
Location: HK
Posts: 1,214

Re: My comparative LED performance measurments...

DF,

Most fantastic work!!

Very interesting to see how the SxxH when compared to UxxJ for performance. I kinda wonder if we were to allow more time to run(10-15 min), will the SxxH's performance decline a bit due to the heat/overdriven(to simulate a flashlight setting with lesser heatsink)at 500-700ma? However, it might put SxxH in some heat risk, and I would not wish that so on a premium bin.

Henry,

I have the same conversation with Djpark long ago about how the waltage might to some degree affect the brightness of the lux. And the test results, to some extent, seems to varify that it does bear some importance to the brightness of a lux besides current.

_____
Dummy Reference Guide to Minimag mod

Quote

06-06-2006, 02:40 AM #13

DFiorentino
Flashaholic*

Join Date: Dec 2004
Location: MD
Posts: 993

Re: My comparative LED performance measurments...

First post updated with some of the emmiters I had on hand.

It appears that the emmiter from my new B42XR comes out to be a SW0J luxIII. The W0 is based on my own eyes, but the S__J seem to fall in line with the others tested. So, I guess the UX0J I replaced it with actually is an improvement .

It's also nice to see that I have some LEDs that span their respective ranges. I have some good T-bins and some poorer ones. Some good R-bins and some poorer ones. Some good...well you get the point. It was interesting seeing the span.

Looking at the mixed 1w & 3w LUX graph helps me visuallize the differences in induvidual bins. But check out the 5w LUX graph. A 20% difference in just the W-bins.

This exercise has forever transmormed me into an anal SOB. I will from now on log any new LEDs I get and further sort them into my own "bin" structure.

Enjoy.
-DF

_____
"When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge." - A.E.

Quote

06-06-2006, 02:47 AM #14

DFiorentino
Flashaholic*

Join Date: Dec 2004
Location: MD
Posts: 993

Re: My comparative LED performance measurments...

Oh, and for what its worth, this has brought my respect level for the LuxV up even higher. (I'm with Bernie in the LuxV RULEZ club 

.) Man those things are BRIGHT ! Now, I just have to sort out the winners and keep them for myself .

-DF

_____
"When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge." - A.E.

Quote

06-06-2006, 02:57 AM #15

AW
CPF Supporting Dealer

Join Date: Oct 2004
Location: Hong Kong
Posts: 2,654

Re: My comparative LED performance measurments...

Just bought another tray of SXOH stars based on your findings

_____

***Protected LiIon Cells Available Here
***Protected R123 Charger Kit

Quote

06-06-2006, 10:17 PM #16

CM
Flashaholic*

Join Date: Sep 2002
Location: Mesa, AZ
Posts: 2,586

Re: My comparative LED performance measurments...

Excellent. This should be a sticky.

Quote

06-11-2006, 01:52 AM #17

DFiorentino
Flashaholic*

Join Date: Dec 2004
Location: MD
Posts: 993

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Temperature data added to the bottom of the first post.

-DF

_____
"When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge." - A.E.

Quote

06-11-2006, 09:21 AM #18

WAVE_PARTICLE
Flashaholic*

Join Date: Dec 2005
Location: Ontario, Canada
Posts: 815

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Wow! Excellent work. I just came across this.....

Definately should be a sticky.

WP

Quote

06-11-2006, 12:03 PM #19

tonyd
Enlightened

Join Date: Feb 2006
Posts: 85

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

EXCELLANT! Very much should be a sticky

Quote

06-11-2006, 01:19 PM #20

AlexGT
Flashaholic*

Join Date: Jan 2001
Location: Earth!
Posts: 2,000

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Very nice work, I already put it on my favorites, good job

AlexGT

Quote

06-11-2006, 04:25 PM #21

evan9162
Flashaholic*

Join Date: Apr 2002
Location: Boise, ID
Posts: 2,132

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Were the temperatures in the graph what you measured, or a calculated junction temp? I ask because you can't directly measure the junction temp, even though you hint that that's what you're measuring.

The closest you can measure is the slug temperature, which is much lower than the junction temp. You must calculate junction temp (in degrees Celcius) with the following:

Lux I : slug temp (in C) + (current * Vf * 15)
Lux III: slug temp (in C) + (current * Vf * 13)
Lux V: slug temp (in C) + (current * Vf * 8)

If the above are just the slug measurements, then these are the actual junction temperatures (you don't have any Vf measurements for the 1500mA, so I estimaged 6.8V, 3.9V, and 4.0V at 1500mA for the Lux V, III, and I respectively):

Code:

	350mA		700mA		1000mA
	1 min	5 min	1 min	5 min	1 min
Lux V VY0S			82.5	92.9	119.98
Lux III TX0H			75.17	81.57	104.62
Lux I RX0H	49.1	49.8	76.55	84.35	107.05

You are greatly exceeding the maximum junction temp for all devices at 1500mA.

Quote

06-11-2006, 10:44 PM #22

DFiorentino
Flashaholic*

Join Date: Dec 2004
Location: MD
Posts: 993

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

evan9162: Thank you for enlightening me. It caused me to actually read further to understand what you meant and do a little more testing.

First post updated with calculated junction temps and additional 1500mA test data. Its amazing what each additional piece of heatsinking does at these extreme levels. I can't wait for some of Yaesumofo's copper O-sinks!

-DF

"When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge." - A.E.

Quote

06-11-2006, 11:26 PM #23

evan9162
Flashaholic*

Join Date: Apr 2002
Location: Boise, ID
Posts: 2,132

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Looks good. I especially like the color coding on the junction temp.

The mag body/head are a surprisingly good heat sinking combo. There's a lot of thermal mass there, but it also does dissipate heat rather well into the air. It will get hot if left to sit in still air, but if you're walking around with one, just that amount of airflow allows things to stay relatively cool.

Quote

06-12-2006, 12:24 AM #24

wquiles
Flashaholic*

Join Date: Jan 2005
Location: Texas, USA, Earth
Posts: 2,767

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Quote:

> Originally Posted by **DFiorentino**
> *I can't wait for some of Yaesumofo's copper O-sinks!*

That is why I used copper in my own LED Lightbox . Mine is the huge, solid copper that modamag invented for 4 emiters - it works great

Will

_____

Light Box for LED/Lights ... LED Data from Light Box ... Testing of PhotonFanatic's LED's
McE2S for C/M bodies ... Bench testing of incandecent soft start circuit
Night beamshots - various lights ... Night beamshots - Revision 2 ...
Stippled Reflector Beamshots ...
DIY guide to upgrade BOG 3W drop-in module ... DIY upgrade for BOG 3W drop-in module - part 2 ...

Quote

06-12-2006, 09:37 AM #25

Luna
Flashaholic*

Join Date: Dec 2004
Posts: 805

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

DFiorentino,

Did you happen to get the lux vs temp at 1 and 5mins of the LuxV

Quote

06-12-2006, 03:26 PM #26

thesurefire
Flashaholic*

Join Date: Dec 2003
Location: U.S.A.
Posts: 1,118

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Very useful. Thanks for taking the time to do this.

_____

Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius, and a lot of courage to move in the opposite direction. - Albert Einstein

Quote

06-12-2006, 03:50 PM #27

HarryN
Flashaholic*

Join Date: Jan 2004
Location: Pleasanton (Bay Area), CA, USA
Posts: 1,928

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Thanks for all of the work. I don't have the metrology to do this properly, but on the Lux V WWOS emitters I am playing with, there seems to be very little difference in output (visually) between 100 - 300ma. Have you looked at this range at all ?

If you want a real kick, try driving the Lux Vs at 25ma and compare them to other LEDs - amazing.

_____
"BREEZE" RCR2 side x side (under development)

http://www.candlepowerforums.com/vb...ead.php?t=91460

Quote

06-12-2006, 07:30 PM #28

DFiorentino
Flashaholic*

Join Date: Dec 2004
Location: MD
Posts: 993

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Will: I have two of modamag's copper PQS myself, but I'm not about to cut them up for this 

. I actually just purchased a 2.75"OD x .5" piece of copper bar stock to use as a new heatsink.

Luna: My current setup is a bit cramped, so its hard to do temp and lux testing together *right now* .

HarryN: I actually have noticed this, but nothing has been "officially" recorded as of yet.

I really appreciate the positive feedback and help from everyone. So much so that I'm redoing everything! Actually, Luna hit it on the head. I wanted to be able to log temp and lux at the same time and the new set up will be able to do this. In addition, I hope to add a ton more test points in the under and overdrive regions. Now keep in mind, this is still being done on a backyard budget. Its going to take me a few days to assemble the rig and get the new testing done. Hopefully the migranes will stay away now that I'm medicated .

-DF

_____
"When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge." - A.E.

Quote

06-13-2006, 04:40 PM #29

greenLED
Flashaholic

Join Date: Mar 2004
Location: getting there
Posts: 9,384

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

I'm blown away by all the info (and hard work!) in this thread/post.

CPF Specials thread ** **FS: Glow in the dark o-rings** ** Free modding services

JSBurly's Flashlights **<--- NEW site**

Quote

06-22-2006, 08:06 PM #30

milkyspit
Flashaholic*

Join Date: Sep 2002
Location: New Jersey
Posts: 3,003

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

This thread is terrific!

--Scott


Milkyspit: Be Very Afraid.


MC2 order NOW!


C2 McR27L UXOJ.


Milky's Project-M.


For Sale or Trade.


Old Threads Index.

Edit Quote

06-23-2006, 04:42 AM #31

ac0311
Enlightened

Join Date: Dec 2003
Posts: 34

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Great info, but now am puzzled, why a Lux I SxxH has more lux than a Lux III TxxH? They both have the same vF? Help this noob understand. For general use is it better to use a H vF or a J vF? Thought I was beginning to understand the bin codes.

Quote

06-23-2006, 11:29 AM #32

milkyspit
Flashaholic*

Join Date: Sep 2002
Location: New Jersey
Posts: 3,003

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

Quote:

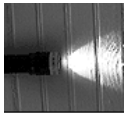
> Originally Posted by **ac0311**
> *Great info, but now am puzzled, why a Lux I SxxH has more lux than a Lux III TxxH? They both have the same vF? Help this noob understand. For general use is it better to use a H vF or a J vF? Thought I was beginning to understand the bin codes.*

This I can handle! All Lux1 are rated at 350mA output current, but the Lux3 are rated at 700mA output current. This leads to some interesting things... among them, the Lux1 actually has a HIGHER Vf than the Lux3 if they're both driven at the same output level... and the Lux1 will become significantly brighter if it's driven at Lux3 levels... it's entirely possible for a Lux1 S-flux to reach or even exceed T-flux when driven that hard.

If you remember only one thing: bin codes are RELATIVE (to the drive level used in establishing them!).

_____
--Scott


Milkyspit: Be Very Afraid.

MC2 order NOW!

C2 McR27L UX0J.

Milky's Project-M.

For Sale or Trade.

Old Threads Index.

Edit Quote

06-24-2006, 12:19 AM #33

ac0311
Enlightened

Join Date: Dec 2003
Posts: 34

Re: My comparative LED performance measurments (Lux, Vf, Eff., Temp)

If you remember only one thing: bin codes are RELATIVE (to the drive level used in establishing them!). That's the key. Thanx.

Quote

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LED Go

All times are GMT -4. The time now is 10:13 AM.

---- Silver

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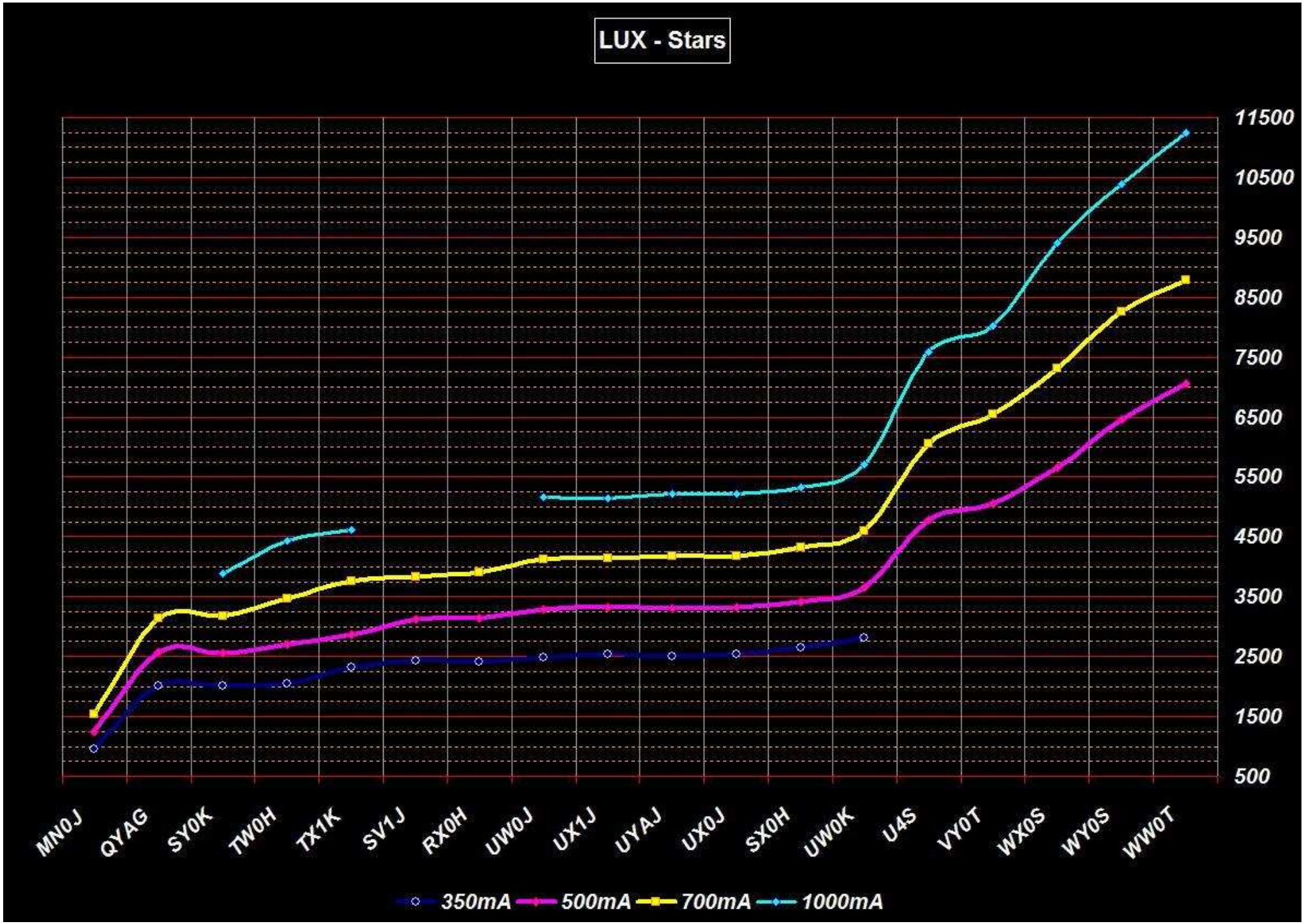
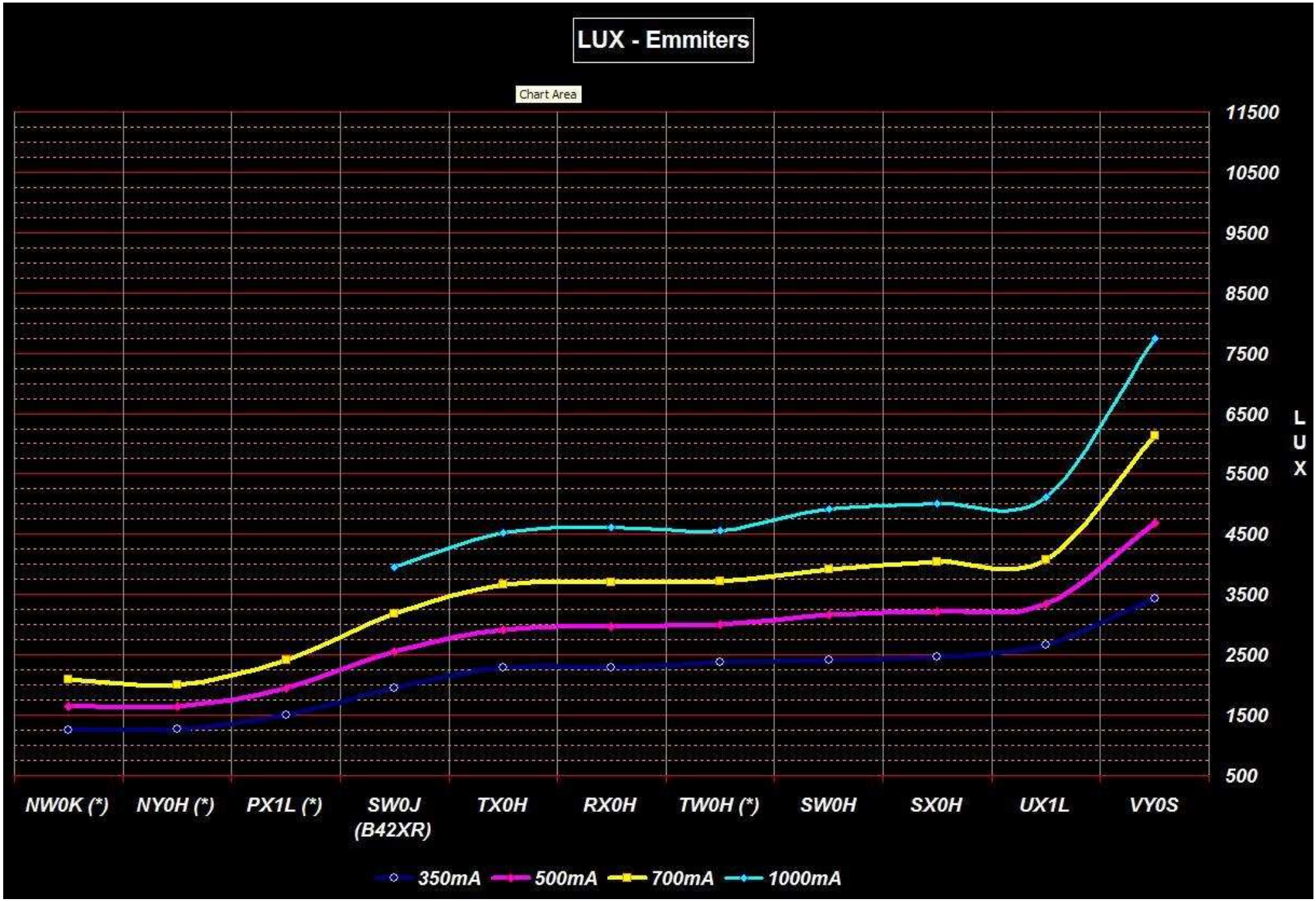
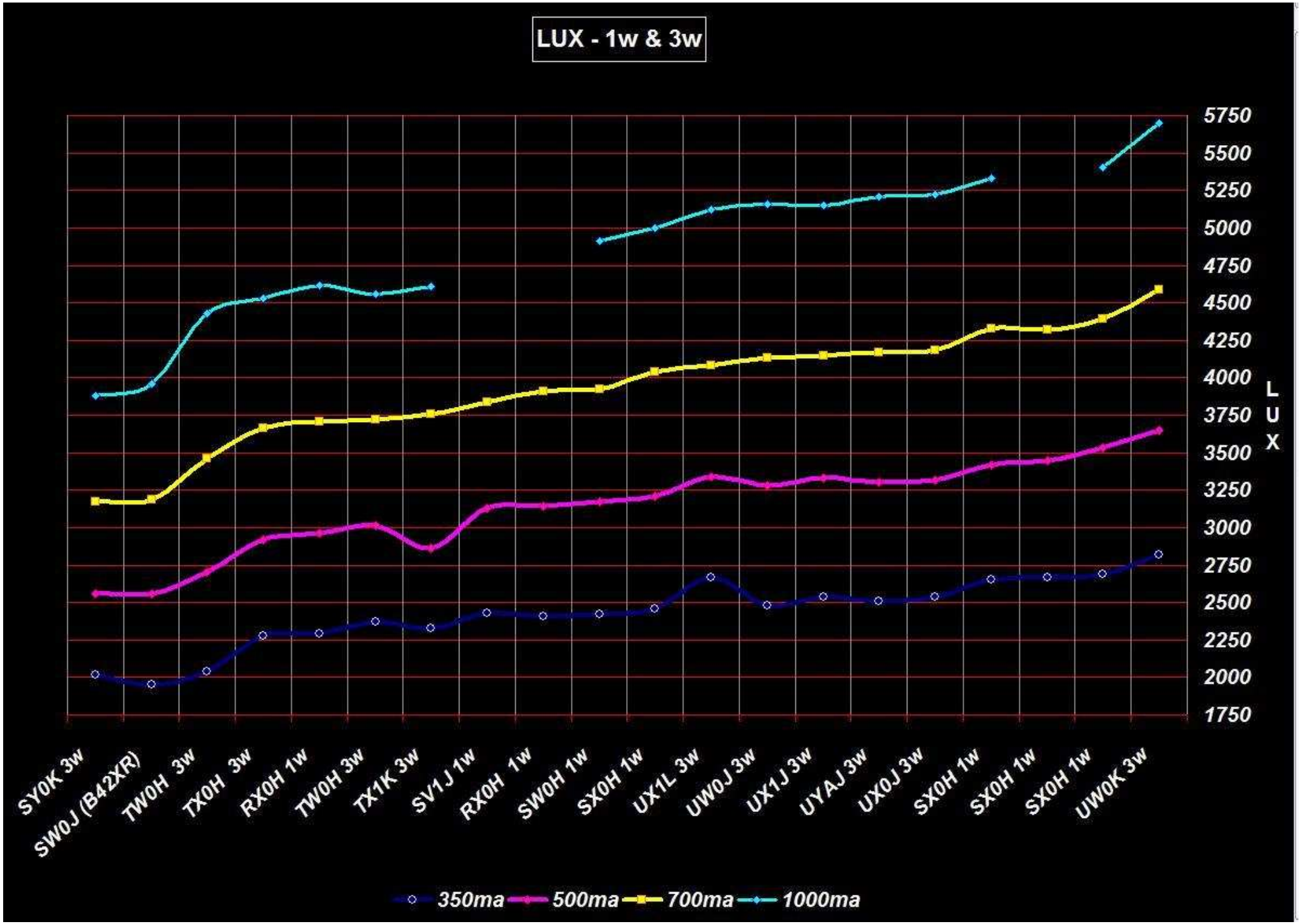
Part	Description	350ma					500ma					700ma					1000ma				
		Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.
LuxV Stars	WW0T						7060	**154.2**	6.51	3.26	2169	8790	**192.0**	6.71	4.70	1871	11240	**245.5**	6.95	6.95	1617
	WY0S						6450	**140.9**	5.90	2.95	2186	8260	**180.4**	6.09	4.26	1938	10380	**226.7**	6.34	6.34	1637
	WX0S						5650	**123.4**	6.25	3.13	1808	7310	**159.7**	6.45	4.52	1619	9400	**205.3**	6.70	6.70	1403
	VY0T						5060	**110.5**	6.23	3.12	1624	6550	**143.1**	6.45	4.52	1451	8030	**175.4**	6.73	6.73	1193
	U4S						4780	**104.4**	6.21	3.11	1539	6050	**132.2**	6.42	4.49	1346	7580	**165.6**	6.64	6.64	1142
LuxIII Stars	UW0K	2820	**61.6**	3.47	1.21	2322	3650	**79.7**	3.63	1.82	2011	4590	**100.3**	3.82	2.67	1717	5700	**124.5**	4.06	4.06	1404
	UX0J	2540	**55.5**	3.29	1.15	2206	3320	**72.5**	3.41	1.71	1947	4180	**91.3**	3.55	2.49	1682	5220	**114.0**	3.75	3.75	1392
	UYAJ	2510	**54.8**	3.30	1.16	2173	3300	**72.1**	3.44	1.72	1919	4170	**91.1**	3.60	2.52	1655	5210	**113.8**	3.81	3.81	1367
	UX1J	2540	**55.5**	3.38	1.18	2147	3330	**72.7**	3.51	1.76	1897	4150	**90.6**	3.66	2.56	1620	5150	**112.5**	3.86	3.86	1334
	UW0J	2480	**54.2**	3.35	1.17	2115	3280	**71.6**	3.49	1.75	1880	4130	**90.2**	3.65	2.56	1616	5160	**112.7**	3.87	3.87	1333
	TX1K	2330	**50.9**	3.42	1.20	1947	2860	**62.5**	3.53	1.77	1620	3760	**82.1**	3.79	2.65	1417	4610	**100.7**	4.04	4.04	1141
	TW0H	2040	**44.6**	3.11	1.09	1874	2700	**59.0**	3.23	1.62	1672	3460	**75.6**	3.38	2.37	1462	4430	**96.8**	3.58	3.58	1237
	SY0K	2020	**44.1**	3.43	1.20	1683	2560	**55.9**	3.57	1.79	1434	3170	**69.2**	3.74	2.62	1211	3880	**84.8**	3.97	3.97	977
LuxI Stars	SX0H (1)	2670	**58.3**	3.25	1.14	2347	3450	**75.4**	3.37	1.69	2047	4320	**94.4**	3.53	2.47	1748					
	SX0H (2)	2690	**58.8**	3.28	1.15	2343	3530	**77.1**	3.41	1.71	2070	4390	**95.9**	3.55	2.49	1767	5400	**118.0**	3.76	3.76	1436
	SX0H (3)	2650	**57.9**	3.28	1.15	2308	3420	**74.7**	3.40	1.70	2012	4330	**94.6**	3.56	2.49	1738	5330	**116.4**	3.77	3.77	1414
	RX0H	2410	**52.6**	3.21	1.12	2145	3140	**68.6**	3.33	1.67	1886	3910	**85.4**	3.46	2.42	1614					
	SV1J (LD)	2430	**53.1**	3.44	1.20	2018	3130	**68.4**	3.59	1.80	1744	3840	**83.9**	3.75	2.63	1463					
	QYAG	2010	**43.9**	3.08	1.08	1865	2570	**56.1**	3.20	1.60	1606	3140	**68.6**	3.34	2.34	1343					
	MN0J (LD)	962	**21.0**	3.36	1.18	818	1246	**27.2**	3.53	1.77	706	1543	**33.7**	3.72	2.60	593					

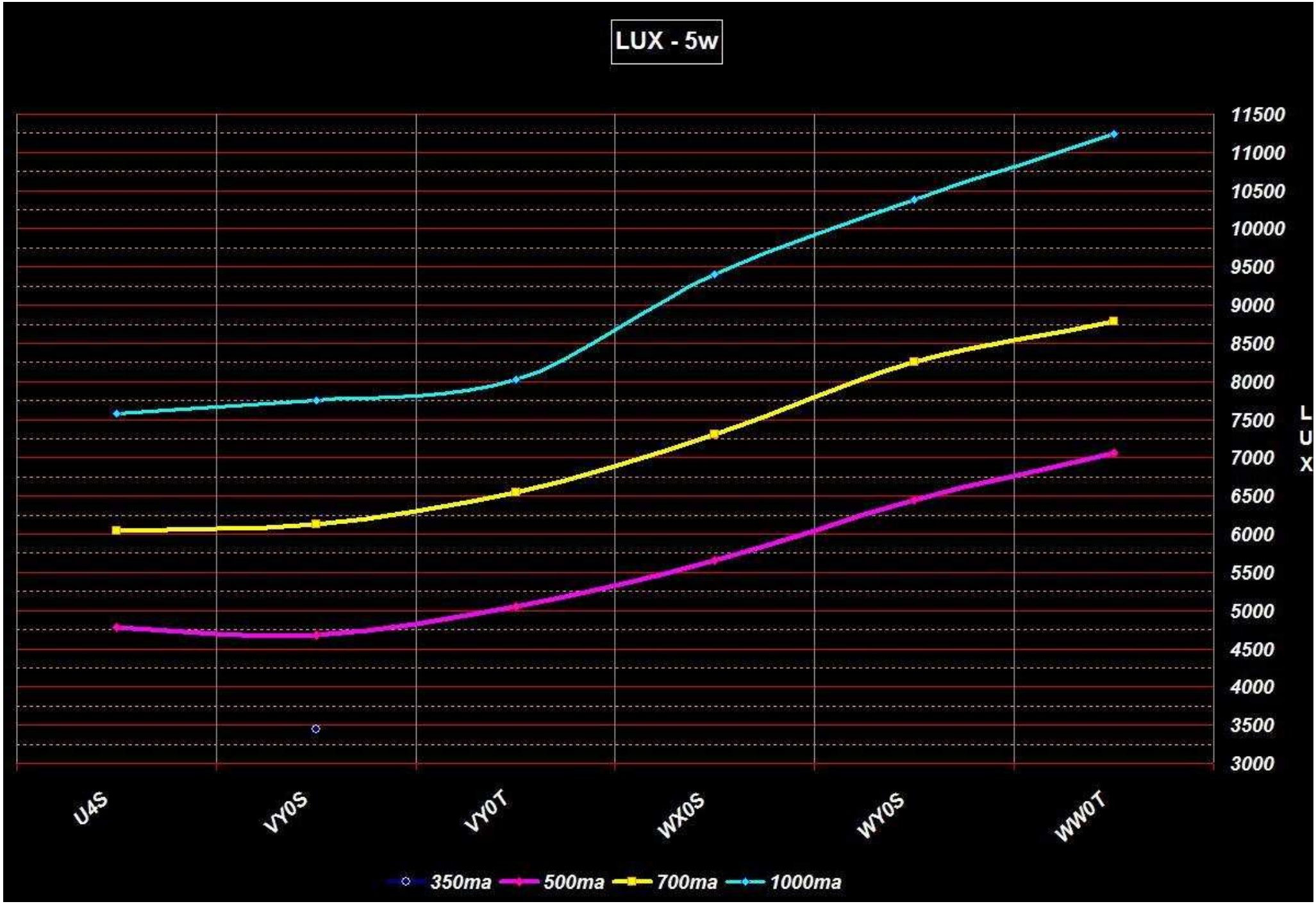
Part	Description	350ma					500ma					700ma					1000ma					1500ma				
		Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.	Lux	BLC	Vf	Watts	Eff.
LuxV Emitters	VY0S	3440	**75.1**	5.85	2.05	1680	4680	**102.2**	6.02	3.01	1555	6130	**133.9**	6.21	4.35	1410	7750	**169.3**	6.46	6.46	1200					
K2 Emmiters	UYAN	2040	**44.6**	4.02	1.41	1450	2690	**58.8**	4.23	2.12	1272	3430	**74.9**	4.43	3.10	1106	4120	**90.0**	5.19	5.19	794	5120	**111.8**	5.43	5.43	943
LuxIII Emitters	UX1L	2670	**58.3**	3.62	1.27	2107	3340	**73.0**	3.77	1.89	1772	4080	**89.1**	3.93	2.75	1483	5120	**111.8**	4.06	4.06	1261					
	TX0H	2280	**49.8**	3.13	1.10	2081	2920	**63.8**	3.27	1.64	1786	3660	**79.9**	3.42	2.39	1529	4530	**98.9**	3.64	3.64	1245					
	TW0H (*)	2370	**51.8**	3.18	1.11	2129	3010	**65.7**	3.31	1.66	1819	3720	**81.3**	3.45	2.42	1540	4560	**99.6**	3.65	3.65	1249					
	SW0J (B42XR)	1950	**42.6**	3.29	1.15	1693	2560	**55.9**	3.45	1.73	1484	3190	**69.7**	3.64	2.55	1252	3960	**86.5**	3.89	3.89	1018					
LuxI Emitters	SW0H	2420	**52.9**	3.29	1.15	2102	3170	**69.2**	3.39	1.70	1870	3920	**85.6**	3.54	2.48	1582	4910	**107.2**	3.73	3.73	1316					
	SX0H	2460	**53.7**	3.18	1.11	2210	3210	**70.1**	3.21	1.61	2000	4040	**88.2**	3.45	2.42	1673	5000	**109.2**	3.64	3.64	1374					
	RX0H	2290	**50.0**	3.30	1.16	1983	2960	**64.7**	3.43	1.72	1726	3710	**81.0**	3.58	2.51	1480	4620	**100.9**	3.77	3.77	1225					
	PX1L (*)	1500	**32.8**	3.65	1.28	1174	1950	**42.6**	3.82	1.91	1021	2420	**52.9**	3.97	2.78	871										
	NY0H (*)	1270	**27.7**	3.28	1.15	1106	1640	**35.8**	3.41	1.71	962	2000	**43.7**	3.57	2.50	800										
	NW0K (*)	1260	**27.5**	3.48	1.22	1034	1650	**36.0**	3.64	1.82	907	2090	**45.7**	3.83	2.68	780										

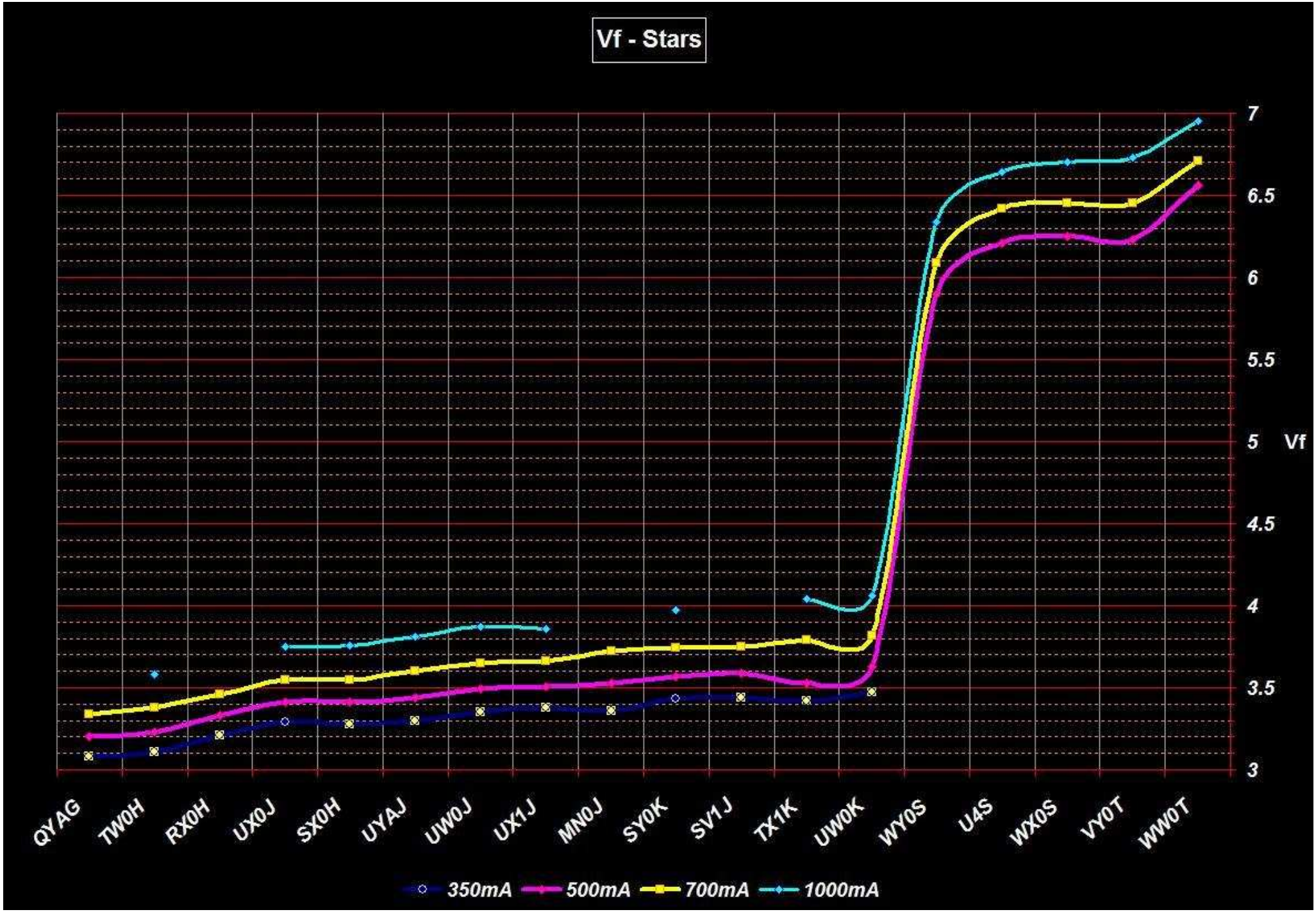
(*) Actual bin code unknown; listed bin based on previous testing.

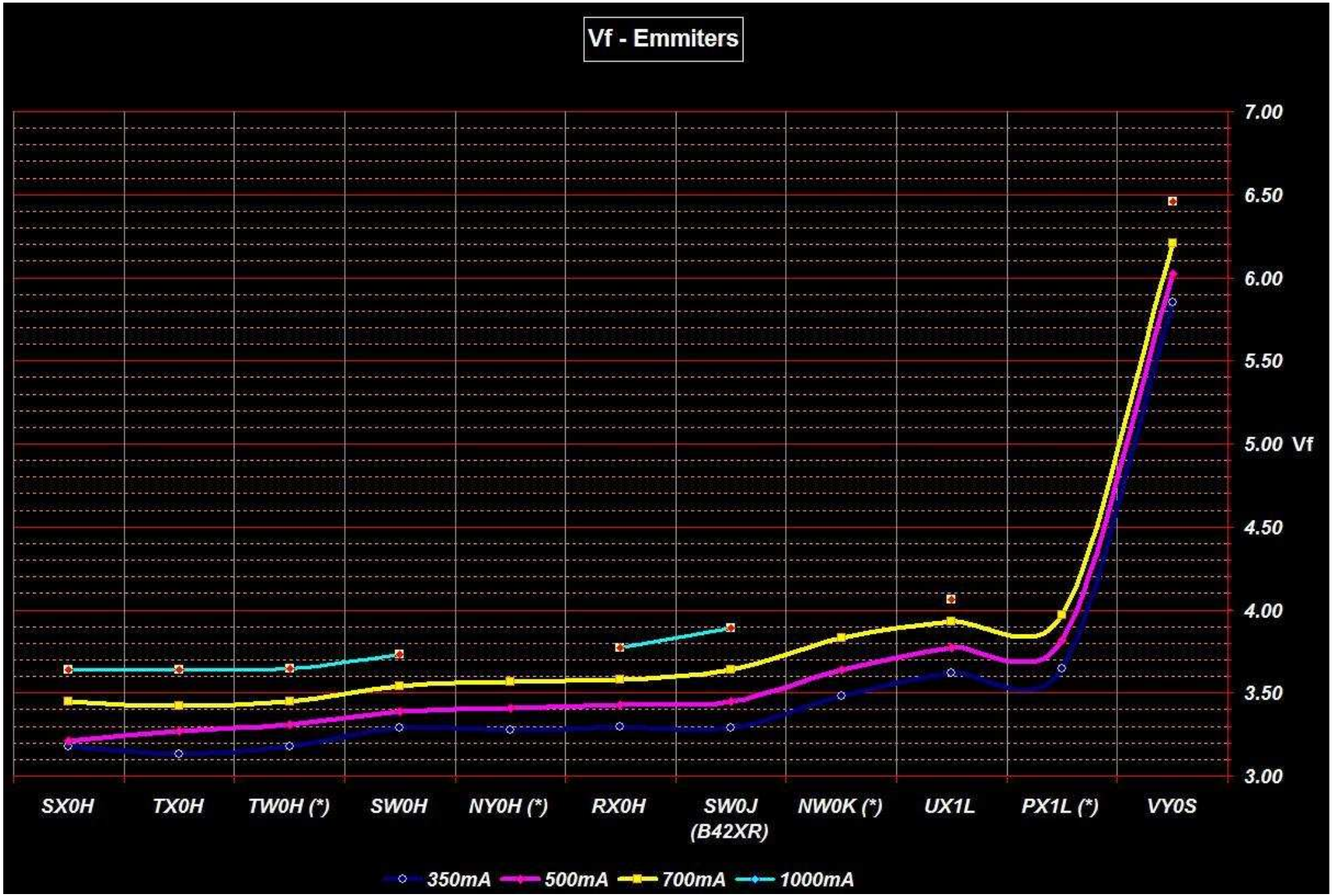

LUX - Stars
11500
10500
9500
8500
7500
6500
5500
4500
3500
2500
1500
500
MN0J
QYAG
SY0K
TW0H
TX1K
SV1J
RX0H
UW0J
UX1J
UYAJ
UX0J
SX0H
UW0K
U4S
VY0T
WX0S
WY0S
WW0T
350mA
500mA
700mA
1000mA


LUX - Emmiters
Chart Area
11500
10500
9500
8500
7500
6500
5500
4500
3500
2500
1500
500
LUX
NW0K (*)
NY0H (*)
PX1L (*)
SW0J (B42XR)
TX0H
RX0H
TW0H (*)
SW0H
SX0H
UX1L
VY0S
350mA
500mA
700mA
1000mA


LUX - 1w & 3w
5750
5500
5250
5000
4750
4500
4250
4000
3750
3500
3250
3000
2750
2500
2250
2000
1750
LUX
SY0K 3w
SW0J (B42XR)
TW0H 3w
TX0H 3w
RX0H 1w
TW0H 3w
TX1K 3w
SV1J 1w
RX0H 1w
SW0H 1w
SX0H 1w
UX1L 3w
UW0J 3w
UX1J 3w
UYAJ 3w
UX0J 3w
SX0H 1w
SX0H 1w
SX0H 1w
UW0K 3w
350ma
500ma
700ma
1000ma

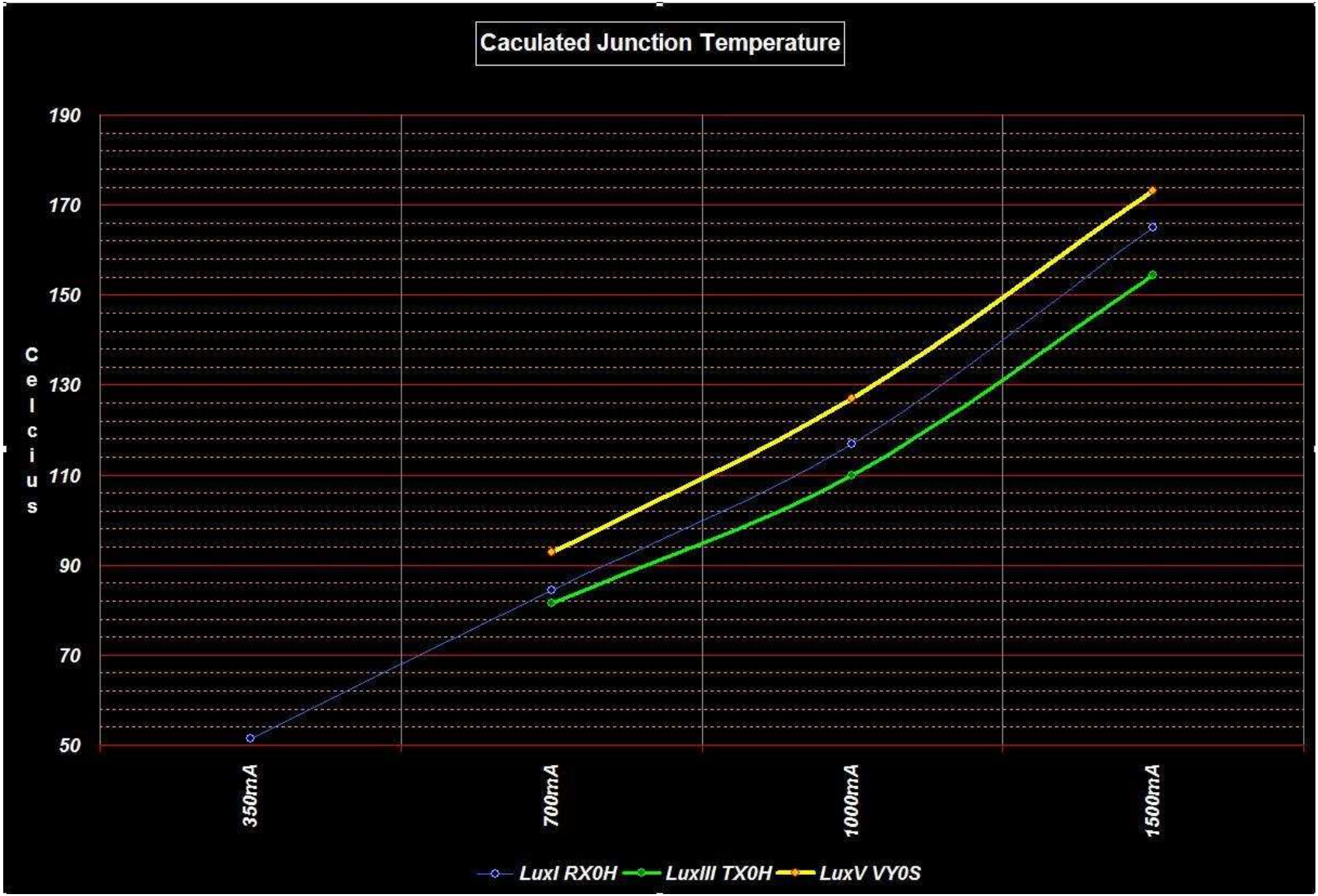

LUX - 5w
11500
11000
10500
10000
9500
9000
8500
8000
7500
7000
6500
6000
5500
5000
4500
4000
3500
3000
LUX
U4S
VY0S
VY0T
WX0S
WY0S
WW0T
350ma
500ma
700ma
1000ma


Vf - Stars
7
6.5
6
5.5
5
4.5
4
3.5
3
Vf
QYAG
TW0H
RX0H
UX0J
SX0H
UYAJ
UW0J
UX1J
MN0J
SY0K
SV1J
TX1K
UW0K
WY0S
U4S
WX0S
VY0T
WW0T
350mA
500mA
700mA
1000mA


Vf - Emmiters
7.00
6.50
6.00
5.50
5.00 Vf
4.50
4.00
3.50
3.00
SX0H
TX0H
TW0H (*)
SW0H
NY0H (*)
RX0H
SW0J (B42XR)
NW0K (*)
UX1L
PX1L (*)
VY0S
350mA
500mA
700mA
1000mA


Efficiency - Stars
LUX / W
2350
2250
2150
2050
1950
1850
1750
1650
1550
1450
1350
1250
1150
1050
950
350
500
700
1000
mA
WY0S
WW0T
SX0H
UW0K
UX0J
WX0S
UYAJ
UX1J
RX0H
UW0J
SV1J
TW0H
VY0T
TX1K
QYAG
U4S
SY0K


Efficiency - Emmiters
2250
2150
2050
1950
1850
1750
1650
1550
1450
1350
1250
1150
1050
950
850
750
LUX / W
350
500
700
1000
mA
SX0H
SW0H
TW0H (*)
TX0H
UX1L
RX0H
VY0S
SW0J (B42XR)
PX1L (*)
NY0H (*)
NW0K (*)


Caculated Junction Temperature
190
170
150
130
110
90
70
50
Celcius
350mA
700mA
1000mA
1500mA
LuxI RX0H
LuxIII TX0H
LuxV VY0S