

:

```
( 2 ) : x = 0.7191    y = 0.2789 / u' = 0.5861    v' = 0.5114    duv = -1.388e-001
      : Tc = 1001K      : λd = 642.8 nm      : Purity = 99.4%
      : R = 99.5% G = 0.4% B = 0.0%      : λp = 656.5 nm      : Δλd = 16.3 nm
      : Ra = 8.4    AvgR = -1.1    Kred = 99.09%
R1 = -4.25      R2 = -80.15      R3 = -22.55      R4 = -30.33      R5 = -0.82
R6 = -88.14      R7 = -2.67      R8 = -93.85      R9 = -271.71     R10 = 78.40
R11 = -13.91     R12 = 81.26      R13 = 31.70     R14 = 53.48     R15 = -43.32
```

:

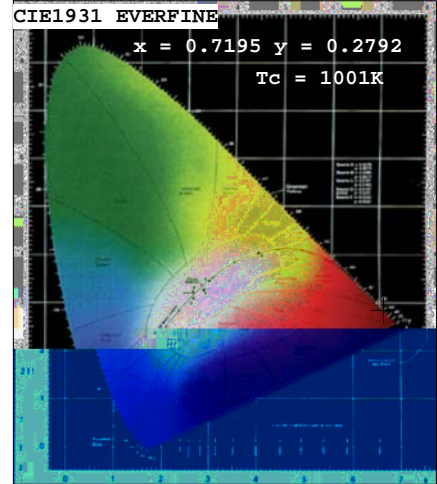
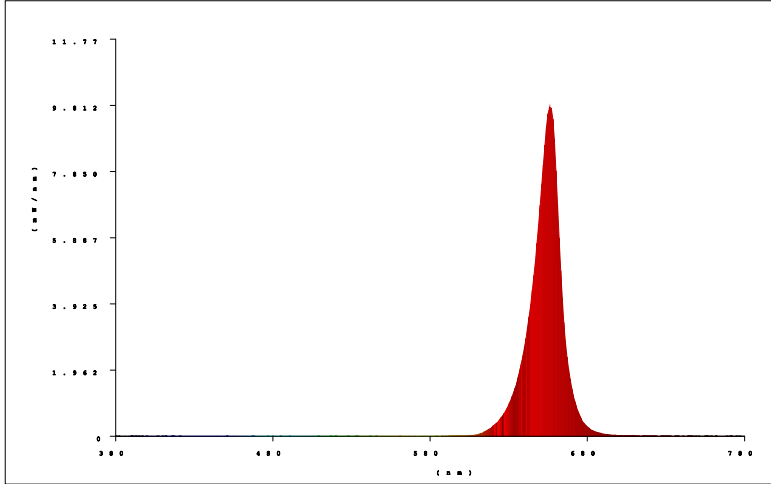
```
= 9.675 lm      : 53.99 lm/W    e = 135.0 mW
(umol/s): 5.080e-004[380~500nm] 4.184e-004[500~600nm] 7.348e-001[600~780nm]
=7.358e-001umol/s      =1.02e+003      =7.530e-001
400~700nm : PPF: 0.73485 μmol/s
            PRF: 134.92 mW
            Eff (PPF): 4.10 μmol/s/W
```

:

```
VF = 1.784 V      IF = 100.4 mA      P = 179.2 mW
: ** [OUT]      : OUT
```

: T=110.00ms Ip=47251 (72%) [ HAAS1200\_V1\_USB ] V2.00.288

```
: 5#      : 3
: DAMIN   : 2021-01-26 11-27
: 25.3    : 65.0%
: EVERFINE : 5
: damin
: LED300 + HAAS1200_V1_USB
```



:

( 2 ) : x = 0.7195 y = 0.2792 / u' = 0.5860 v' = 0.5116 duv = -1.387e-001

: Tc = 1001K :  $\lambda_d = 642.2 \text{ nm}$  : Purity = 99.6%

: R = 99.5% G = 0.5% B = 0.0% :  $\lambda_p = 656.3 \text{ nm}$  :  $\Delta\lambda_d = 16.7 \text{ nm}$

: Ra = 10.1 AvgR = 0.6 Kred = 99.04%

R1 = 5.72	R2 = 80.46	R3 = 24.49	R4 = -26.87	R5 = -1.32
R6 = 88.46	R7 = -1.23	R8 = -91.63	R9 = -268.43	R10 = 78.61
R11 = -9.23	R12 = 81.41	R13 = 33.00	R14 = 54.68	R15 = -41.81

:

= 14.59 lm : 53.16 lm/W e = 204.1 mW

( $\mu\text{mol/s}$ ): 6.034e-004[380~500nm] 7.063e-004[500~600nm] 1.111e+000[600~780nm]

= 1.112e+000  $\mu\text{mol/s}$  = 1.29e+003 = 7.431e-001

400 ~ 700 nm : PPF : 1.1106  $\mu\text{mol/s}$

PRF : 203.87 mW

Eff (PPF) : 4.05  $\mu\text{mol/s/W}$

:

VF = 1.824 V

IF = 150.4 mA

P = 274.5 mW

: \*\* [OUT]

: OUT

: T=80.00ms Ip=51180 (78%) [ HAAS1200\_V1\_USB ] V2.00.288

: 5 #

: 4

: DAMIN

: 2021-01-26 11-28

: 25.3

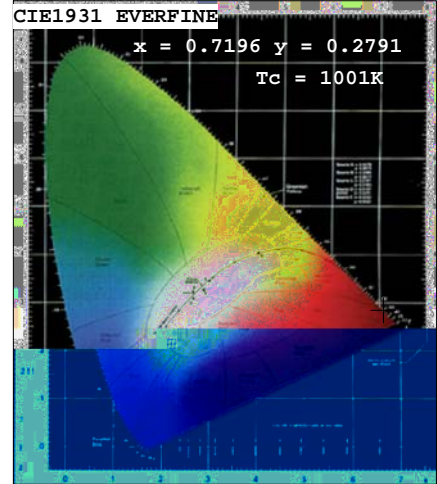
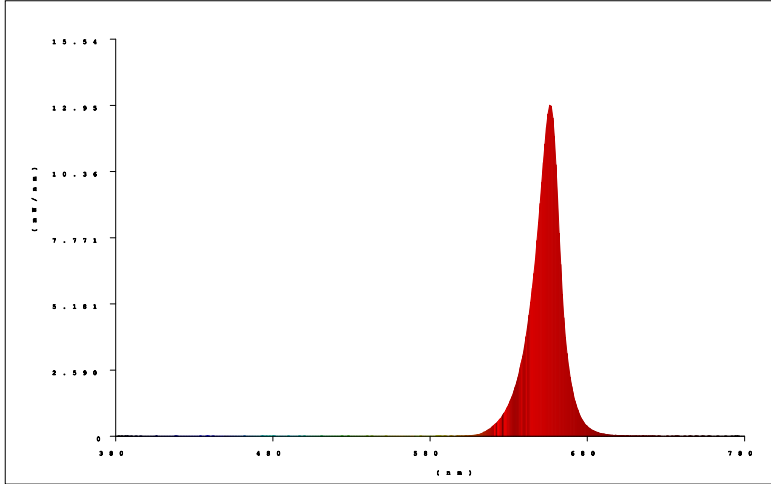
: 65.0%

: EVERFINE

: 5

: damin

: LED300 + HAAS1200\_V1\_USB



:

```
( 2 ) : x = 0.7196   y = 0.2791 / u' = 0.5863   v' = 0.5116   duv = -1.390e-001
      : Tc = 1001K       : λd = 642.4 nm       : Purity = 99.6%
      : R = 99.5% G = 0.4% B = 0.0%       : λp = 655.9 nm       : Δλd = 17.0 nm
      : Ra = 8.4   AvgR = -1.1   Kred = 99.11%
R1 = -4.04      R2 = -79.80      R3 = -23.61      R4 = -30.14      R5 = -1.29
R6 = -87.36     R7 = -2.45      R8 = -94.07     R9 = -272.54    R10 = 77.35
R11 = -13.81    R12 = 83.05     R13 = 31.52    R14 = 54.11    R15 = -43.65
```

:

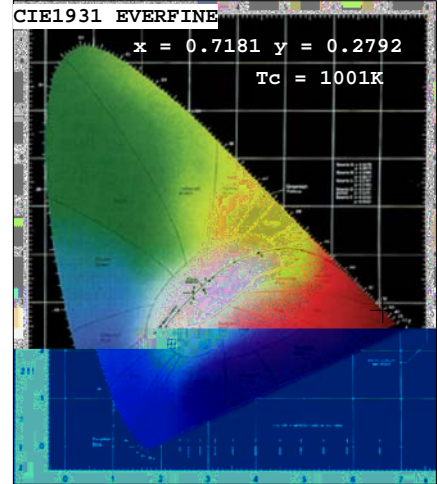
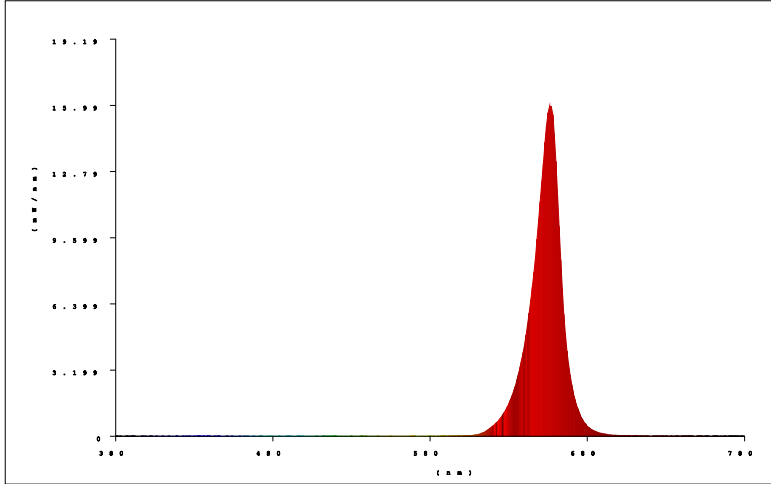
```
= 19.49 lm           : 52.19 lm/W   e = 273.3 mW
(umol/s): 7.270e-004[380~500nm] 7.782e-004[500~600nm] 1.488e+000[600~780nm]
=1.490e+000umol/s           =1.43e+003           =7.314e-001
400~700nm : PPF: 1.4883 μmol/s
            PRF: 273.18 mW
            Eff (PPF): 3.98 μmol/s/W
```

:

```
VF = 1.863 V           IF = 200.4 mA           P = 373.5 mW
: ** [OUT]           : OUT
```

: T=50.00ms Ip=41142 (63%) [ HAAS1200\_V1\_USB ] V2.00.288

```
: 5# : 5
: DAMIN : 2021-01-26 11-28
: 25.3 : 65.0%
: EVERFINE : 5
: damin
: LED300 + HAAS1200_V1_USB
```



:

( 2 ) : x = 0.7181 y = 0.2792 / u' = 0.5846 v' = 0.5113 duv = -1.373e-001

: Tc = 1001K :  $\lambda_d = 642.6 \text{ nm}$  : Purity = 99.2%

: R = 99.2% G = 0.7% B = 0.1% :  $\lambda_p = 656.3 \text{ nm}$  :  $\Delta\lambda_d = 17.3 \text{ nm}$

: Ra = 14.8 AvgR = 5.3 Kred = 98.75%

R1 = -10.52	R2 = -82.70	R3 = -27.10	R4 = -19.25	R5 = -8.31
R6 = -91.31	R7 = -2.13	R8 = -84.20	R9 = -255.30	R10 = 82.61
R11 = 0.06	R12 = 74.82	R13 = 37.32	R14 = 56.38	R15 = -35.74

:

= 24.46 lm : 51.67 lm/W e = 343.1 mW

( $\mu\text{mol/s}$ ): 1.675e-003[380~500nm] 1.539e-003[500~600nm] 1.866e+000[600~780nm]

= 1.869e+000  $\mu\text{mol/s}$  = 784 = 7.238e-001

400 ~ 700 nm : PPF : 1.8648  $\mu\text{mol/s}$

PRF : 342.34 mW

Eff (PPF) : 3.94  $\mu\text{mol/s/W}$

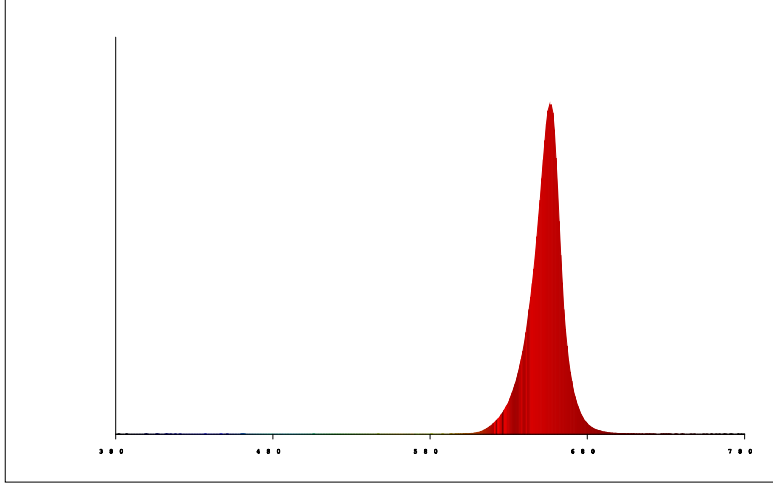
:

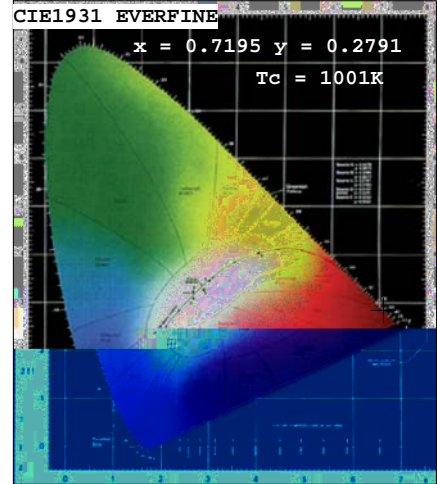
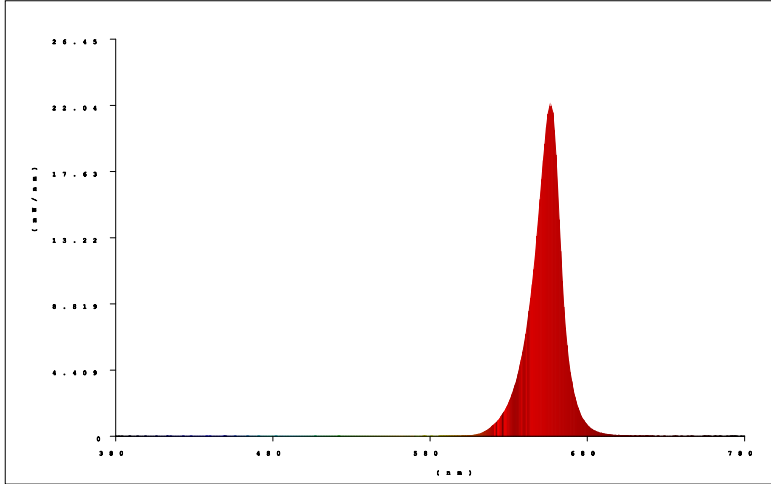
VF = 1.896 V IF = 249.7 mA P = 473.4 mW

: \*\* [OUT] : OUT

: T=50.00ms Ip=50787 (77%) [ HAAS1200\_V1\_USB ] V2.00.288

: 5 #	: 6
: DAMIN	: 2021-01-26 11-28
: 25.3	: 65.0%
: EVERFINE	: 5
: damin	
: LED300 + HAAS1200_V1_USB	





:

```
( 2 ) : x = 0.7195    y = 0.2791 / u' = 0.5861    v' = 0.5116    duv = -1.388e-001
      : Tc = 1001K      : λd = 642.3nm      : Purity = 99.6%
      : R = 99.5% G = 0.4% B = 0.0%      : λp = 657.2nm      : Δλd = 17.7nm
      : Ra = 7.7    AvgR = -1.7    Kred = 99.07%
R1 = -3.17      R2 = -79.28      R3 = -23.13      R4 = -31.54      R5 = -2.48
R6 = -86.53     R7 = -2.40      R8 = -94.13     R9 = -272.72    R10 = 76.75
R11 = -15.68    R12 = 83.88      R13 = 30.60     R14 = 53.70     R15 = -44.10
```

:

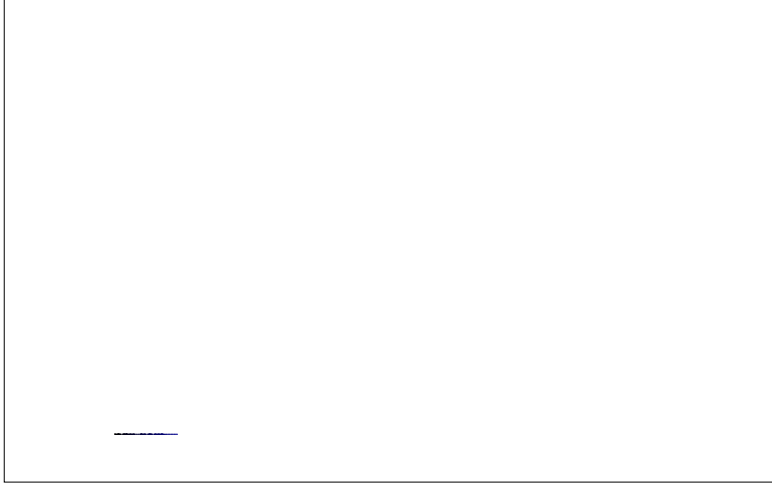
```
= 34.19 lm      : 49.75 lm/W    e = 480.9 mW
(umol/s): 1.051e-003[380~500nm] 1.274e-003[500~600nm] 2.619e+000[600~780nm]
=2.621e+000umol/s      =1.71e+003      =6.993e-001
400~700nm : PPF: 2.6177 μmol/s
            PRF: 480.38mW
            Eff (PPF): 3.81 μmol/s/W
```

:

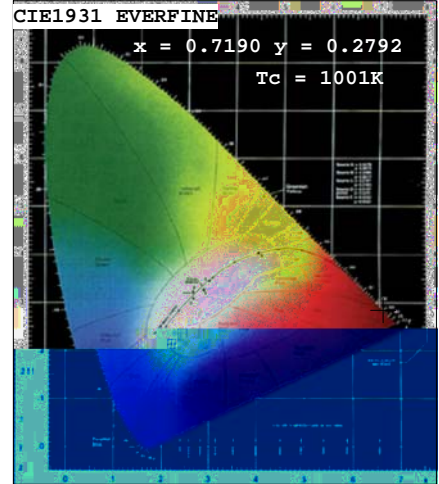
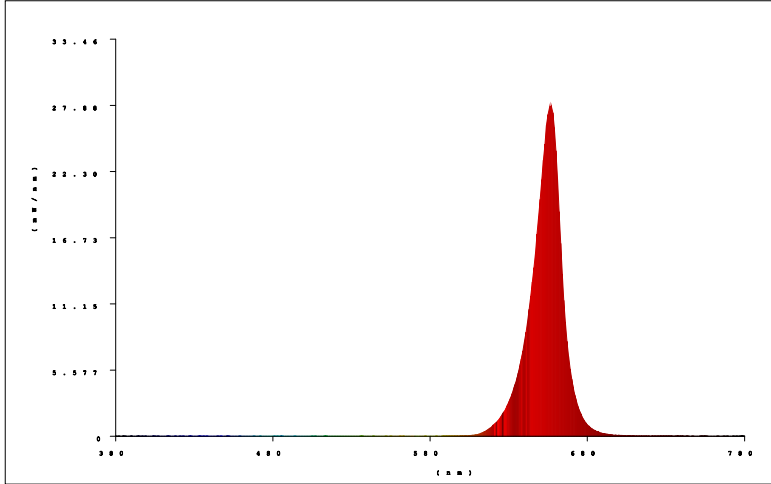
```
VF = 1.961 V      IF = 350.3 mA      P = 687.3 mW
: ** [OUT]      : OUT
```

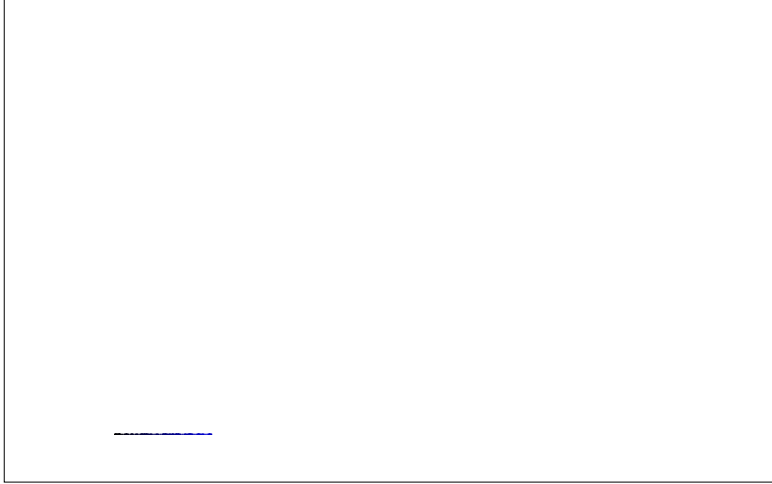
: T=30.00ms Ip=41913 (64%) [ HAAS1200\_V1\_USB ] V2.00.288

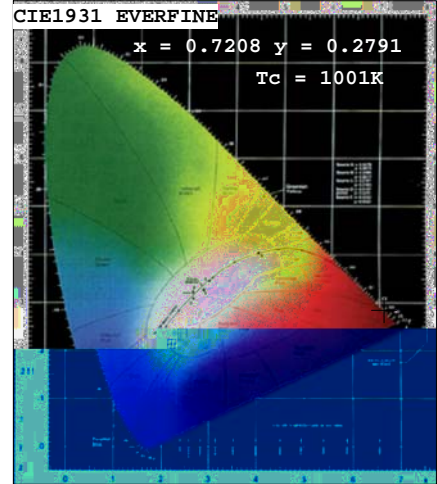
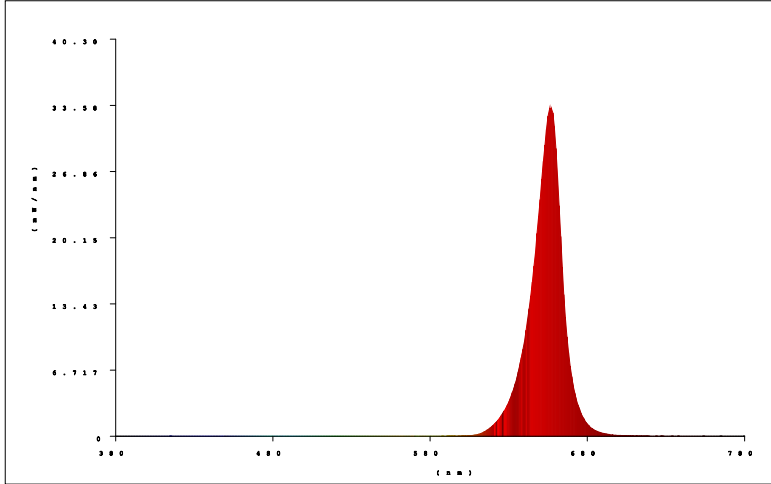
```
: 5# : 9
: DAMIN : 2021-01-26 11-29
: 25.3 : 65.0%
: EVERFINE : 5
: damin
: LED300 + HAAS1200_V1_USB
```











:

```
( 2 ) : x = 0.7208    y = 0.2791 / u' = 0.5876    v' = 0.5118    duv = -1.403e-001
      : Tc = 1001K      : λd = 642.1nm      : Purity = 100.0%
      : R = 99.9% G = 0.1% B = 0.0%      : λp = 656.6nm      : Δλd = 18.4nm
      : Ra = 1.1    AvgR = -8.6    Kred = 99.42%
R1  --3.35      R2  -76.54      R3  -18.95      R4  --42.34      R5  --11.95
R6  -82.75      R7  --7.18      R8  --104.22    R9  --290.25    R10 -72.13
R11 -28.82     R12 -85.14     R13 -24.91     R14 -50.90     R15 -52.32
```

:

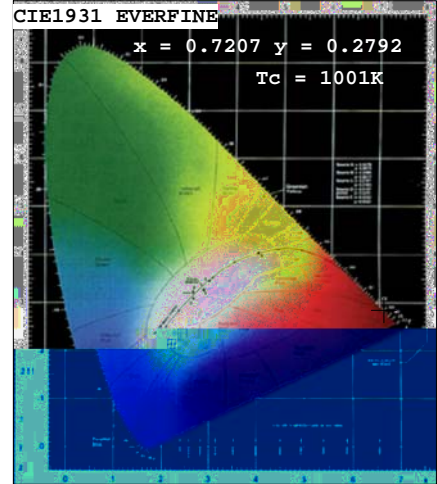
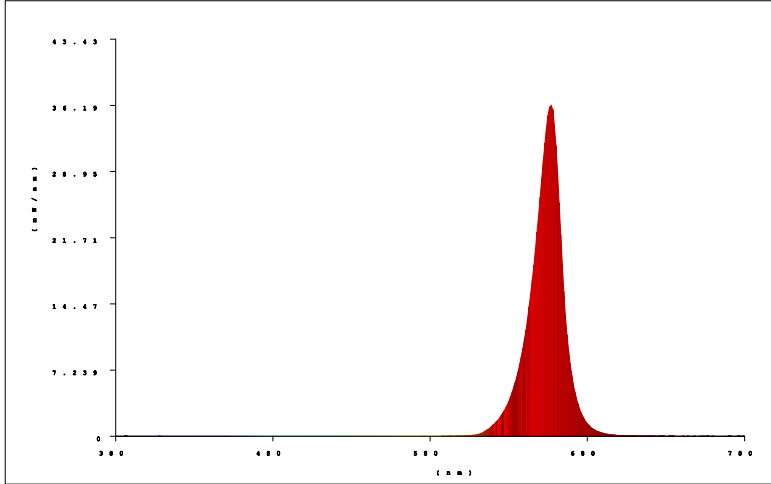
```
= 53.00 lm      : 46.30 lm/W    e = 750.0 mW
(umol/s): 2.394e-004[380~500nm] 7.694e-004[500~600nm] 4.089e+000[600~780nm]
=4.090e+000umol/s      =1.16e+004      =6.551e-001
400~700nm :      PPF: 4.0942 μmol/s
      PRF: 750.98mW
      Eff (PPF): 3.58 μmol/s/W
```

:

```
VF = 2.080 V      IF = 550.3 mA      P = 1145 mW
: ** [OUT]      : OUT
```

: T=20.00ms Ip=42632 (65%) [ HAAS1200\_V1\_USB ] V2.00.288

```
: 5#      : 13
: DAMIN   : 2021-01-26 11-30
: 25.3    : 65.0%
: EVERFINE : 5
: damin
: LED300 + HAAS1200_V1_USB
```



:

```
( 2 ) : x = 0.7207    y = 0.2792 / u' = 0.5873    v' = 0.5118    duv = -1.400e-001
      : Tc = 1001K      : λd = 642.1nm      : Purity = 99.9%
      : R = 99.8% G = 0.2% B = 0.0%      : λp = 656.6nm      : Δλd = 18.6nm
      : Ra = 2.3    AvgR = -7.4    Kred = 99.34%
R1  --2.26      R2  -76.89      R3  -19.79      R4  --40.50      R5  --10.41
R6  -83.10      R7  --6.12      R8  --102.16     R9  --286.72     R10 -72.78
R11 --26.76     R12 -85.36     R13 -25.76     R14 -51.41     R15 --50.70
```

:

```
= 57.78 lm      : 45.66 lm/W    e = 818.8 mW
(umol/s): 5.162e-004[380~500nm] 1.186e-003[500~600nm] 4.463e+000[600~780nm]
=4.465e+000umol/s      =6.07e+003      =6.470e-001
400~700nm : PPF: 4.463 μmol/s
            PRF: 818.63mW
            Eff (PPF): 3.53 μmol/s/W
```

:

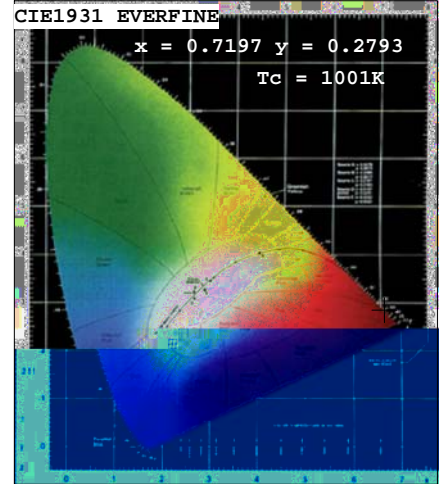
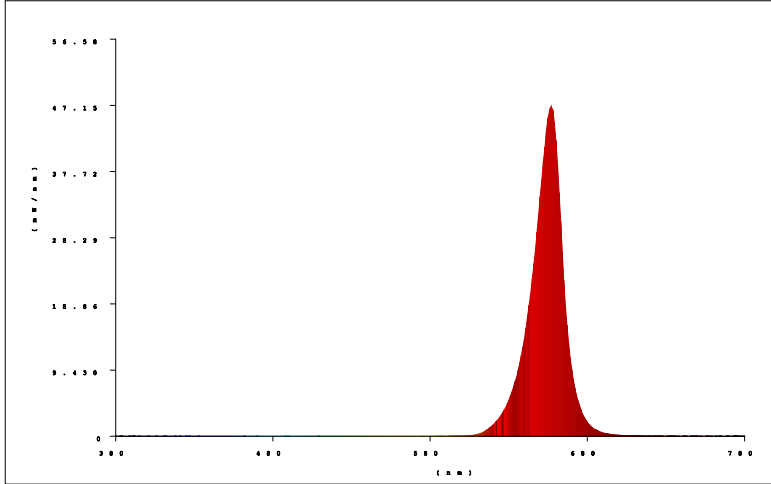
```
VF = 2.108 V      IF = 600.3 mA      P = 1266 mW
: ** [OUT]      : OUT
```

: T=20.00ms Ip=45866 (70%) [ HAAS1200\_V1\_USB ] V2.00.288

```
: 5#      : 14
: DAMIN   : 2021-01-26 11-30
: 25.3    : 65.0%
: EVERFINE : 5
: damin
: LED300 + HAAS1200_V1_USB
```

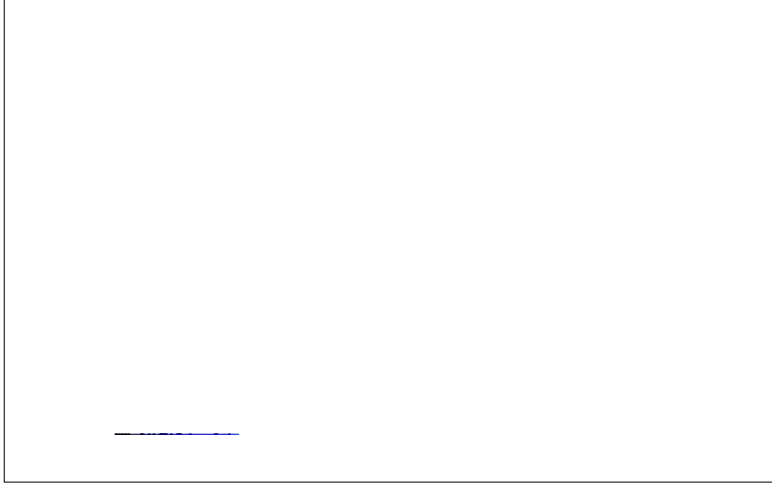




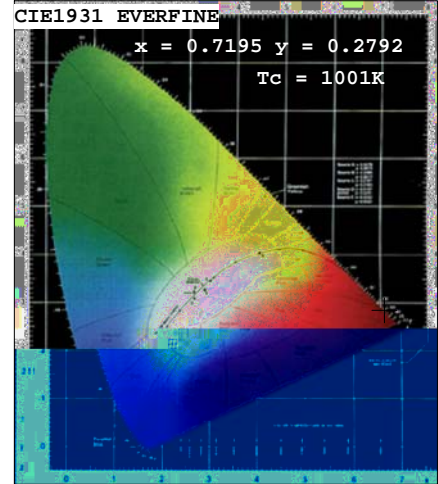
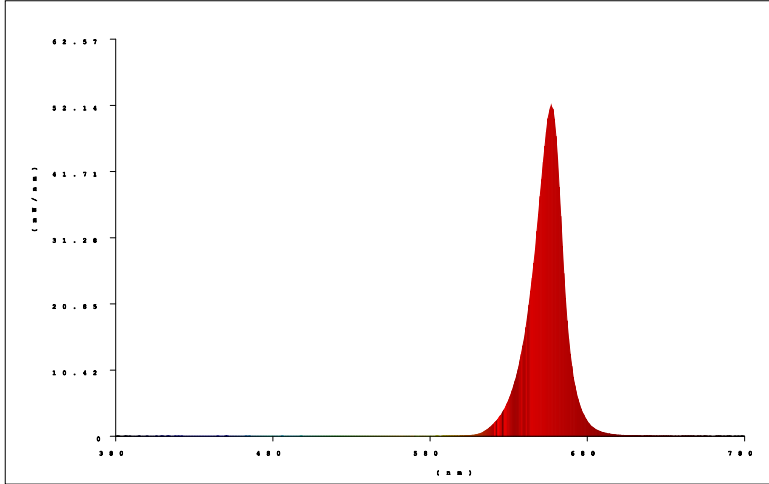


:

( 2 ) :  $x = 0.7197$   $y = 0.2793$  /  $u' = 0.5860$   $v' = 0.5117$   $duv = -1.388e-001$   
 :  $T_c = 1001K$  :  $\lambda$







:

( 2 ) : x = 0.7195 y = 0.2792 / u' = 0.5860 v' = 0.5116 duv = -1.387e-001

: Tc = 1001K :  $\lambda_d = 642.2 \text{ nm}$  : Purity = 99.6%

: R = 99.6% G = 0.4% B = 0.0% :  $\lambda_p = 657.2 \text{ nm}$  :  $\Delta\lambda_d = 19.4 \text{ nm}$

: Ra = 6.7 AvgR = -2.7 Kred = 99.09%

R1 = -2.18	R2 = -78.87	R3 = -21.98	R4 = -33.46	R5 = -3.87
R6 = -85.67	R7 = -2.68	R8 = -94.76	R9 = -273.78	R10 = 76.43
R11 = -18.43	R12 = 84.32	R13 = 29.66	R14 = 52.92	R15 = -44.90

:

= 85.23 lm : 41.72 lm/W e = 1220 mW

(umol/s): 2.773e-003[380~500nm] 3.534e-003[500~600nm] 6.647e+000[600~780nm]

= 6.653e+000umol/s = 1.66e+003 = 5.967e-001

400 ~ 700 nm : PPF : 6.6369  $\mu\text{mol/s}$

PRF : 1217 mW

Eff (PPF) : 3.25  $\mu\text{mol/s/W}$

:

Vf = 2.269 V

If = 900.2 mA

P = 2043 mW

: \*\* [OUT]

: OUT

: T=15.00ms Ip=49452 (75%) [ HAAS1200\_V1\_USB ] V2.00.288

: 5 #

: 19

: DAMIN

: 2021-01-26 11-31

: 25.3

: 65.0%

: EVERFINE

