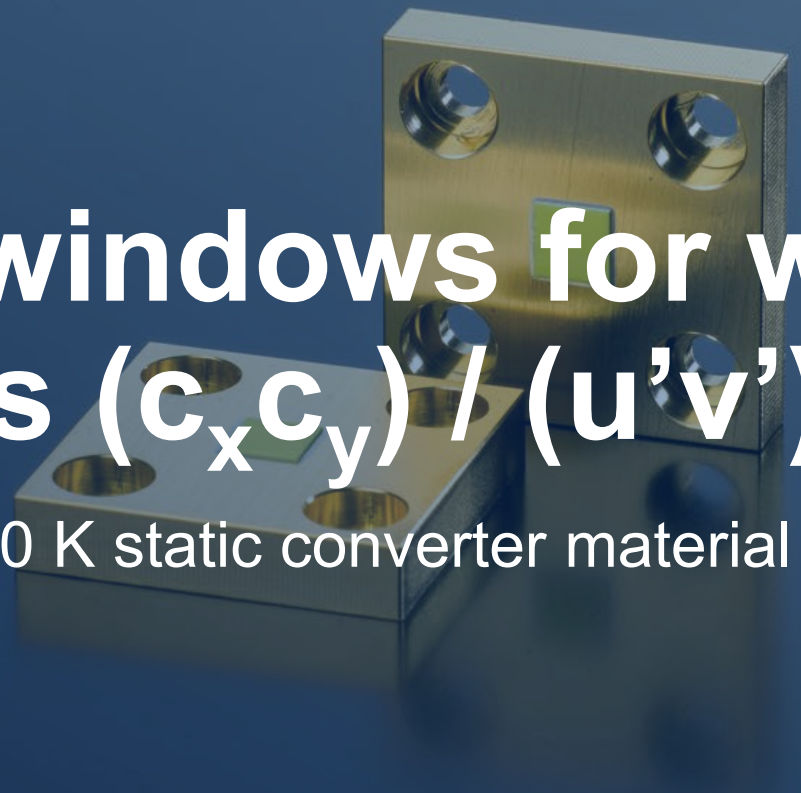
SCHOTT
glass made of ideas



# Tolerance windows for white color coordinates ($c_x c_y$) / (u'v')

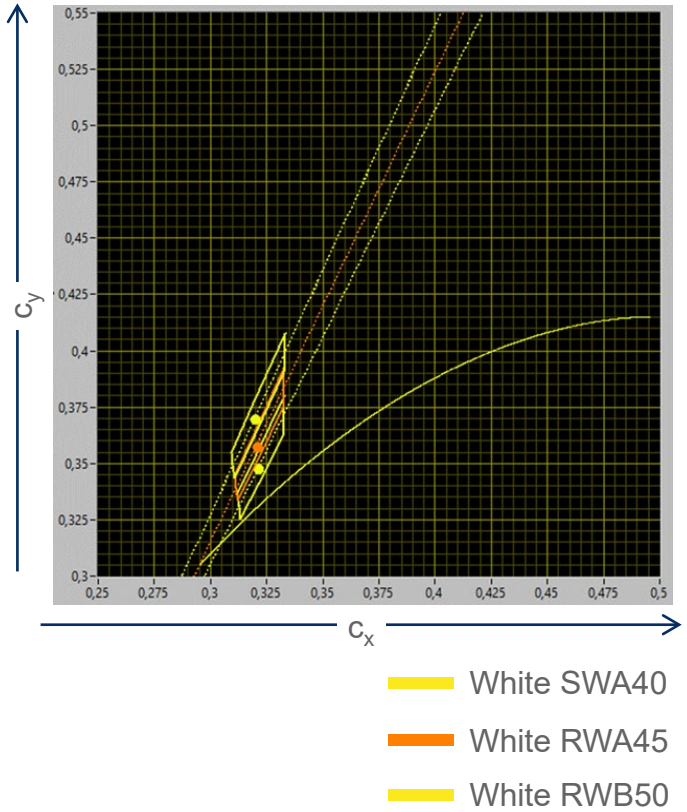
White 6,000 K and 5,000 K static converter material

# Visualization of spec - CIE 1931 ($c_x c_y$) color coordinates

## White 6,000 K material

- The material is specified in the CIE 1931 color space.
- Correlated color temperature (CCT) of the material is 6,000 K (- 500 K / + 500 K).
- All colors that can possibly be created by mixing the emission spectrum of the material with the blue laser spectrum define the „color line“ of the respective material. These define the height of the spec window.

| 150 µm die thickness | White SWA40 | | White RWA45 | | White RWB50 | |
|---|---|---|---|---|---|---|
| | ($c_x$) | ($c_y$) | ($c_x$) | ($c_y$) | ($c_x$) | ($c_y$) |
| **White color coordinates** | 0.3195 | 0.3699 | 0.3204 | 0.3580 | 0.3210 | 0.3479 |
| **Tolerance window** | 0.3330 | 0.4076 | 0.3329 | 0.3923 | 0.3328 | 0.3795 |
| | 0.3093 | 0.3548 | 0.3107 | 0.3449 | 0.3118 | 0.3363 |
| | 0.3108 | 0.3436 | 0.3122 | 0.3337 | 0.3133 | 0.3253 |
| | 0.3329 | 0.3904 | 0.3327 | 0.3757 | 0.3327 | 0.3634 |
| | 0.3330 | 0.4076 | 0.3329 | 0.3923 | 0.3328 | 0.3795 |




www.schott.com/ceramic-converter



SCHOTT
glass made of ideas

# Spec - CIE 1976 (u‘v‘) color coordinates

## White 6,000 K material

- The CIE 1976 has an improved uniformity of the chromaticity scale.
- Advantage with respect to CIE 1931:
  - Distances between color coordinates reflect the human ability to distinguish colors.

| 150 µm die thickness | White SWA40 | | White RWA45 | | White RWB50 | |
|---|---|---|---|---|---|---|
| | (u‘) | (v‘) | (u‘) | (v‘) | (u‘) | (v‘) |
| **White color coordinates** | 0.18798 | 0.32639 | 0.19255 | 0.32274 | 0.19659 | 0.31952 |
| **Tolerance window** | 0.18438 | 0.33847 | 0.18909 | 0.33427 | 0.19324 | 0.33056 |
| | 0.18631 | 0.32066 | 0.19067 | 0.31750 | 0.19454 | 0.31469 |
| | 0.19123 | 0.31709 | 0.19572 | 0.31381 | 0.19969 | 0.31094 |
| | 0.18969 | 0.33373 | 0.19451 | 0.32941 | 0.19875 | 0.32564 |
| | 0.18438 | 0.33847 | 0.18909 | 0.33427 | 0.19324 | 0.33056 |

www.schott.com/ceramic-converter



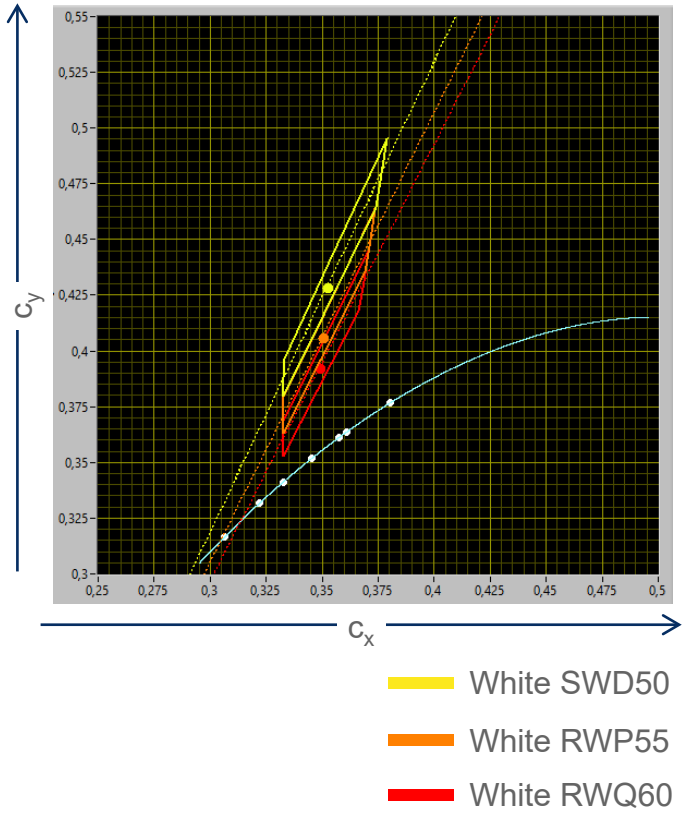
SCHOTT
glass made of ideas

# Visualization of spec - CIE 1931 ($c_x c_y$) color coordinates

## White 5,000 K material

- The material is specified in the CIE 1931 color space.
- Correlated color temperature (CCT) of the material is 5,000 K (- 400 K / + 500 K).
- All colors that can possibly be created by mixing the emission spectrum of the material with the blue laser spectrum define the „color line“ of the respective material. These define the height of the spec window.

| 150 µm die thickness | White SWD50 | | White RWP55 | | White RWQ60 | |
|---|---|---|---|---|---|---|
| | ($c_x$) | ($c_y$) | ($c_x$) | ($c_y$) | ($c_x$) | ($c_y$) |
| **White color coordinates** | 0.3520 | 0.4286 | 0.3500 | 0.4063 | 0.3488 | 0.3926 |
| **Tolerance window** | 0.3787 | 0.4952 | 0.3738 | 0.4640 | 0.3708 | 0.4450 |
| | 0.3330 | 0.3965 | 0.3328 | 0.3795 | 0.3327 | 0.3688 |
| | 0.3328 | 0.3797 | 0.3326 | 0.3633 | 0.3326 | 0.3530 |
| | 0.3739 | 0.4645 | 0.3692 | 0.4354 | 0.3664 | 0.4178 |
| | 0.3787 | 0.4952 | 0.3738 | 0.4640 | 0.3708 | 0.4450 |




www.schott.com/ceramic-converter



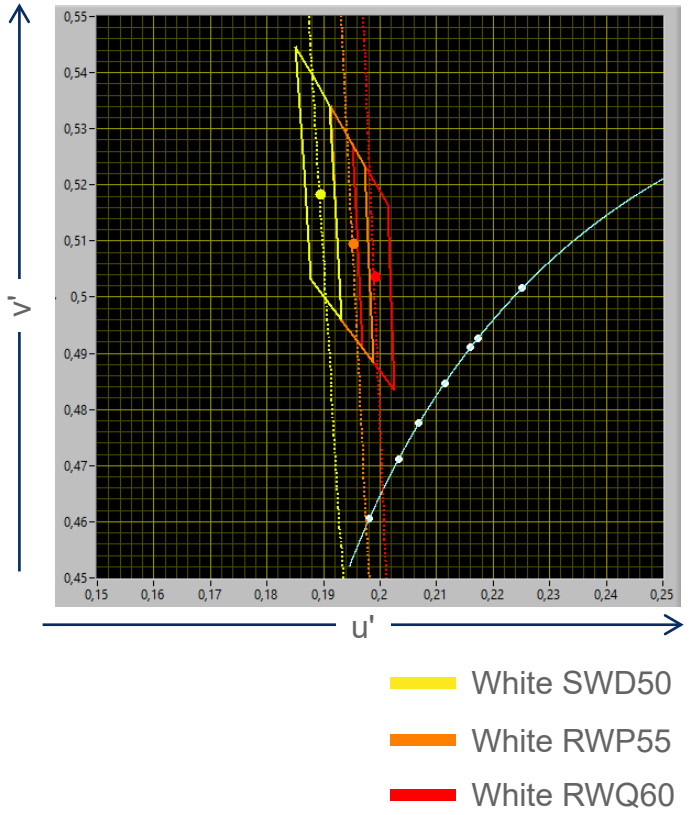
SCHOTT
glass made of ideas

# Visualization of spec - CIE 1976 (u‘v‘) color coordinates

## White 5,000 K material

- The CIE 1976 has an improved uniformity of the chromaticity scale.
- Advantage with respect to CIE 1931:
  - Distances between color coordinates reflect the human ability to distinguish colors.

| 150 µm die thickness | White SWD50 | | White RWP55 | | White RWQ60 | |
|---|---|---|---|---|---|---|
| | (u‘) | (v‘) | (u‘) | (v‘) | (u‘) | (v‘) |
| White color coordinates | 0.18930 | 0.51851 | 0.19512 | 0.50961 | 0.19895 | 0.50378 |
| Tolerance window | 0.18508 | 0.54451 | 0.19119 | 0.53398 | 0.19518 | 0.52708 |
| | 0.18779 | 0.50315 | 0.19326 | 0.49581 | 0.19687 | 0.49099 |
| | 0.19317 | 0.49593 | 0.19876 | 0.48842 | 0.20245 | 0.48350 |
| | 0.19108 | 0.53416 | 0.19727 | 0.52343 | 0.20131 | 0.51645 |
| | 0.18508 | 0.54451 | 0.19119 | 0.53398 | 0.19518 | 0.52708 |




www.schott.com/ceramic-converter



SCHOTT
glass made of ideas