ARGOLIGHT
A Precision Company

Daybook Data Manager
version 1.7.0

# Report title

Report reference: R-2021-08-01
Edition date: 2024-01-02 16:41:12
Monitoring time range: 2023-12-08 to 2024-01-02
Edited by: Ernst Abbe
Validated by: Galileo Galilei

## System & Acquisition profile used for this report

| Microscope | Axio Imager 2 (Zeiss) Axio Imager 2 | | | |
|---|---|---|---|---|
| Acquisition profile | Profile 1 | | | |
| Product used | Argo-HM Argolight (Argo-HM Argo-HM) | | | |
| Channel | Objective | Filter | Light source | Detector |
| ● DAPI | 5x/0.25<br>Air - Fluar<br>5x/0.25 | DAPI<br>Filter cube set<br>X: 359/20 nm<br>M: 445/25 nm | LED 470 nm<br>LED<br>N/A %<br>470 nm | Orca Flash 4.0 LT<br>sCMOS<br>Binning 1x1<br>488 nm |

## Comments

Editor:

Validator:

# 1. Field Uniformity

## 1.1. Primary metrics

| Date | Centering Accuracy | Roll Off Of The Pink Diagonal Profile | Roll Off Of The Purple Diagonal Profile | Coefficient Of Variation | Field Uniformity |
|---|---|---|---|---|---|
| 2024-01-02 14:29:04 | 72.98 % | 21.78 % | 19.47 % | 5.43 % | 74.63 % |

Table 1: Primary metrics for the 'Field Uniformity' at different dates.

## 1.2. Line charts

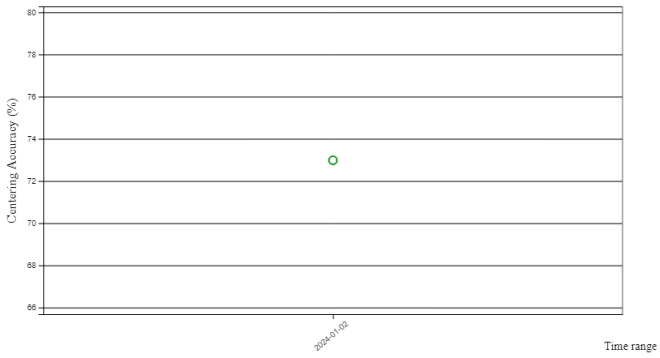


Figure 1: 'Centering Accuracy' metric over time.

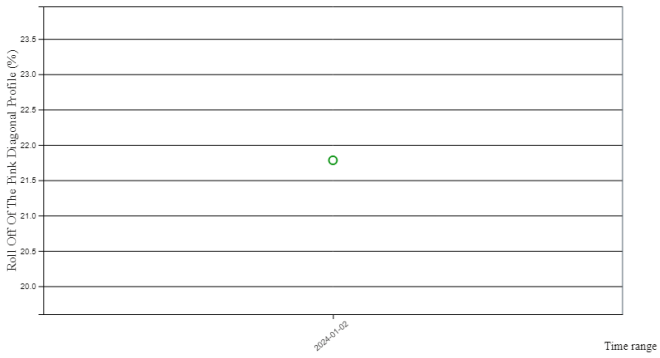


Figure 2: 'Roll Off Of The Pink Diagonal Profile' metric over time.

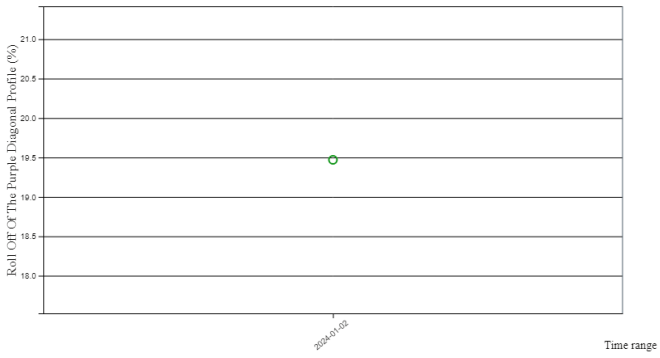


Figure 3: 'Roll Off Of The Purple Diagonal Profile' metric over time.

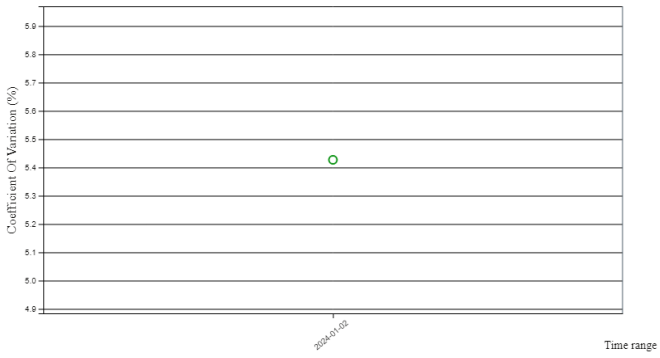


Figure 4: 'Coefficient Of Variation' metric over time.

# 2. Field Distortion

## 2.1. Primary metrics

| Date | Geometric Distortion Rate | Maximum Distortion Rate Along X | Maximum Distortion Rate Along Y | Maximum Of The Vector Magnitudes |
|---|---|---|---|---|
| 2024-01-02 14:29:04 | -0.11 % | 0.2 % | 0.2 % | 3.9706 px |

Table 2: Primary metrics for the 'Field Distortion' at different dates.

## 2.2. Line charts

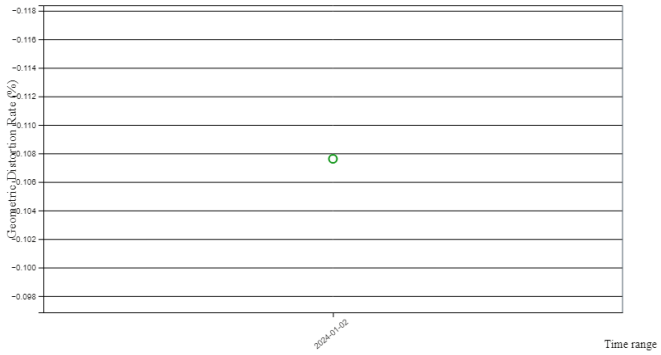


Figure 6: 'Geometric Distortion Rate' metric over time.

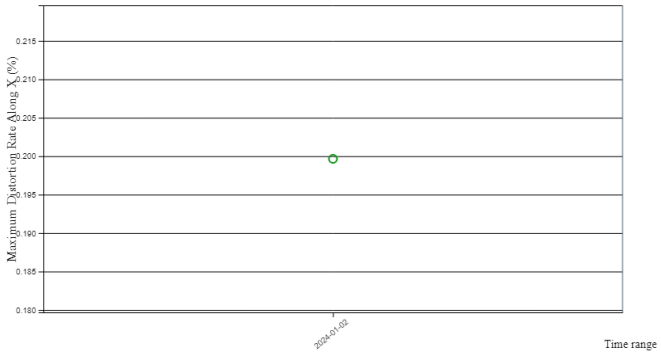


Figure 7: 'Maximum Distortion Rate Along X' metric over time.

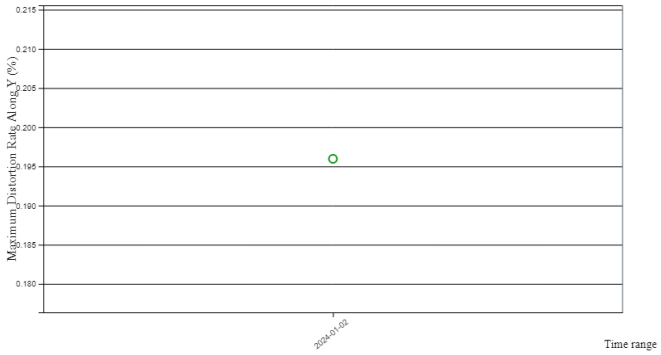


Figure 8: 'Maximum Distortion Rate Along Y' metric over time.

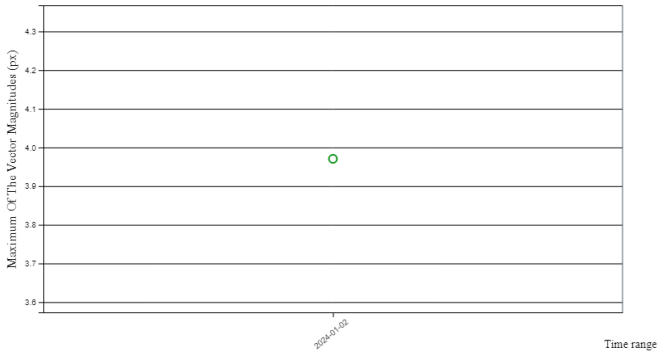


Figure 9: 'Maximum Of The Vector Magnitudes' metric over time.

# 3. Lateral Co Registration Accuracy - Ch1 vs GFP

## 3.1. Primary metrics

| Date | Pearson Correlation Coefficient | Maximum Of The Vector Magnitudes |
|---|---|---|
| 2024-01-02 14:29:12 | 0.9349 unitless | 3.3401 px |

Table 3: Primary metrics for the 'Lateral Co Registration Accuracy - Ch1 vs GFP' at different dates.

## 3.2. Line charts

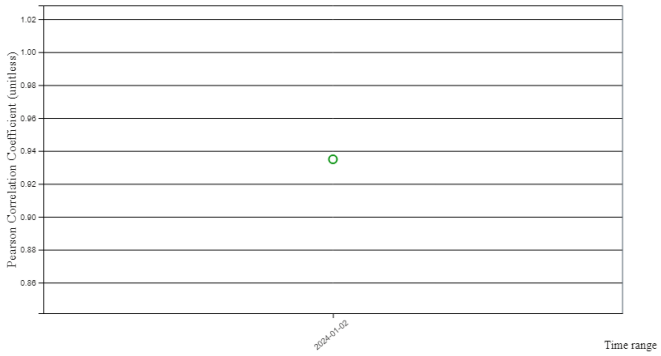


Figure 10: 'Pearson Correlation Coefficient' metric over time.

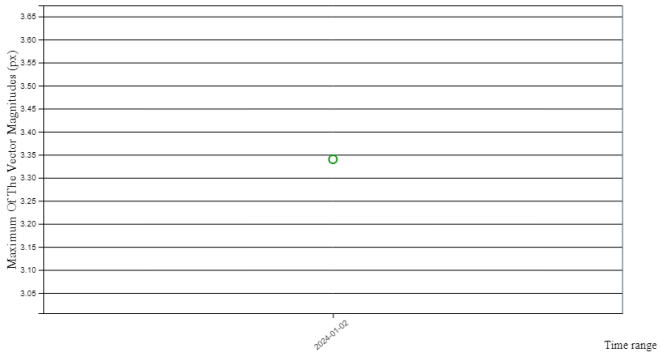


Figure 11: 'Maximum Of The Vector Magnitudes' metric over time.

# 4. Line Spread Function

## 4.1. Primary metrics

| Date | FWHM Of The Left Curve In The Horizontal Profile | FWHM Of The Left Curve In The Vertical Profile | FWHM Of The Right Curve In The Horizontal Profile | FWHM Of The Right Curve In The Vertical Profile | SNR In The Horizontal Profile | SNR In The Vertical Profile |
|---|---|---|---|---|---|---|
| 2024-01-02 14:29:24 | 0.4877 µm | 0.4565 µm | 0.4256 µm | 0.4328 µm | 33.39 unitless | 36.08 unitless |

Table 4: Primary metrics for the 'Line Spread Function' at different dates.

## 4.2. Line charts

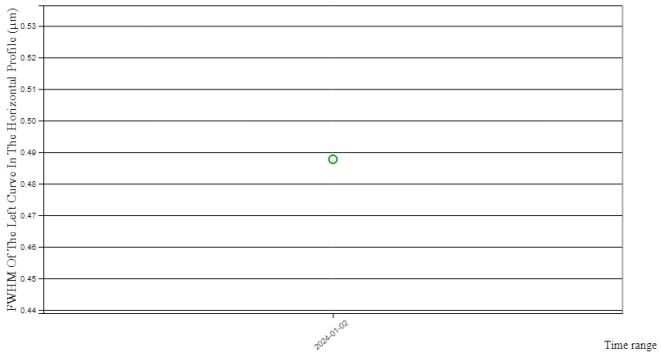


Figure 12: 'FWHM Of The Left Curve In The Horizontal Profile' metric over time.


Figure 13: 'FWHM Of The Left Curve In The Vertical Profile' metric over time.

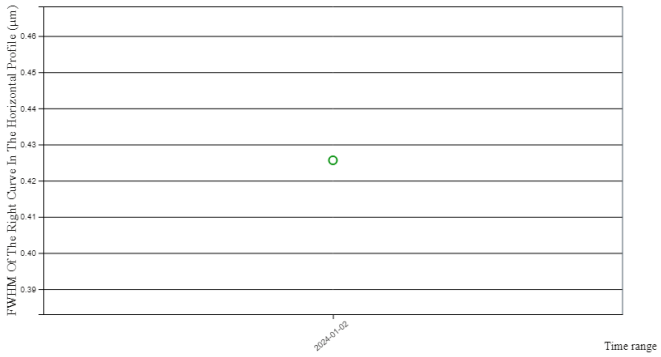


Figure 14: 'FWHM Of The Right Curve In The Horizontal Profile' metric over time.

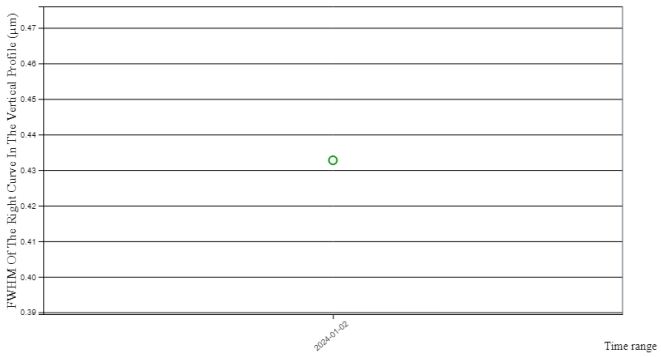


Figure 15: 'FWHM Of The Right Curve In The Vertical Profile' metric over time.

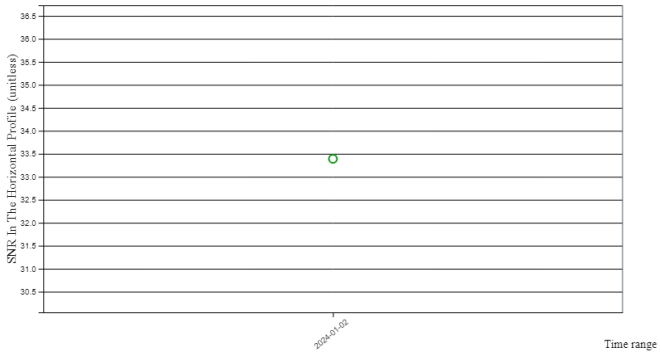


Figure 16: 'SNR In The Horizontal Profile' metric over time.

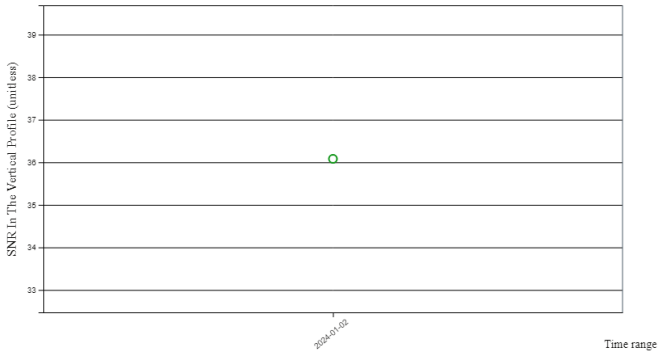


Figure 17: 'SNR In The Vertical Profile' metric over time.

# 5. Ring Spread Function

## 5.1. Primary metrics

| Date | FWHM Of The Left Curve In The Horizontal Profile | FWHM Of The Left Curve In The Vertical Profile | FWHM Of The Right Curve In The Horizontal Profile | FWHM Of The Right Curve In The Vertical Profile | SNR In The Horizontal Profile | SNR In The Vertical Profile |
|---|---|---|---|---|---|---|
| 2024-01-02 14:29:31 | 0.5534 µm | 0.5955 µm | 0.6108 µm | 0.5991 µm | 29.95 unitless | 31.53 unitless |

Table 5: Primary metrics for the 'Ring Spread Function' at different dates.

## 5.2. Line charts

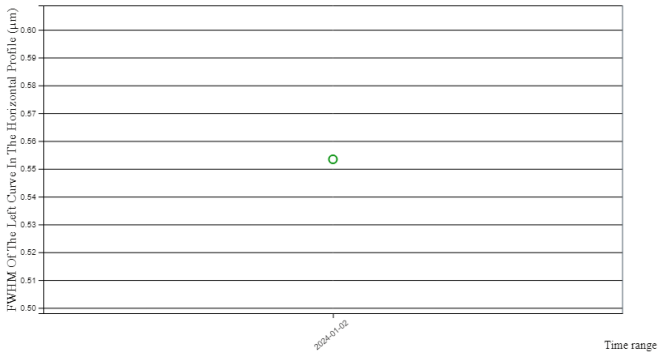


Figure 18: 'FWHM Of The Left Curve In The Horizontal Profile' metric over time.

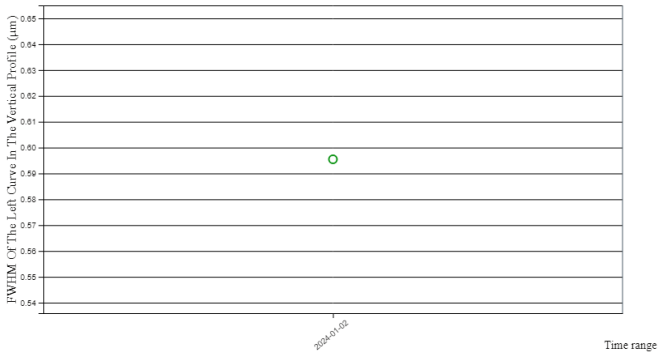


Figure 19: 'FWHM Of The Left Curve In The Vertical Profile' metric over time.

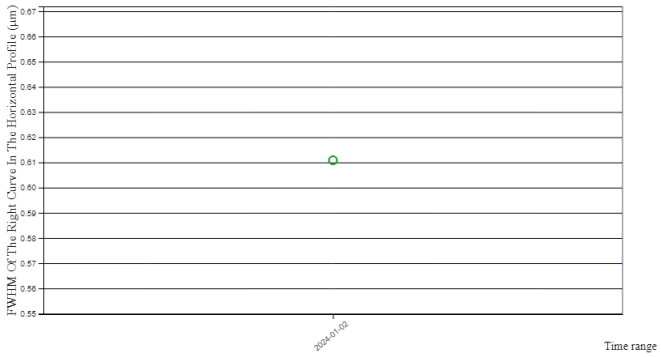


Figure 20: 'FWHM Of The Right Curve In The Horizontal Profile' metric over time.

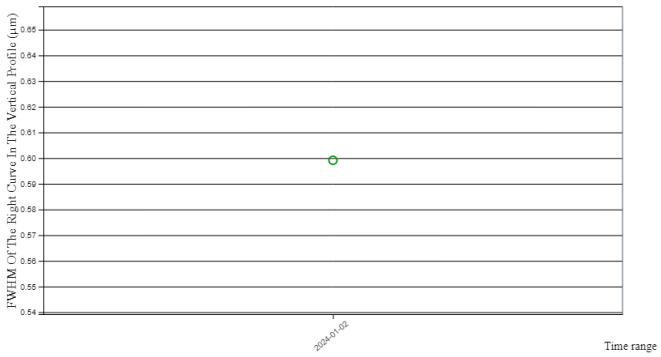


Figure 21: 'FWHM Of The Right Curve In The Vertical Profile' metric over time.


Figure 22: 'SNR In The Horizontal Profile' metric over time.

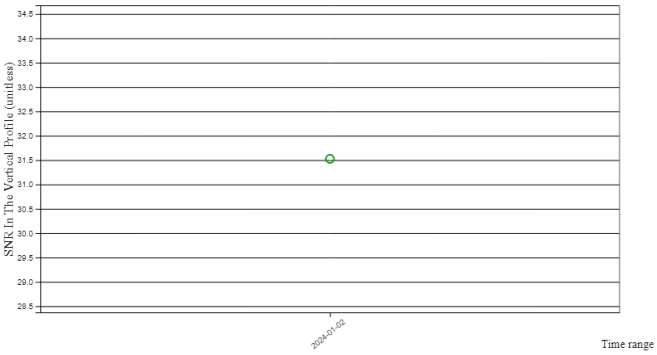


Figure 23: 'SNR In The Vertical Profile' metric over time.

# 6. Lateral Resolution - horizontal

## 6.1. Primary metrics

| Date | Lateral Resolution | Lateral Resolution At Zero Contrast | SNR |
|---|---|---|---|
| 2024-01-02 14:29:22 | 0.4365 µm | 0.3029 µm | 105.27 unitless |

Table 6: Primary metrics for the 'Lateral Resolution - horizontal' at different dates.

## 6.2. Line charts

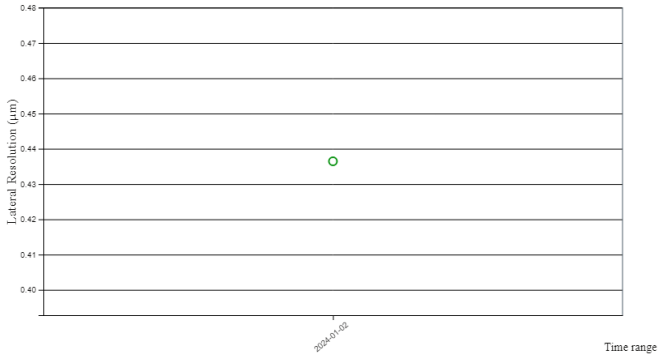


Figure 24: 'Lateral Resolution' metric over time.

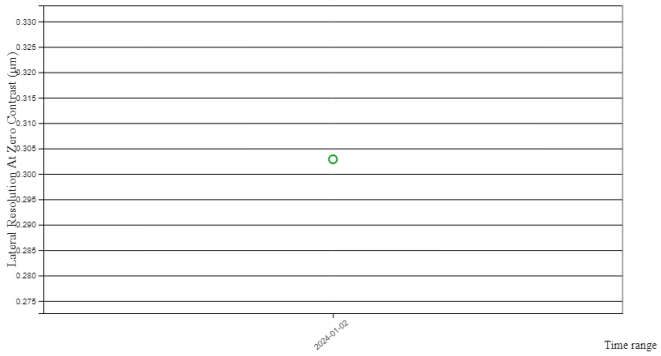


Figure 25: 'Lateral Resolution At Zero Contrast' metric over time.

# 7. Optical Sectioning Strength

## 7.1. Primary metrics

| Date | Optical Sectioning Strength | Optical Sectioning Strength at 50 contrast |
|---|---|---|
| 2024-01-02 14:29:27 | 2.157 µm | N/A |

Table 7: Primary metrics for the 'Optical Sectioning Strength' at different dates.

## 7.2. Line charts

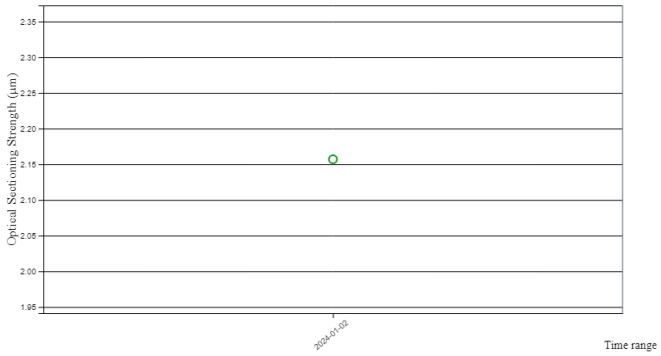


Figure 27: 'Optical Sectioning Strength' metric over time.

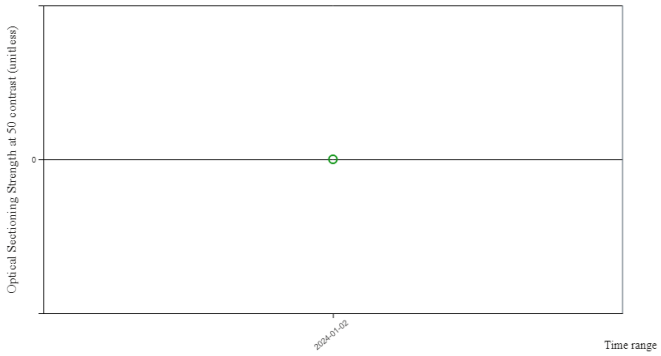


Figure 28: 'Optical Sectioning Strength at 50 contrast ' metric over time.

# 8. Stage Repositioning Repeatability

## 8.1. Primary metrics

| Date | Maximum Of The Drifts Along XWrt Reference Position | Maximum Of The Drifts Along YWrt Reference Position | Maximum Of The Drift Magnitudes Wrt Reference Position |
|---|---|---|---|
| 2023-12-08 10:11:23 | -12.9473 px | 28.2519 px | 31.4667 px |
| 2024-01-02 14:29:42 | -12.9473 px | 28.2519 px | 31.4667 px |

Table 8: Primary metrics for the 'Stage Repositioning Repeatability' at different dates.

## 8.2. Line charts

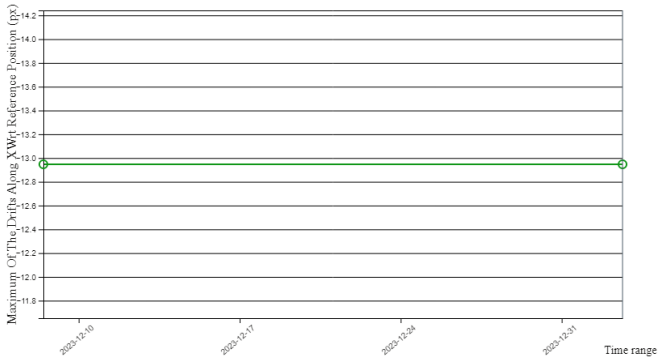


Figure 29: 'Maximum Of The Drifts Along XWrt Reference Position' metric over time.

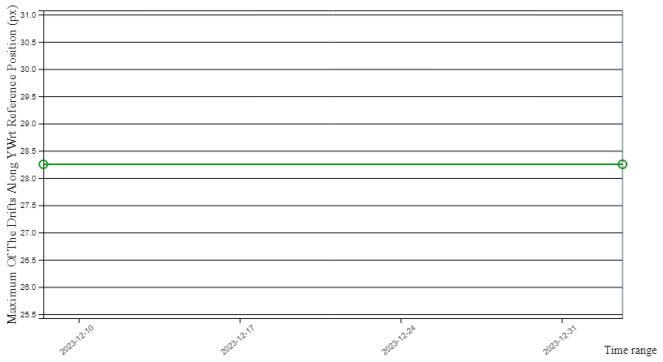


Figure 30: 'Maximum Of The Drifts Along YWrt Reference Position' metric over time.

# 9. Stage Drift During Timelapse

## 9.1. Primary metrics

| Date | Maximum Of The Drifts Along XWrt Reference Position | Maximum Of The Drifts Along YWrt Reference Position | Maximum Of The Drift Magnitudes Wrt Reference Position |
|---|---|---|---|
| 2024-01-02 14:29:38 | -4.4457 px | 15.964 px | 17.3449 px |

Table 9: Primary metrics for the 'Stage Drift During Timelapse' at different dates.

## 9.2. Line charts

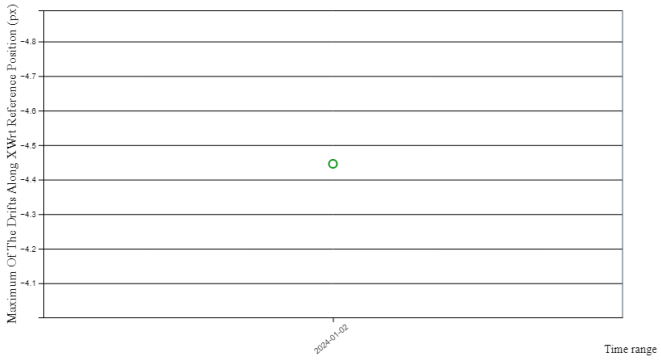


Figure 32: 'Maximum Of The Drifts Along XWrt Reference Position' metric over time.

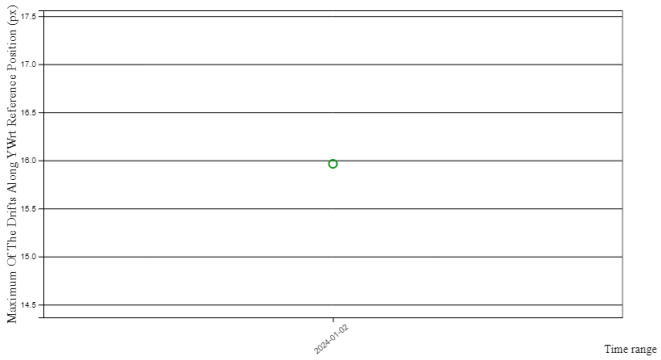


Figure 33: 'Maximum Of The Drifts Along YWrt Reference Position' metric over time.

# 10. Stage Drift During Z Stacking

## 10.1. Primary metrics

| Date | Maximum Of The Drifts Along XWrt Reference Position | Maximum Of The Drifts Along YWrt Reference Position | Maximum Of The Drift Magnitudes Wrt Reference Position |
|---|---|---|---|
| 2024-01-02 14:29:34 | 0.07 px | 0.6949 px | 0.7267 px |

Table 10: Primary metrics for the 'Stage Drift During Z Stacking' at different dates.

## 10.2. Line charts

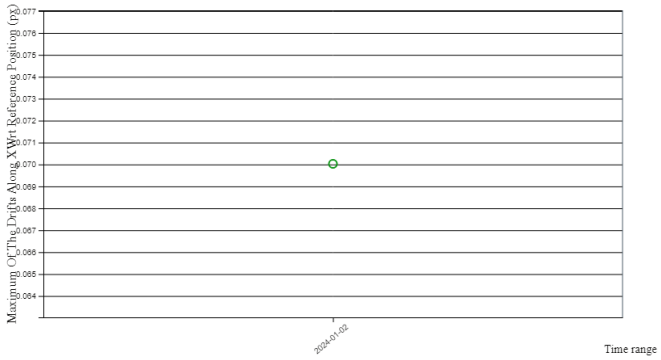


Figure 35: 'Maximum Of The Drifts Along XWrt Reference Position' metric over time.

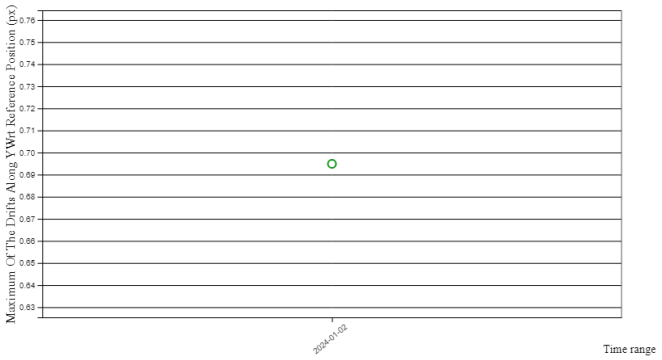


Figure 36: 'Maximum Of The Drifts Along YWrt Reference Position' metric over time.

# 11. Accuracy Of 3D Reconstruction

## 11.1. Primary metrics

| Date | Difference Between The Measured And Expected Ratio |
|---|---|
| 2024-01-02 14:28:56 | N/A |

Table 11: Primary metrics for the 'Accuracy Of 3D Reconstruction' at different dates.

## 11.2. Line charts

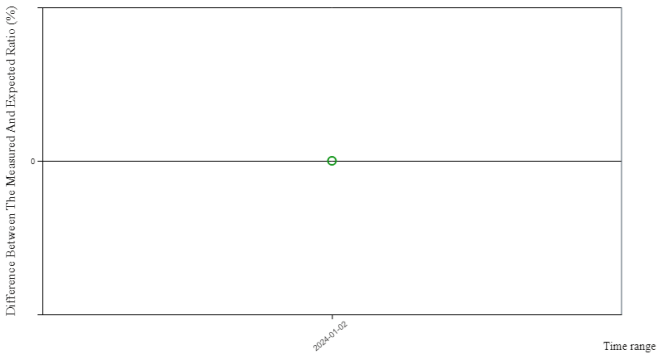


Figure 38: 'Difference Between The Measured And Expected Ratio' metric over time.

# 12. Intensity Response 4x4

## 12.1. Primary metrics

| Date | Pattern Dynamic Range | Intensity Maximum | Intensity Minimum | Coefficient Of Determination Of The Actual Intensity Response |
|---|---|---|---|---|
| 2024-01-02 14:29:09 | 5.79 unitless | 29651 a.u. | 5119 a.u. | 0.9879 unitless |

Table 12: Primary metrics for the 'Intensity Response 4x4' at different dates.

## 12.2. Line charts

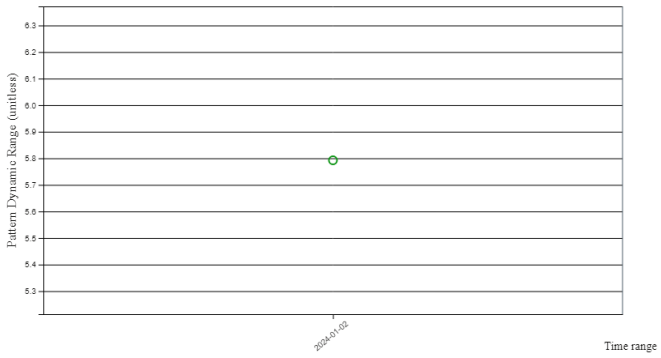


Figure 39: 'Pattern Dynamic Range' metric over time.

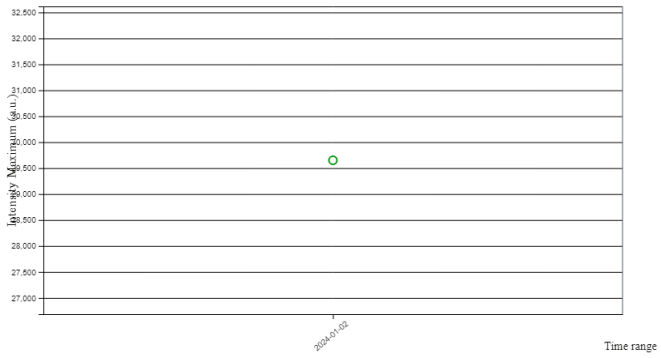


Figure 40: 'Intensity Maximum' metric over time.

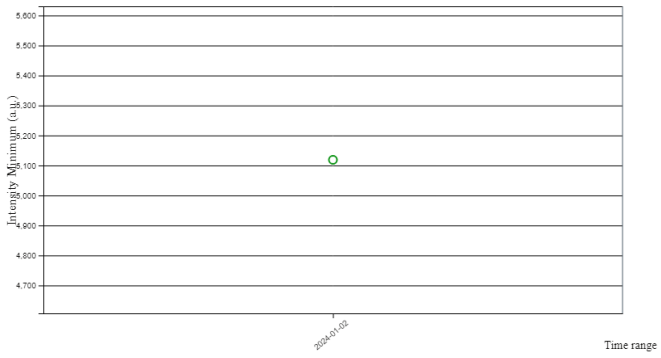


Figure 41: 'Intensity Minimum' metric over time.

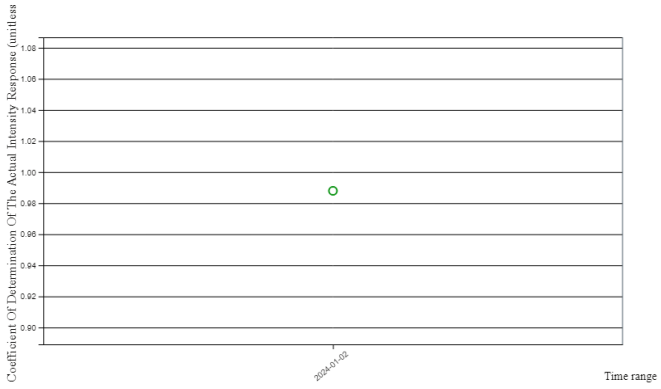


Figure 42: 'Coefficient Of Determination Of The Actual Intensity Response' metric over time.

# 13. Intensity Response 2x16

## 13.1. Primary metrics

| Date | Pattern Dynamic Range | Intensity Maximum | Intensity Minimum | Coefficient Of Determination Of The Actual Intensity Response | Pearson Correlation Coefficient Of The Actual Intensity Response |
|---|---|---|---|---|---|
| 2024-01-02 14:29:07 | 5.76 unitless | 27548 a.u. | 4780 a.u. | 0.9871 unitless | N/A |

Table 13: Primary metrics for the 'Intensity Response 2x16' at different dates.

## 13.2. Line charts

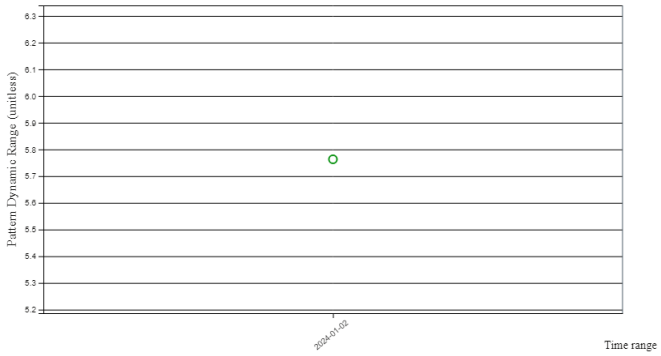


Figure 43: 'Pattern Dynamic Range' metric over time.

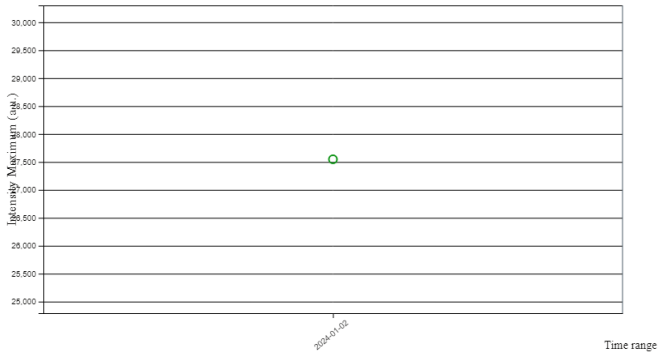


Figure 44: 'Intensity Maximum' metric over time.

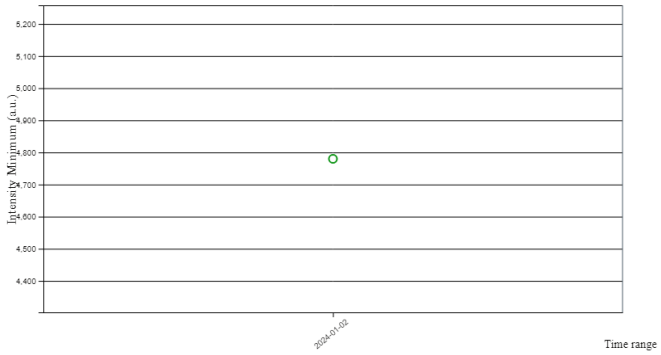


Figure 45: 'Intensity Minimum' metric over time.

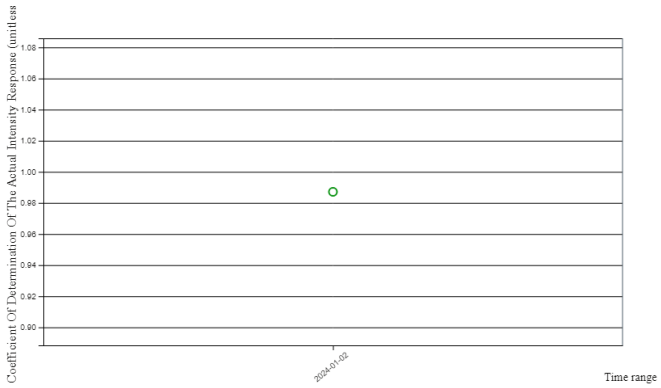


Figure 46: 'Coefficient Of Determination Of The Actual Intensity Response' metric over time.

# 14. Accuracy Of Co Registration - Ch1 vs GFP

## 14.1. Primary metrics

| Date | Pearson Correlation Coefficient Lateral | Pearson Correlation Coefficient Axial | Manders Overlap Coefficient Lateral | Manders Overlap Coefficient Axial | Vector Magnitude Lateral | Vector Magnitude Axial |
|---|---|---|---|---|---|---|
| 2024-01-02 15:08:24 | 0.9063 unitless | 0.8581 unitless | 0.9484 unitless | 0.9059 unitless | 1.0281 px | 1.9869 px |

Table 14: Primary metrics for the 'Accuracy Of Co Registration - Ch1 vs GFP' at different dates.

## 14.2. Line charts

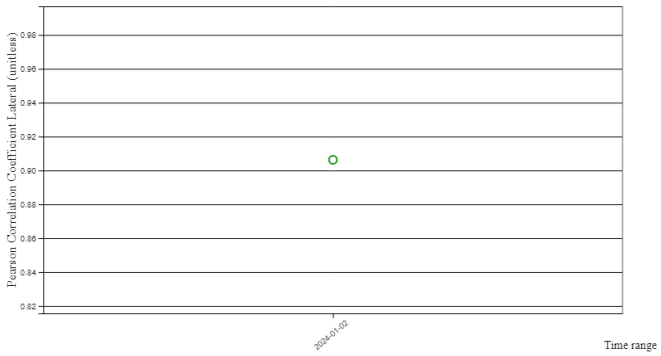


Figure 48: 'Pearson Correlation Coefficient Lateral' metric over time.

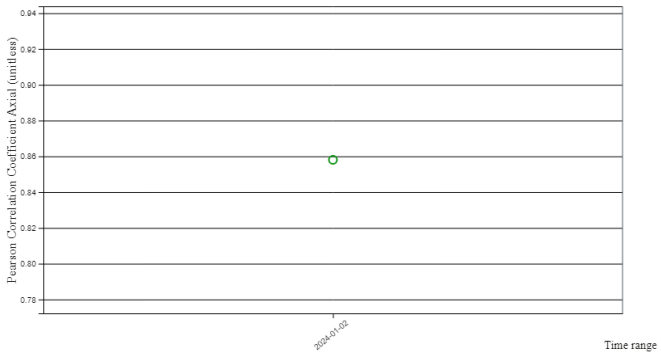


Figure 49: 'Pearson Correlation Coefficient Axial' metric over time.

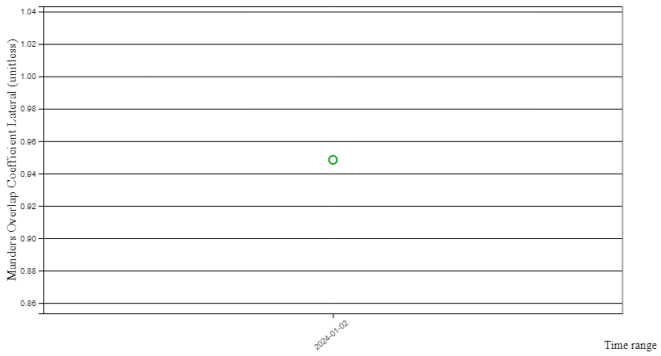


Figure 50: 'Manders Overlap Coefficient Lateral' metric over time.

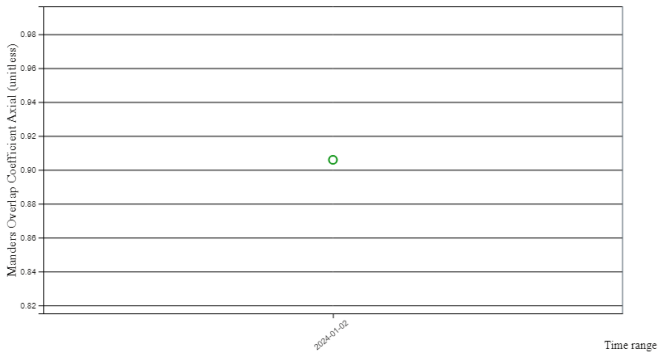


Figure 51: 'Manders Overlap Coefficient Axial' metric over time.

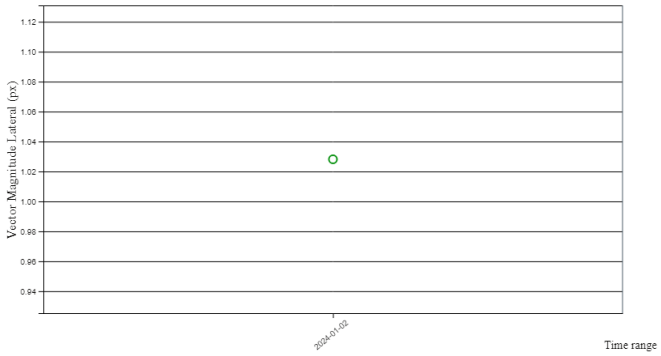


Figure 52: 'Vector Magnitude Lateral' metric over time.

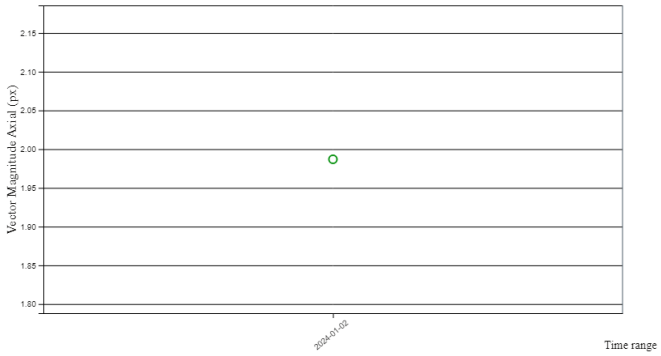


Figure 53: 'Vector Magnitude Axial' metric over time.

# 15. Point Spread Function

## 15.1. Primary metrics

| Date | FWHM Of The Fitting Function Along X | FWHM Of The Fitting Function Along Y | FWHM Of The Fitting Function Along Z | SNR In The Profile Along X | SNR In The Profile Along Y | SNR In The Profile Along Z |
|---|---|---|---|---|---|---|
| 2024-01-02 15:08:26 | 0.2716 µm | 0.3081 µm | 0.6427 µm | 64.21 unitless | 50.18 unitless | 46.33 unitless |

Table 15: Primary metrics for the 'Point Spread Function' at different dates.

## 15.2. Line charts

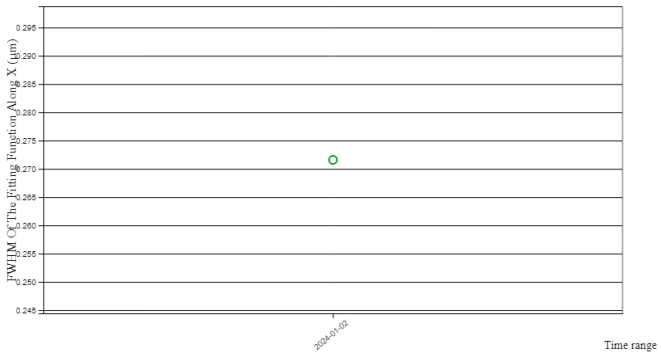


Figure 54: 'FWHM Of The Fitting Function Along X' metric over time.

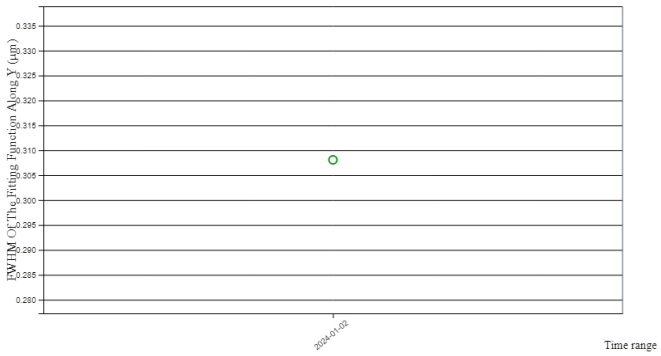


Figure 55: 'FWHM Of The Fitting Function Along Y' metric over time.

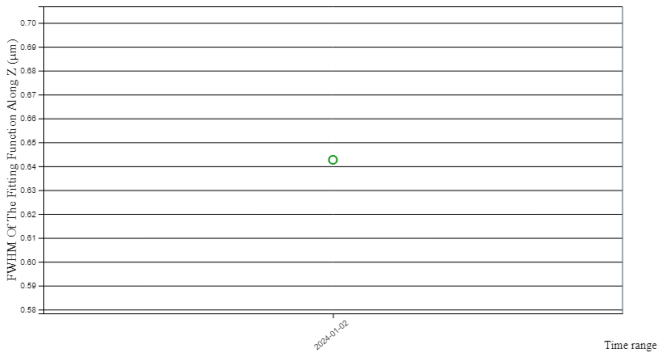


Figure 56: 'FWHM Of The Fitting Function Along Z' metric over time.

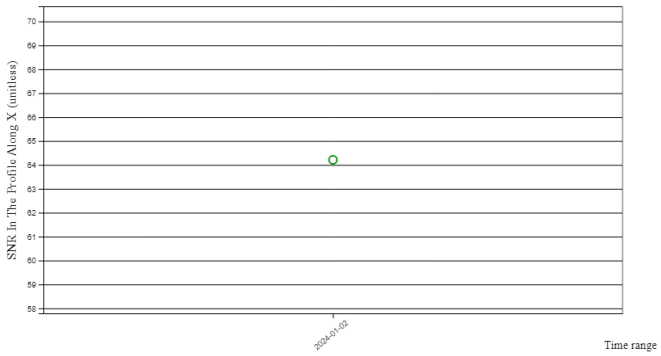


Figure 57: 'SNR In The Profile Along X' metric over time.

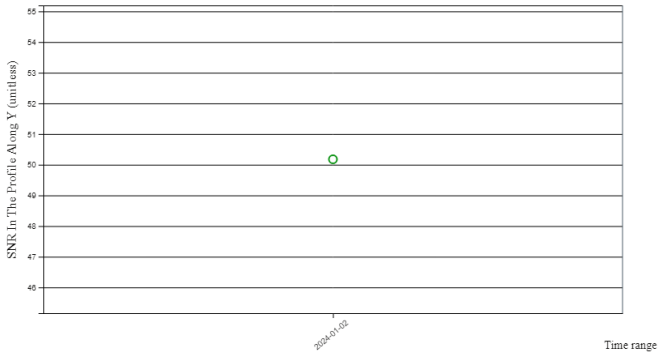


Figure 58: 'SNR In The Profile Along Y' metric over time.

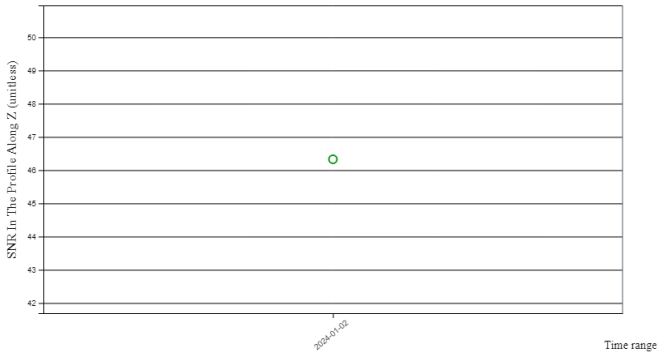


Figure 59: 'SNR In The Profile Along Z' metric over time.

# 16. Uniformity Of Field

## 16.1. Primary metrics

| Date | Centering Accuracy | Roll Off Of The Pink Diagonal Profile | Roll Off Of The Purple Diagonal Profile | Coefficient Of Variation | Field Uniformity |
|---|---|---|---|---|---|
| 2024-01-02 15:08:29 | 66.23 % | 24.36 % | 28.5 % | N/A | 71.39 % |

Table 16: Primary metrics for the 'Uniformity Of Field' at different dates.

## 16.2. Line charts

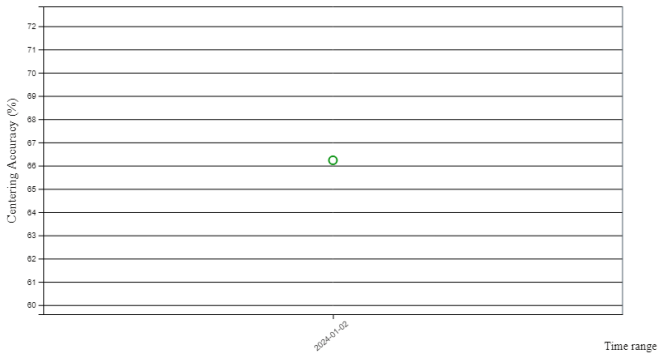


Figure 60: 'Centering Accuracy' metric over time.

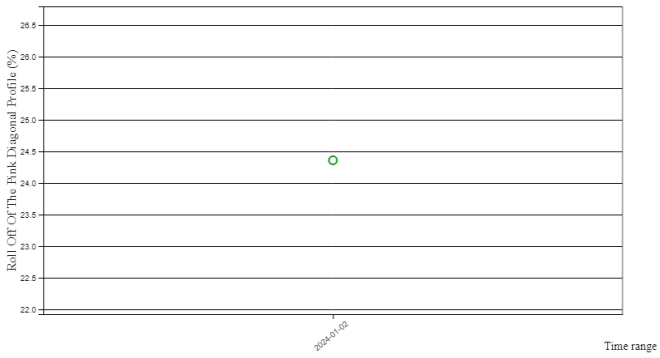


Figure 61: 'Roll Off Of The Pink Diagonal Profile' metric over time.

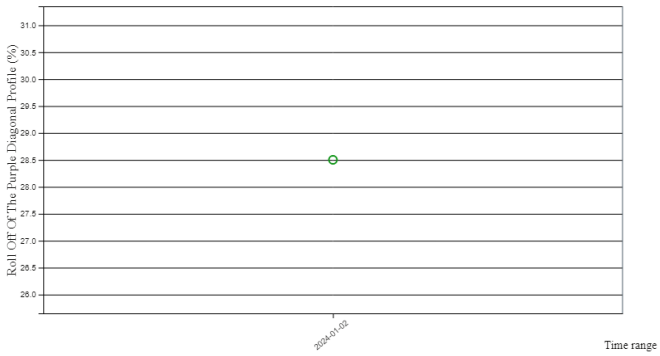


Figure 62: 'Roll Off Of The Purple Diagonal Profile' metric over time.

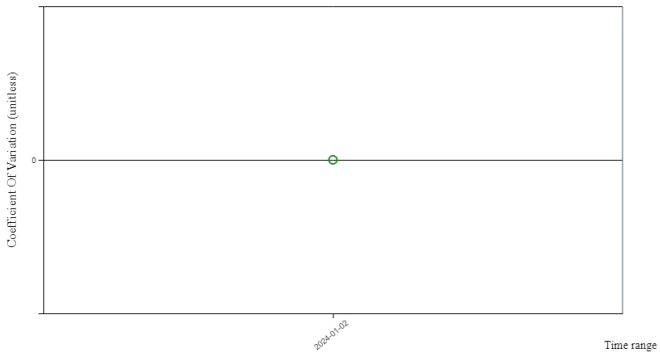


Figure 63: 'Coefficient Of Variation' metric over time.