



No	ITEM	RESULT
1	Resolution (0.175um IsoLine) Conv NA/ σ = 0.68/0.75	Customer needs to calculate using Item2 DOF Data
2	DOF (0.175um IsoLine) Conv NA/ σ = 0.68/0.75	Customer needs to calculate
3	Linewidth Abnormality/COMA (0.175um L&S) Conv NA/ σ = 0.68/0.29	0.040 μ m
4	Total Focus Deviation Conv NA/ σ = 0.68/0.75	0.202 μ m
5	Lens Astigmatism Conv NA/ σ = 0.68/0.75	-0.119 μ m
6	Lens Dynamic Distortion Conv NA/ σ = 0.68/0.75	X = -27nm~39nm Y = -19nm~64nm
7	Maximum Exposure Area	OK
8	Wafer Flatness Accuracy	1). Max-Min = 1.81 μ m 2). Max-Min = 0.800 μ m
9	Exposure Power Conv NA/ σ = 0.68/0.75	648.44mW/cm ²
10	Illumination Uniformity Conv NA/ σ = 0.68/0.75	5.19%
11	Telecentricity	15nm
12	Orthogonality Accuracy	.30urad
13	Stage Precision Accuracy 1) Stepping Accuracy 2) Backlash Accuracy	1). X: 8, 11, 10nm Y: 11, 10, 9nm 2). X: 12, 12, 13nm Y: 16, 16, 15nm
14	Wafer Pre-Alignment Repeatability	X : 4.07 μ m Y : 1.86 μ m T : 3.08 μ m

No	ITEM	RESULT
15	Synchronization Accuracy 1) Mean 2) MSD	1). X : 2nm, Y : 16nm 2). X : 10nm, Y : 34nm
16	AF Adjustment Result	0.074 μ m
17	Integrator Accuracy	Ave Max = 0.500%
18	Inclination 1) Current 2) Range	1). X = -.312urad , Y=.484urad 2). X =3urad, Y =1urad
19	Alignment Accuracy 1) FIA-EGA 2) LSA-EGA	1). X = 15nm Y = 12nm 2). X= 28nm Y = 15nm
20	IU Flare / Lens Flare Conv NA/ σ = 0.68/0.75	0.84%/6.20%
20	Operational Test 1) Wafer Transfer System 2) Reticle Transfer System	OK 1) No Error 2) No Error

Software

MCSV Ver.S3.43

OCSV Ver.S3.43

Unit Version Information numm			
Software Version MCSV : Ver.S3.43 OCSV : Ver.S3.43 TOOL : Ver.S3.71		Base Kit BASE : BASEE2A01-0101A WLDL : WLDX2A52-V340A RLDR : RLDR8_011-V470A	
Stage Controller ST-2AV6.10 STP2AV3.80 WS_2AV5.40 WS_2AV5.40 RS-2AV7.90 RF-2AV2.60 AF2A1V4.30 ZT2A1V7.W0 BL_FPv6.M0 EP-2AV5.50 AD-2AV1.60 RC_XBV6.20		SP Download Count : 25 Date : Mon Feb 25 11:53:43 2008 File : MCSV\$UNITSOFT:ST-2A.H61	FP Download Count : 16 Date : Mon Feb 25 11:58:55 2008 File : MCSV\$UNITSOFT:ST-2A.H61
Alignment Controller AL-82V9.10 AL-28V8.D0 SG-81V8.90 FL-81V7.E0		SP Download Count : 5 Date : Mon Feb 25 12:04:43 2008 File : MCSV\$UNITSOFT:AL-82.H91	FP Download Count : 35 Date : Mon Feb 25 12:07:51 2008 File : MCSV\$UNITSOFT:AL-82.H91
Operation Panel PA-82V6.10 PA-82V6.10		SP Download Count : 12 Date : Tue Jan 8 05:44:45 2002 File : MCSV\$UNITSOFT:PA-82.H61	FP Download Count : 0 Date : File :
Lens Controller LC-A1V3.90 LC_A1V3.90 IM-X5V4.30		SP Download Count : 16 Date : Fri Mar 22 09:51:25 2002 File : MCSV\$UNITSOFT:LC-A1.H39	FP Download Count : 16 Date : Fri Mar 22 09:54:01 2002 File : MCSV\$UNITSOFT:LC-A1.H39
Wafer Loader WR-52V3.40 WL-22V3.40 OF-22V4.30 WLY31V1.40 WR-52V3.40 WL-22V3.40 OF-22V4.30 WLY31V1.40		SP Download Count : 27 Date : Fri Apr 4 04:04:10 2008 File : MCSV\$UNITSOFT:WR-52.H34	FP Download Count : 21 Date : Fri Apr 4 04:06:12 2008 File : MCSV\$UNITSOFT:WR-52.H34
Reticle Loader RL-11V4.70 RR-W07V4.2 PI-C2V1.60 RL-11V4.70 RR-W07V4.2 PI-C2V1.60		SP Download Count : 10 Date : Tue Jan 8 06:11:54 2002 File : MCSV\$UNITSOFT:RL-11.H47	FP Download Count : 0 Date : File :
Cognex ### GPIB Error ###			
2025-11-20 14:32:54.85			Close

Illumination System

Change Illumination System

Current ID
1

▶

Next ID

ID	L-NA	I-NA	Aperture	Aperture-patt.	value	R-type	R-patt.	PURE-patt.	comment	Adjust
1	0.68	0.51	1	Conv.	0.00	Normal	L/S	Off	ID1: 0.68 C0.51	1.000
2	0.68	0.41	2	Conv.	0.00	Normal	L/S	Off	ID2: 0.68 C0.41	0.997
3	0.68	0.30	3	Conv.	0.00	Normal	L/S	Off	ID3: 0.68 C0.30	0.998
4	0.68	0.20	4	Conv.	0.00	Normal	L/S	Off	ID4: 0.68 C0.20	0.997
5	0.68	0.51	5	Annular	50.51	Normal	L/S	Off	ID5: 0.68 A50.51	1.001
6	0.68	0.51	6	Annular	67.51	Normal	L/S	Off	ID6: 0.68 A67.51	0.998
7	0.60	0.30	3	Conv.	0.00	Normal	L/S	Off	ID 7: 0.60 C0.30	0.996
8	0.55	0.41	2	Conv.	0.00	Normal	L/S	Off	ID8: 0.55 C0.41	0.995
9	0.60	0.41	2	Conv.	0.00	Normal	L/S	Off	ID9: 0.60 C0.41	0.994
10	0.55	0.30	3	Conv.	0.00	Normal	L/S	Off	ID10: 0.55 C0.30	0.996
11	0.60	0.51	1	Conv.	0.00	Normal	L/S	Off	ID11: 0.60 C0.51	1.000
12	0.55	0.51	5	Annular	50.51	Normal	L/S	Off	ID12: 0.60 A50.51	0.998

Basic ID number : 1

F13
Quit

Do
Start

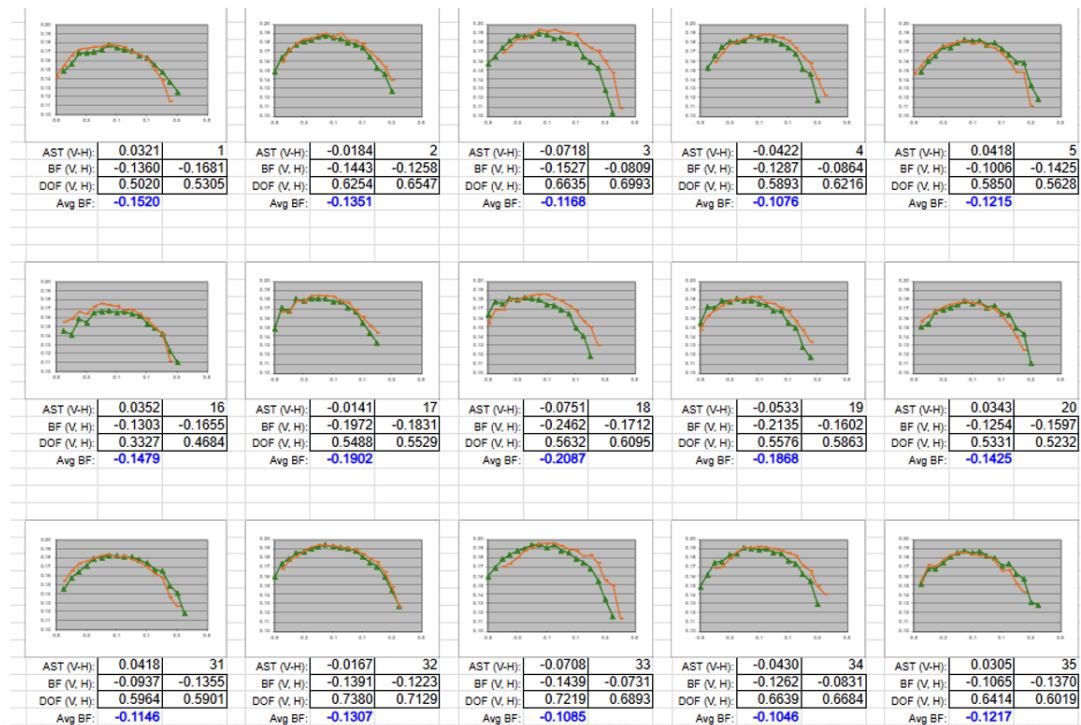
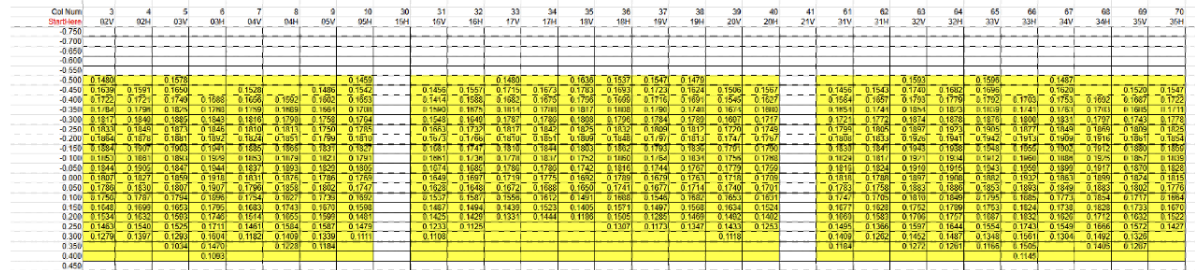
1. Lens Resolution (May 2019):

Conv $NA/\sigma = 0.68/0.75$

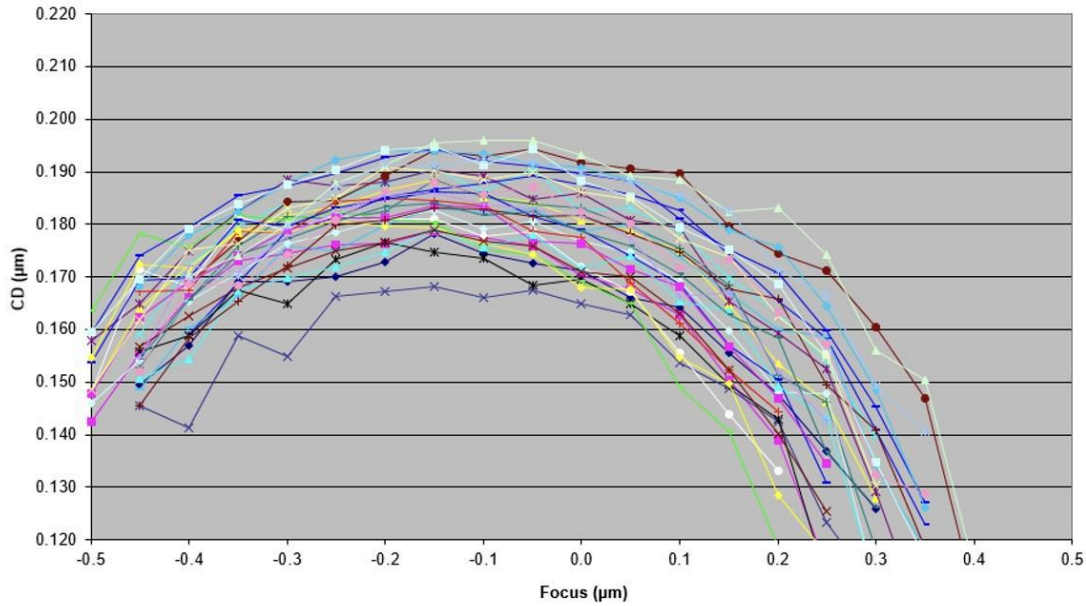
(0.175 μ m Isolated / 15Point V/H)

Result: Customer Needs to Calculate (Use Item2 DOF CD's at Best Focus)

Result: Customer Needs to Calculate



□ □ BTV N/A 10/25/2019 IsoDOF 0.175μm (printed to 0.175μm)
0.68 LNA, 0.51 INA, 0.75 sigma, III ID 1
UV110 ?mJ, 2504HCD v6.35 9E 80 G .E.A



3. Linewidth Abnormality (May 2019):

Conv NA/ σ = 0.68/0.29

(0.175μm L/S / 15Point V/H)

Result: 0.040μm

Center Dose: 21mJ Tool Name: Jao Spec (um) <= 0.045 Best Dose: 20 Track Recipe: N01_LENSOP-LNK
Dose Step: 0.1mJ Exp Date: 5/29/2019 Result (um) 0.040 Pass Best Focus: 0.05 Nikon Recipe: 0IBM_CDV3.C21R5
Center Focus: 0um SEM Name: 1504r Max Delta (um): 0.013 18V L3 (@ BD/BF): 0.205 SEM Recipe: 0_032302H_200_COMA
Focus Step: 0.05um Meas Date: 5/29/2019 18V L1 (@ BD/BF): 0.244 Reticle: HCD #0323-02H
Exposed By: Mike F. Meas By: 18V L5 (@ BD/BF): 0.231 Comment: None
ID#: 4

Reticle Error Removed

11				12				13				14				15			
L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H
227	218	233	215	248	235	234	242	253	237	244	245	239	241	235	246	219	232	225	223
0.019		0.040		0.025		-0.017		0.033		-0.002		-0.003		-0.023		-0.029		0.004	
L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45
224	225	225	226	248	239	243	235	253	240	247	247	245	242	241	247	220	231	224	235
-0.002		-0.001		0.017		0.017		0.027		-0.001		0.006		-0.011		-0.023		-0.026	
16				17				18				19				20			
L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H
221	222	222	215	247	243	243	241	248	232	242	231	244	238	241	235	222	231	228	221
-0.002		0.018		0.007		0.004		0.032		0.024		0.011		0.013		-0.019		0.015	
L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45
222	226	213	224	247	237	242	242	244	230	240	234	242	238	239	243	218	223	217	229
-0.010		-0.025		0.021		-0.001		0.028		0.013		0.007		-0.008		-0.012		-0.027	
21				22				23				24				25			
L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H	L1 V	L5 V	L1 H	L5 H
225	218	222	215	238	233	238	231	247	232	236	238	239	233	240	228	224	222	220	216
0.016		0.015		0.011		0.015		0.030		-0.004		0.011		0.024		0.004		0.009	
L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45	L1 L35	L5 L35	L1 L45	L5 L45
219	224	212	229	237	228	230	243	243	232	238	243	240	231	234	235	225	220	221	220
-0.012		-0.038		0.019		-0.027		0.023		-0.010		0.019		-0.002		0.013		0.001	

Summary Results

	90	0	135	45
11	0.019	0.040	-0.002	-0.001
12	0.025	-0.017	0.017	0.017
13	0.033	-0.002	0.03	-0.001
14	-0.003	-0.023	0.006	-0.011
15	-0.029	0.004	-0.023	-0.026
16	-0.002	0.018	-0.010	-0.025
17	0.007	0.004	0.021	-0.001
18	0.032	0.024	0.03	0.013
19	0.011	0.013	0.007	-0.008
20	-0.019	0.015	-0.012	-0.027
21	0.016	0.015	-0.012	-0.038
22	0.011	0.015	0.019	-0.027
23	0.030	-0.004	0.023	-0.010
24	0.011	0.024	0.019	-0.002
25	0.004	0.009	0.013	0.001

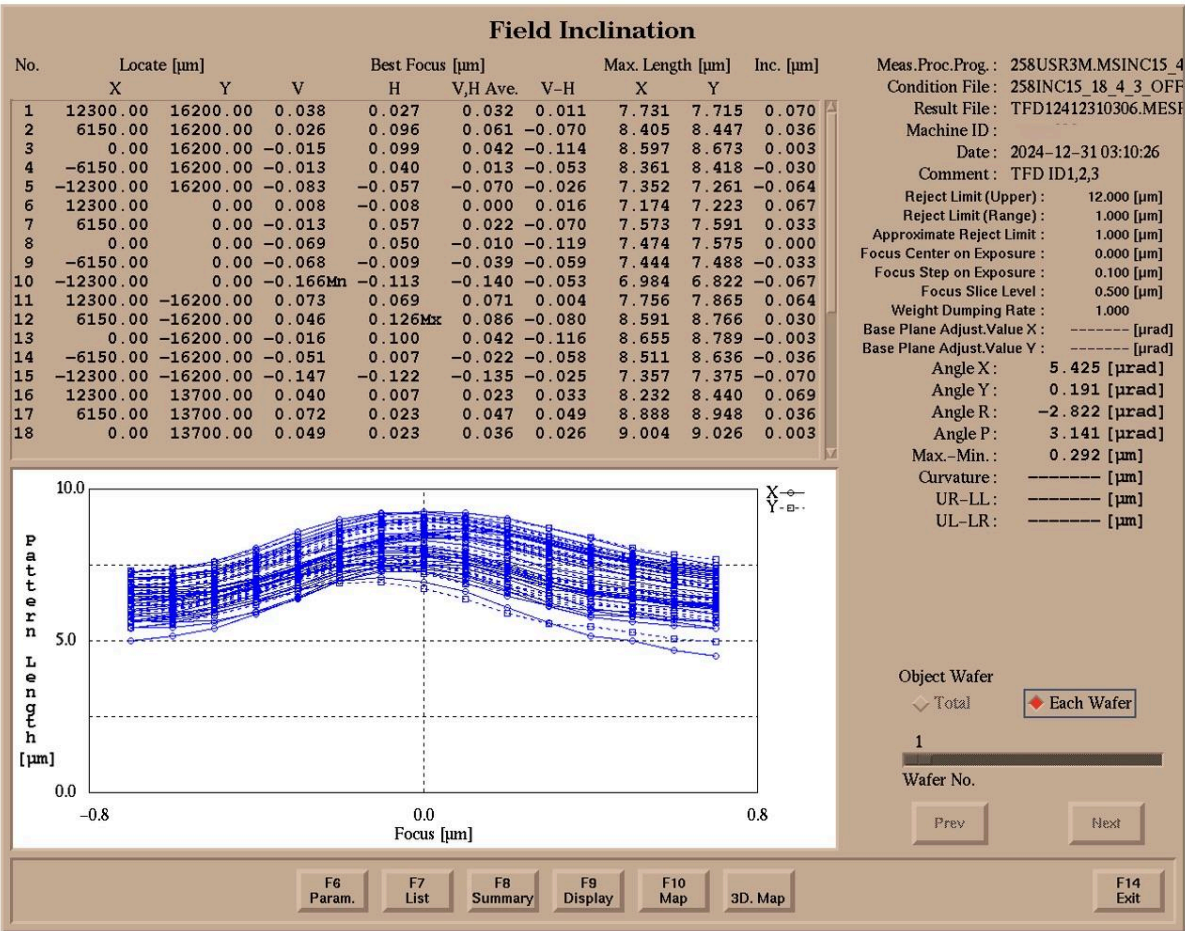
4. Total Focus Deviation (December 2024):

Conv NA/ σ = 0.68/0.75

(0.25 μ m L&S / 15Point V/H)

Result with Tilt: Max – Min = 0.292 μ m

Result without Tilt: Max - Min = 0.202

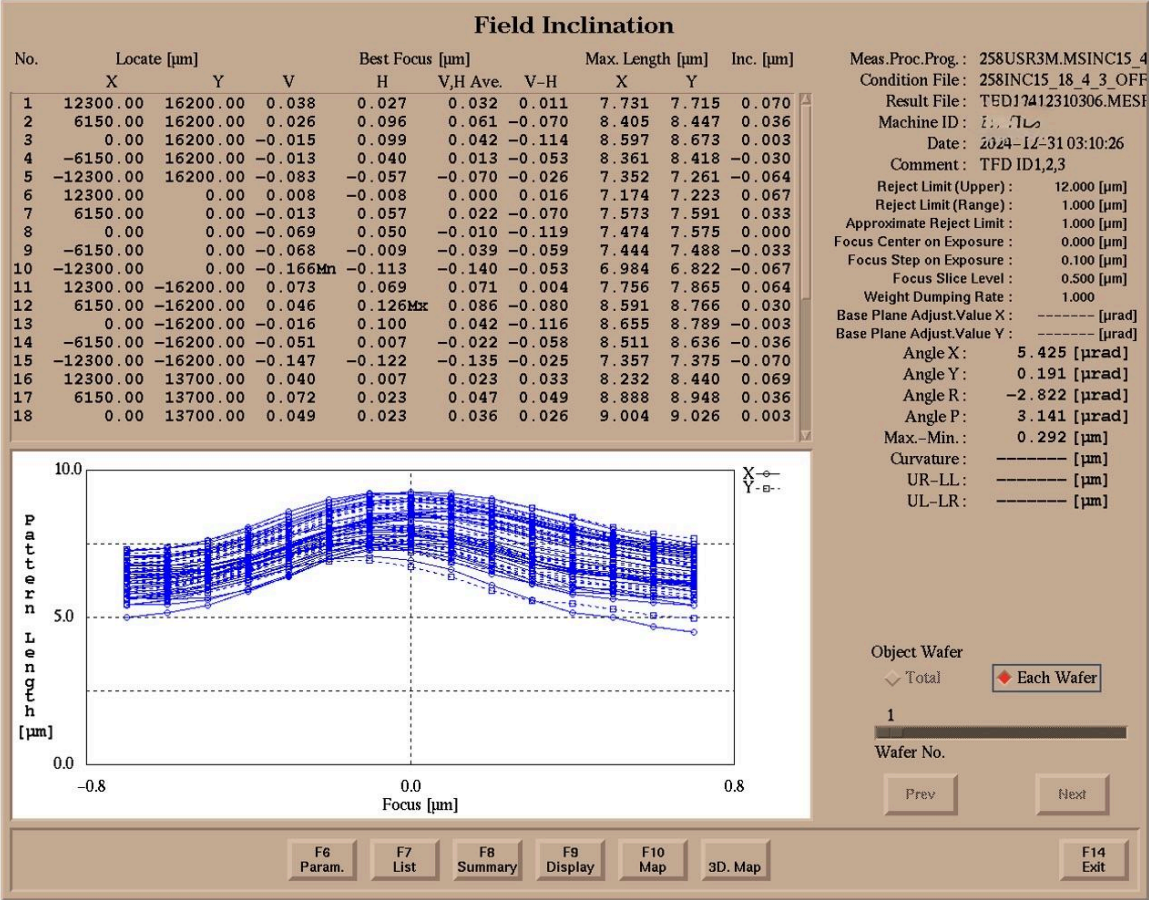


5. Lens Astigmatism (Decemeber 2024):

Conv NA/ σ = 0.68/0.75

(0.25 μ m L&S / 15Point V/H)

Result: |V-H| = -0.119 μ m

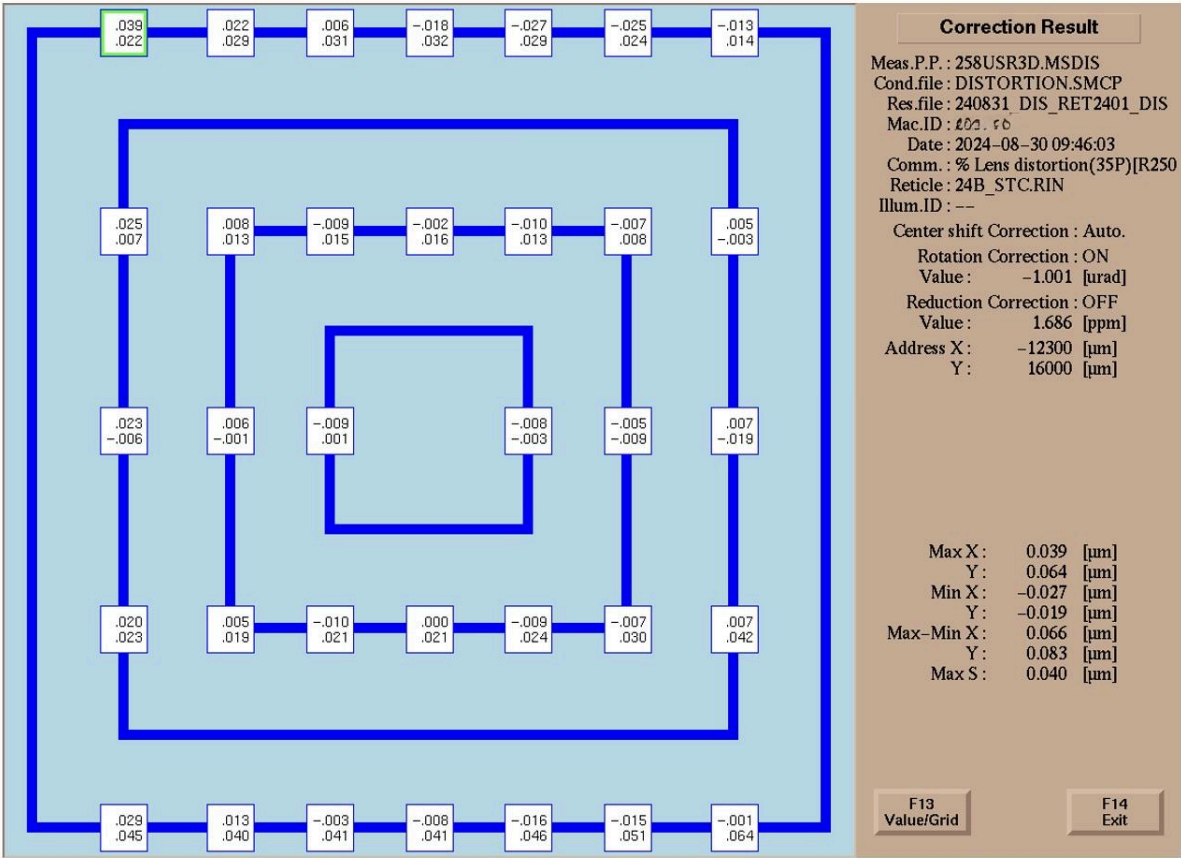


6. Lens Dynamic Distortion (August 2024):

Conv NA/ σ = 0.68/0.75

Result: X = -27nm~39nm

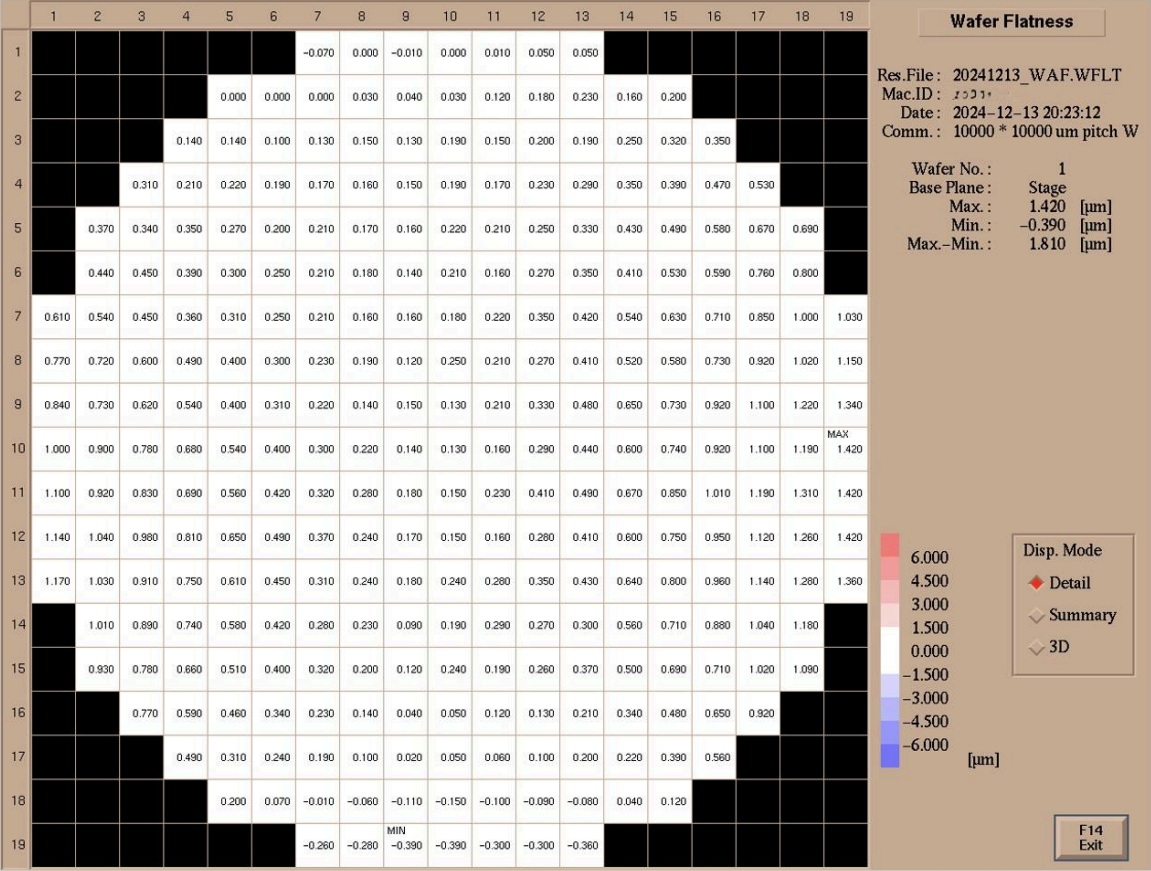
Y = -19nm~64nm



7. Maximum Exposure Area: 25mm (W) x 33mm (H)

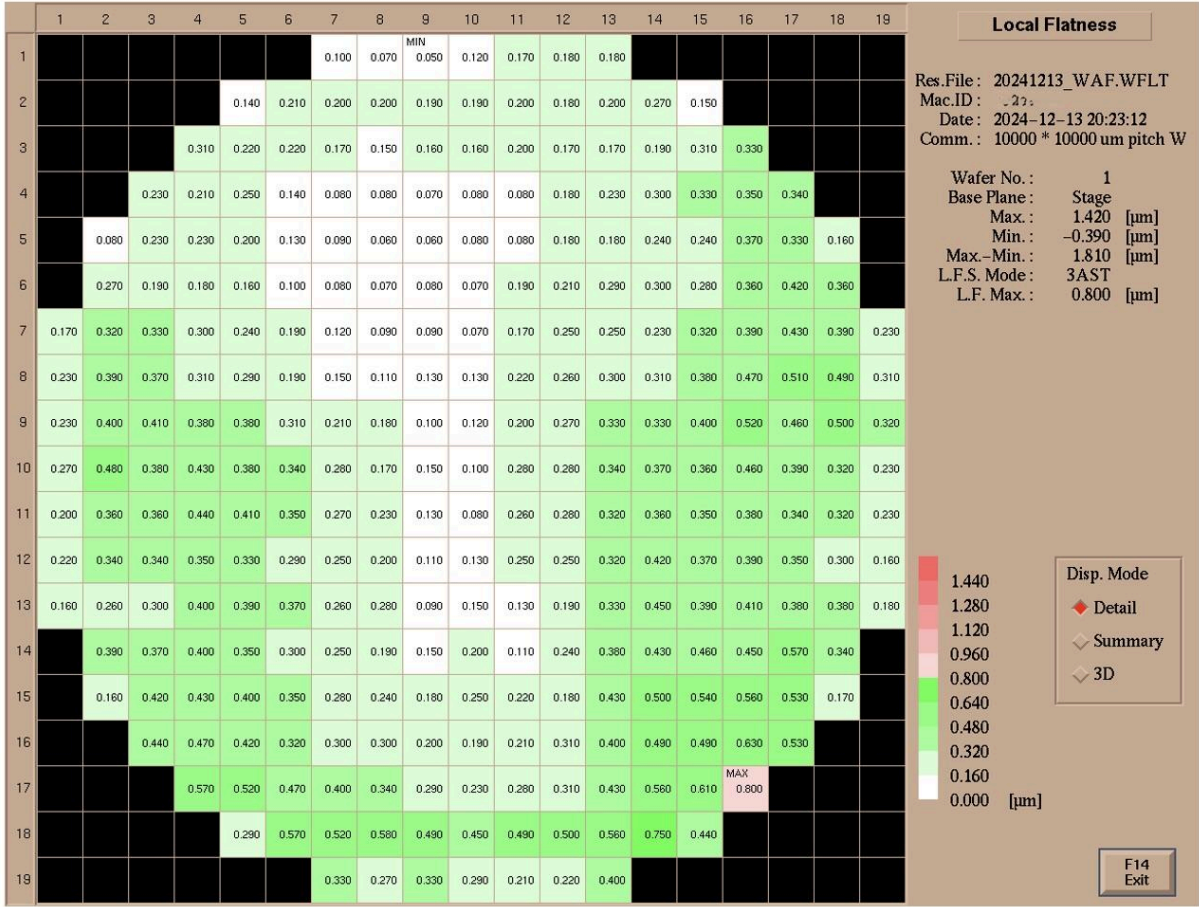
8. Wafer Flatness Accuracy (December 2024):

Result: Max-Min = 1.81μm



Local Flatness

Result: Max-Min = 0.800μm



9/10 Exposure Power / Uniformity (October 2024):

Conv NA/ σ = 0.68/0.75

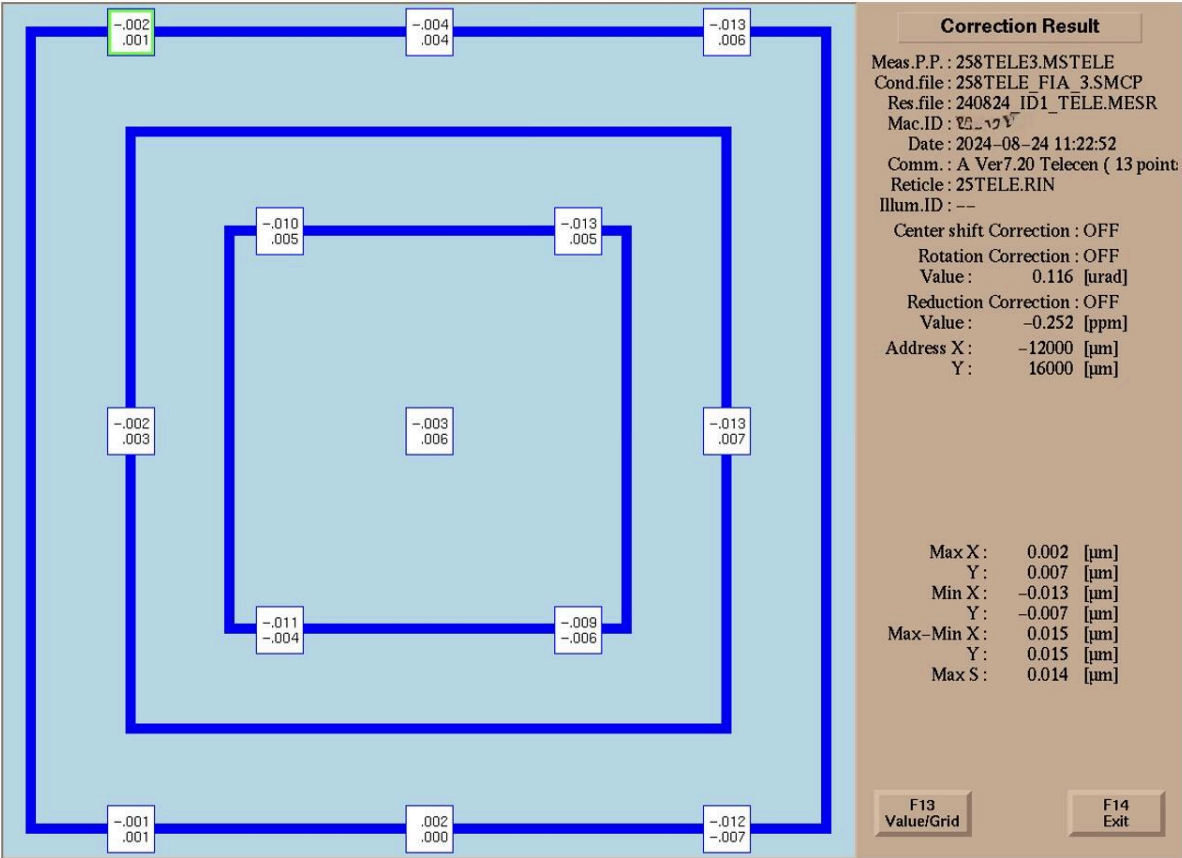
Result: 1) Illumination Power = 648.44mW/cm2

2) Uniformity = 5.19%



11. Telecentricity (August 2024)

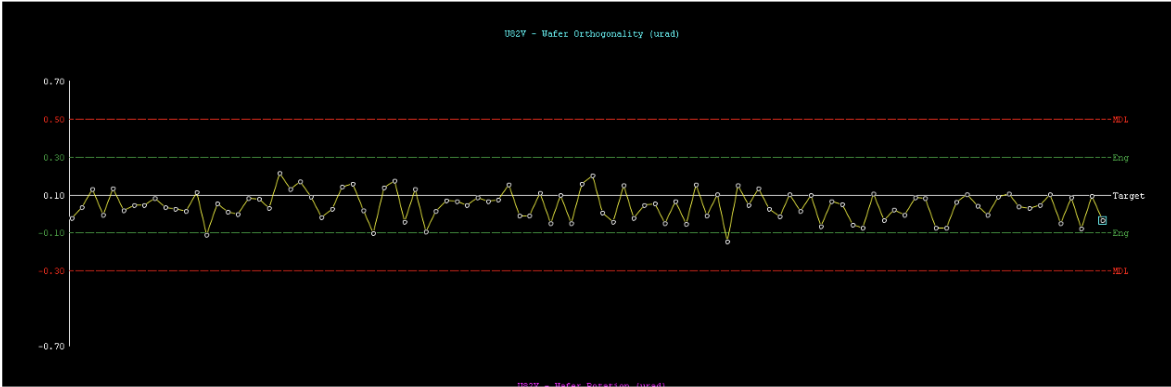
Result: Max 15nm



12. Orthogonality (October 2024 – January 2025) :

Result: 0.30urad

Data is from Overlay Tool Check



13. Stage Precision Accuracy (June 2024):

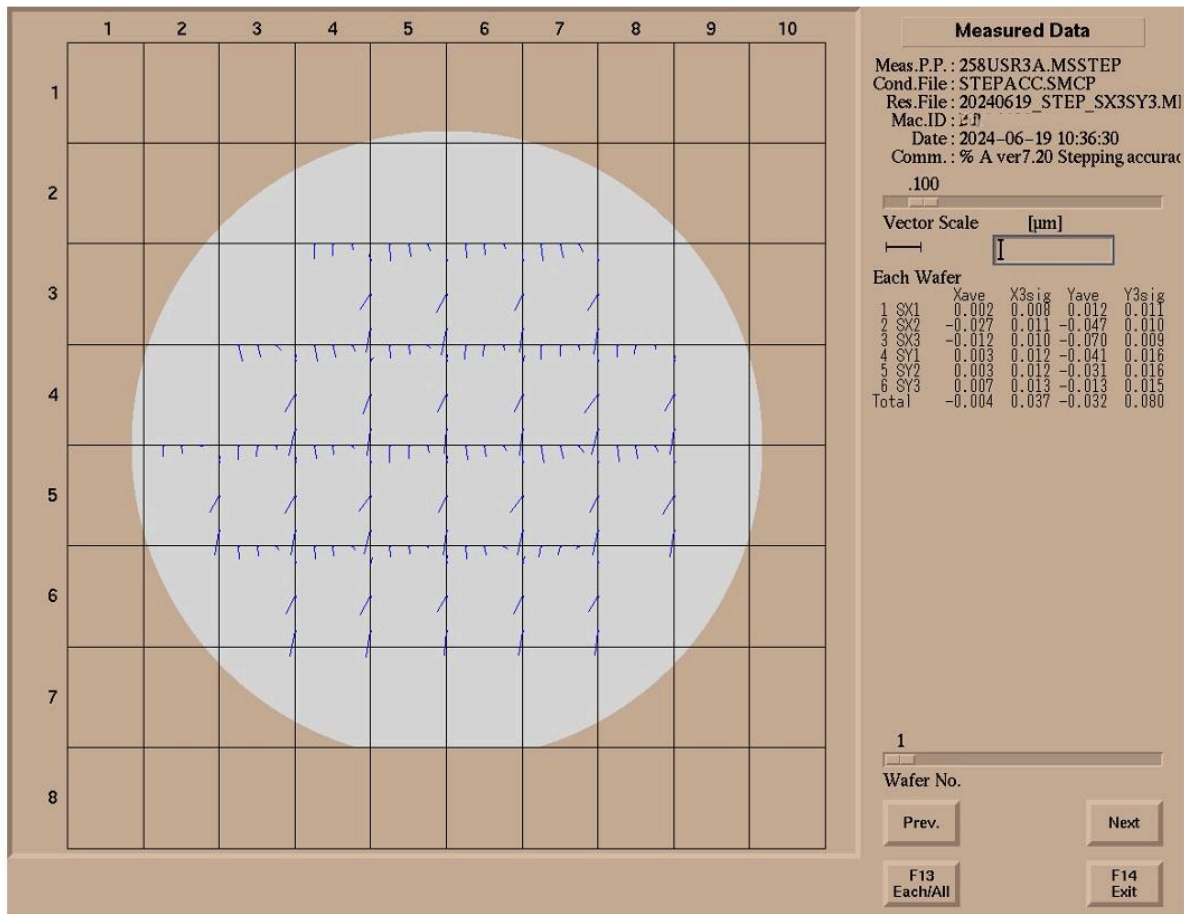
Result:

1) Stepping Accuracy

SX1(3 σ) : 8nm SY1(3 σ) : 11nm
SX2(3 σ) : 11nm SY2(3 σ) : 10nm
SX3(3 σ) : 10nm SY3(3 σ) : 9nm

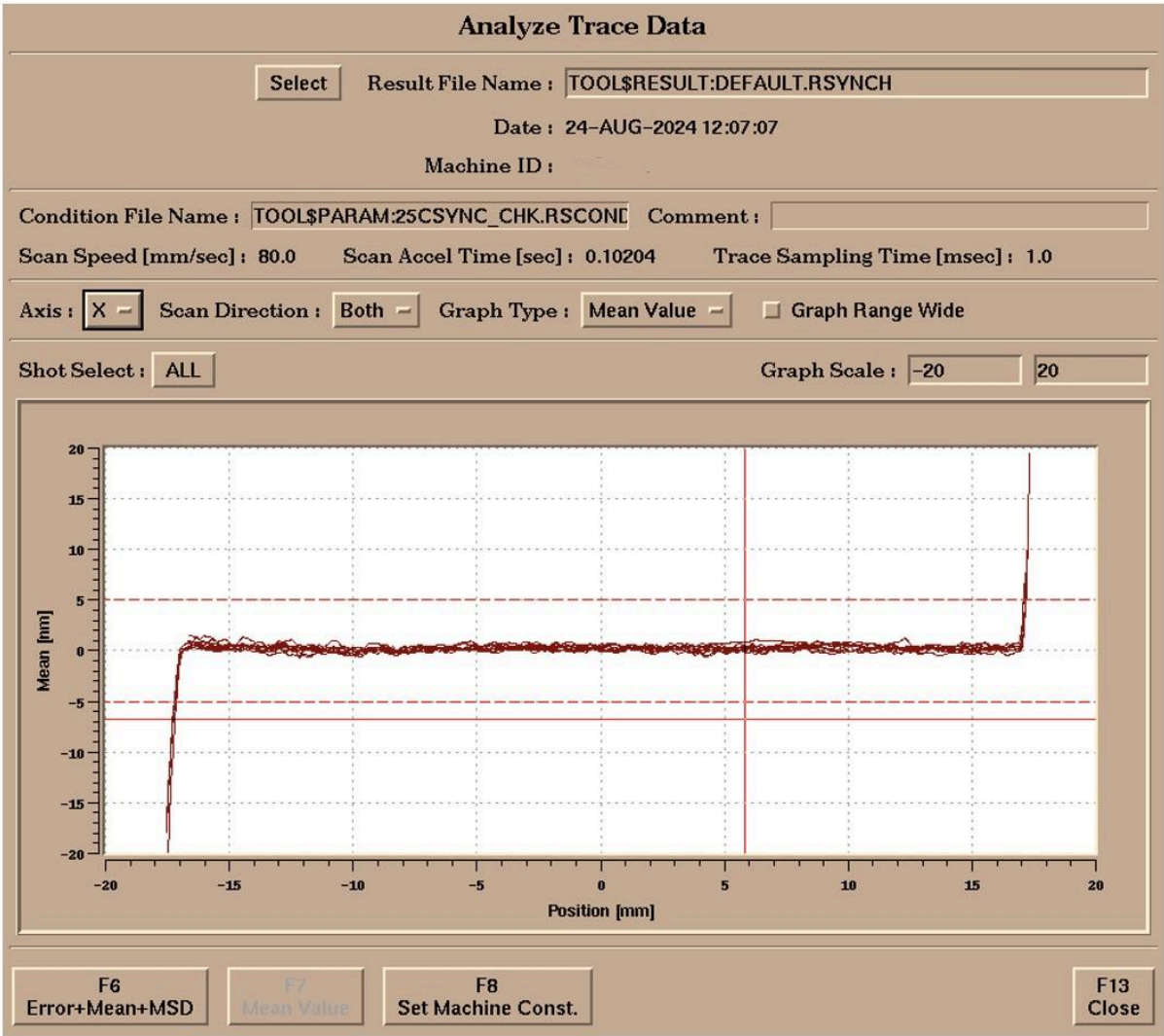
2) Backlash Accuracy

SX1(3 σ) : 12nm SY1(3 σ) : 16nm
SX2(3 σ) : 12nm SY2(3 σ) : 16nm
SX3(3 σ) : 13nm SY3(3 σ) : 15nm

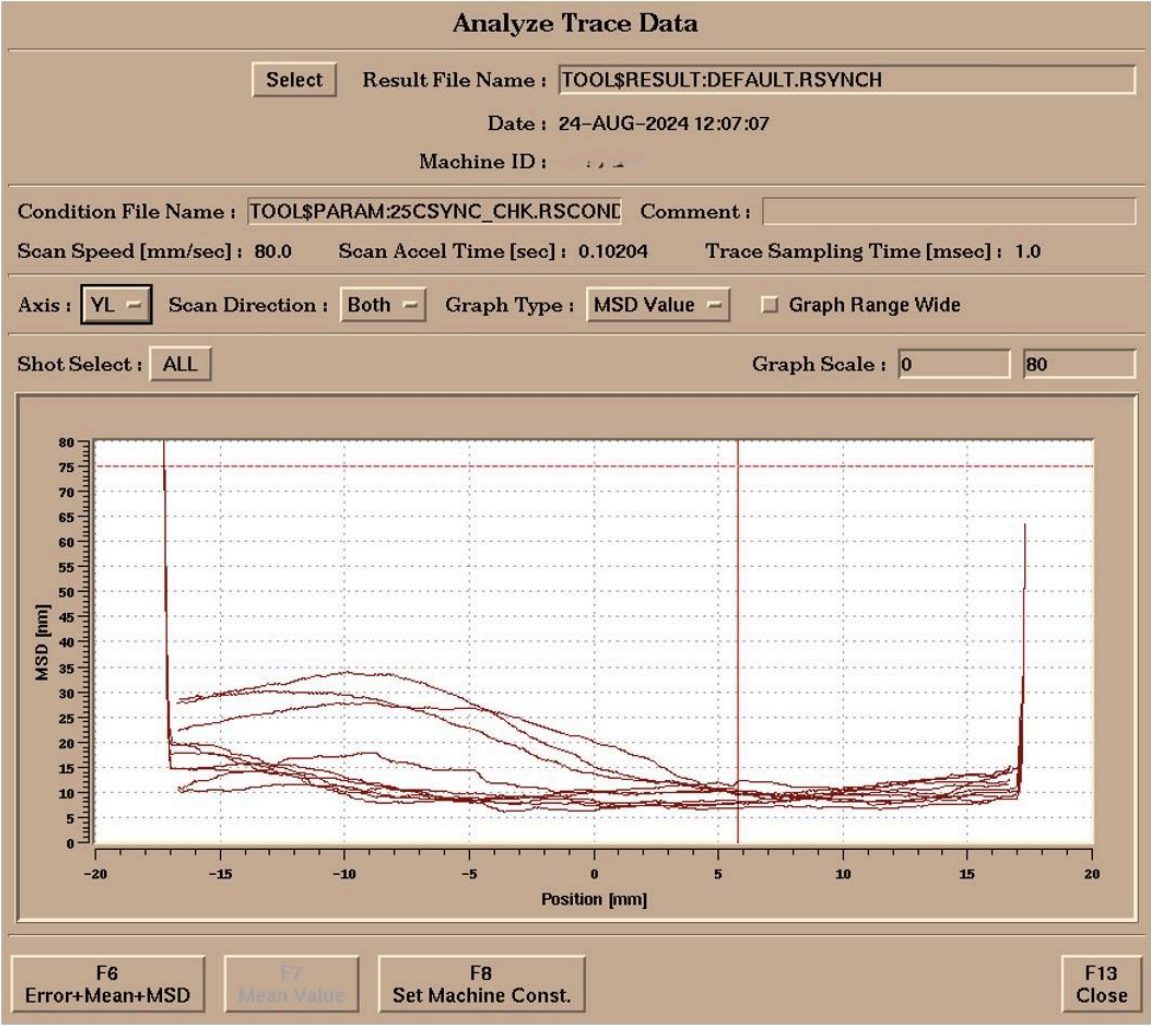


15. Synchronization Accuracy (August 2024):

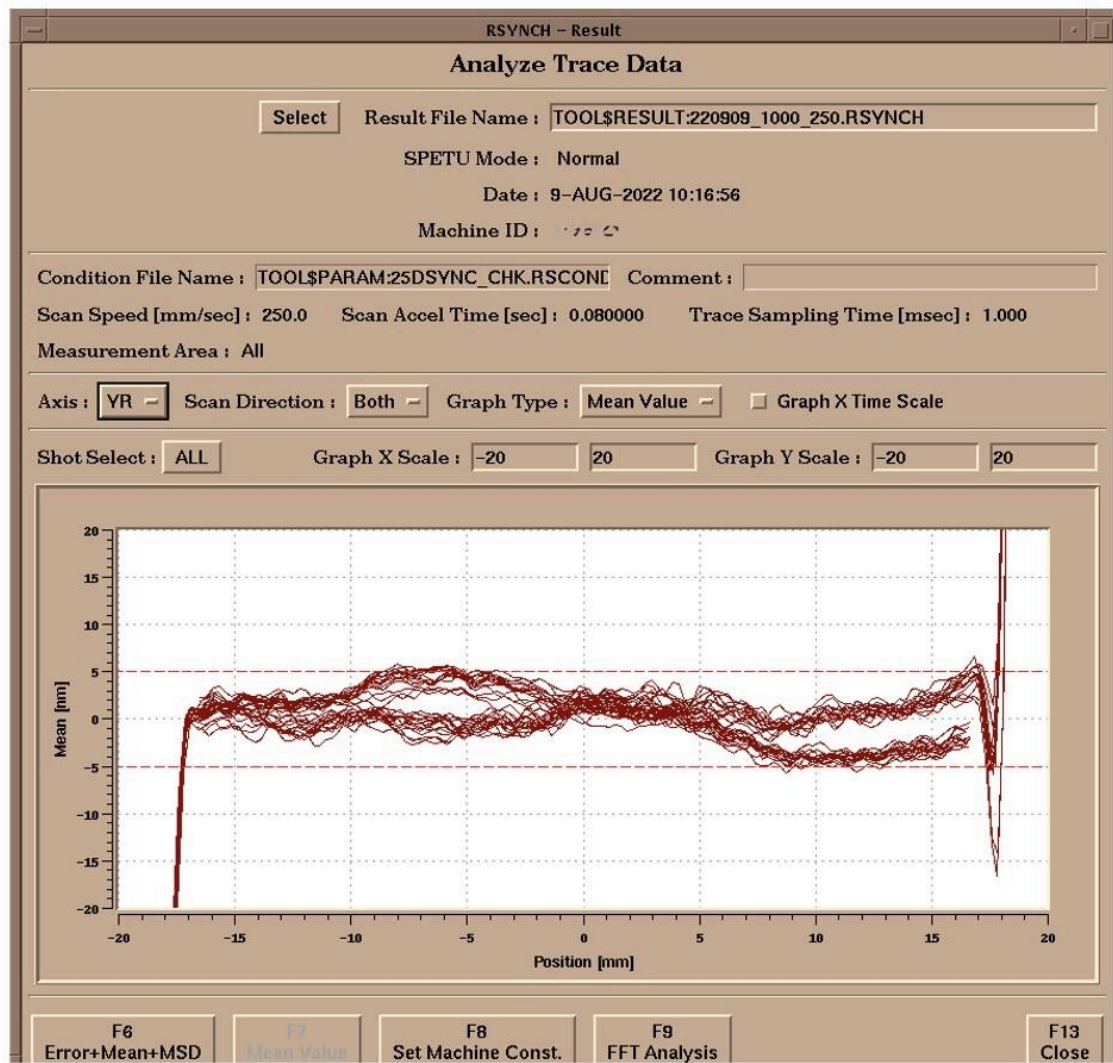
X MEAN Value : 2nm



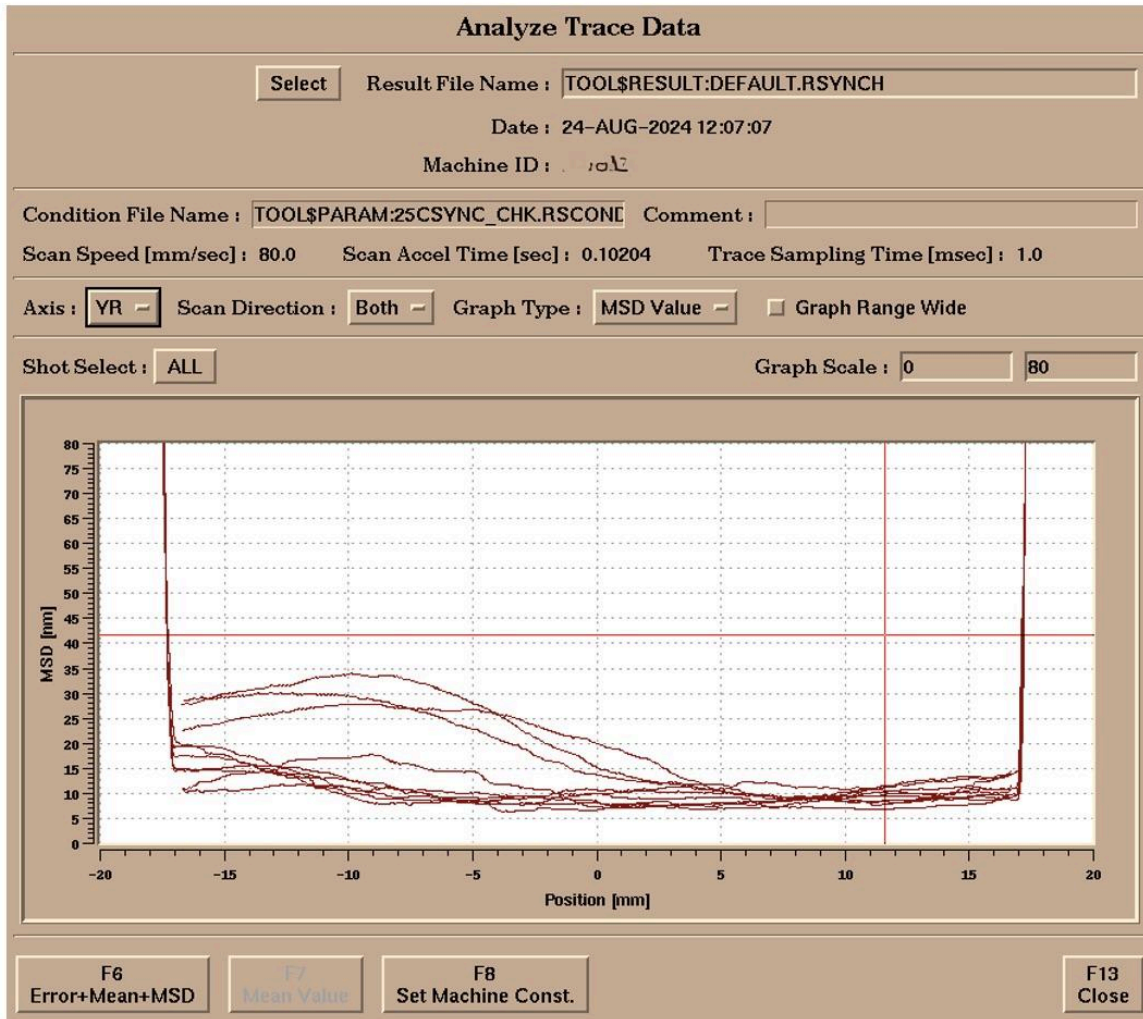
YL MSD Max : 34nm



YR Mean Value : 10nm (-5nm ~ 5nm)



YR MSD Max : 34nm



16. AF Adjustment Result (December 2024):

Result: PSD Max – Min = 0.074μm

File

Multi points focus adjustment result

Fan lean	Magnification	Rotation	Bow phenomenon	Telecen	Offset
-0.017	0.000	0.003	-0.008	0.008	-0.067 [um]
-0.010 [min]	0.000 []	0.008 [min]	0.004 [mm]	-0.004 [mm]	

PSD Max-Min [um] : 0.074

Fix Element : Magnification

X-Tilt [urad] : -1.324

Y-Tilt [urad] : 0.172

SelectResult File : TOOL\$RESULT;DEFAULT.MPFADJ

Result file create date : 13-DEC-2024 22:22:55

Machine ID : 161616

Measure Points : 45 points

OK signal Measure Points : 45 points

Flatness Revise : Off

Clear PSD Revision : No

F6PSD Table

F7Graph

F14Close

17. Integrator Accuracy (October 2024):

Conv NA/ σ = 0.68/0.75

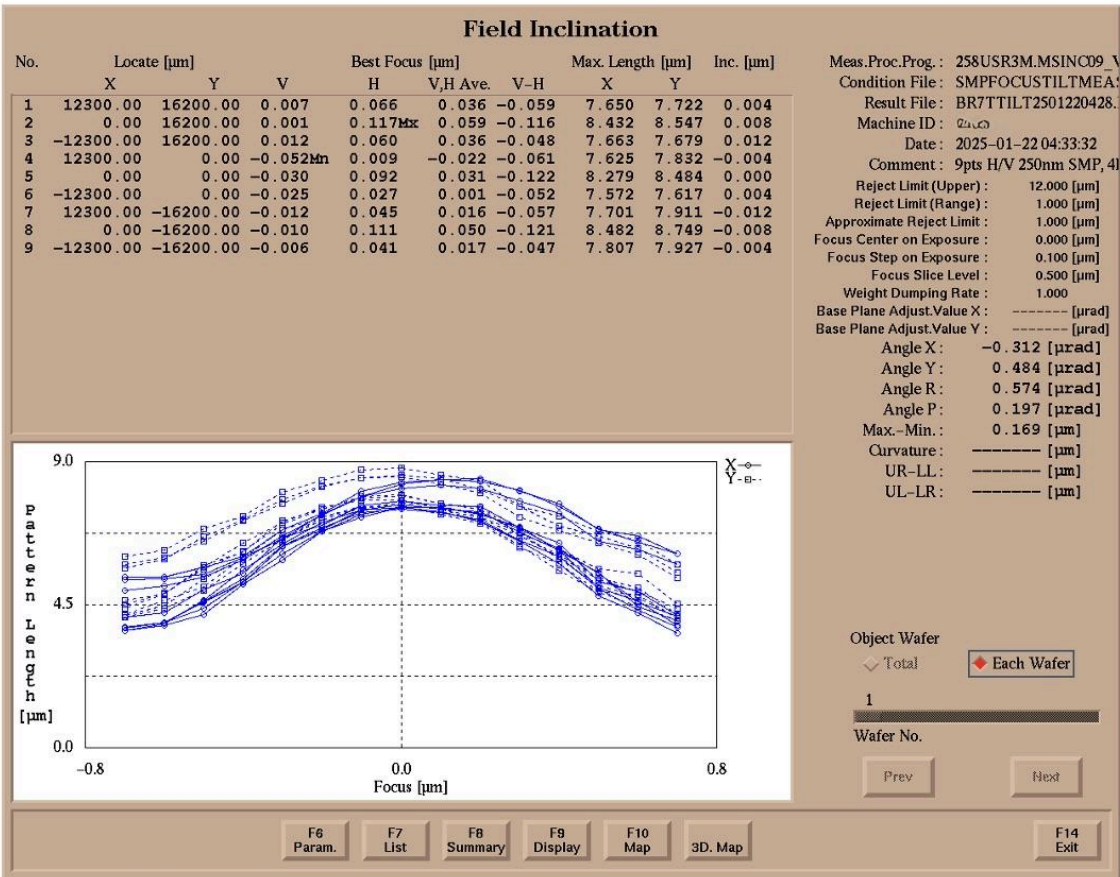
Result: Ave Max = .500%

Target Value Accuracy			
	Target [mJ/cm2]	Result [mJ/cm2]	residual (AVE) [%]
1	10.000	10.023	0.233
2	20.000	19.963	-0.183
3	50.000	50.250	0.500
4	-----	-----	-----
5	-----	-----	-----
6	-----	-----	-----
7	-----	-----	-----
8	-----	-----	-----
9	-----	-----	-----
10	-----	-----	-----

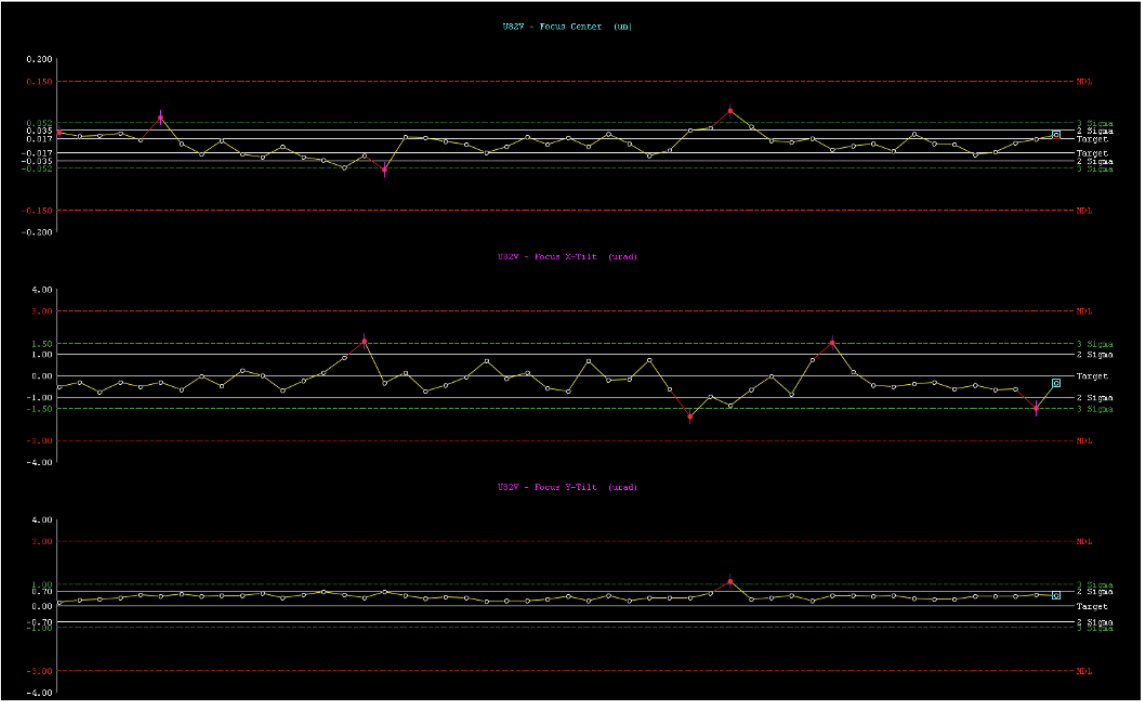
18. Inclination

Result: Current: X = -.312urad Y = 0.484urad

Range: X = 3urad, Y = 1urad



Inclination Results from October 2024-January 2025

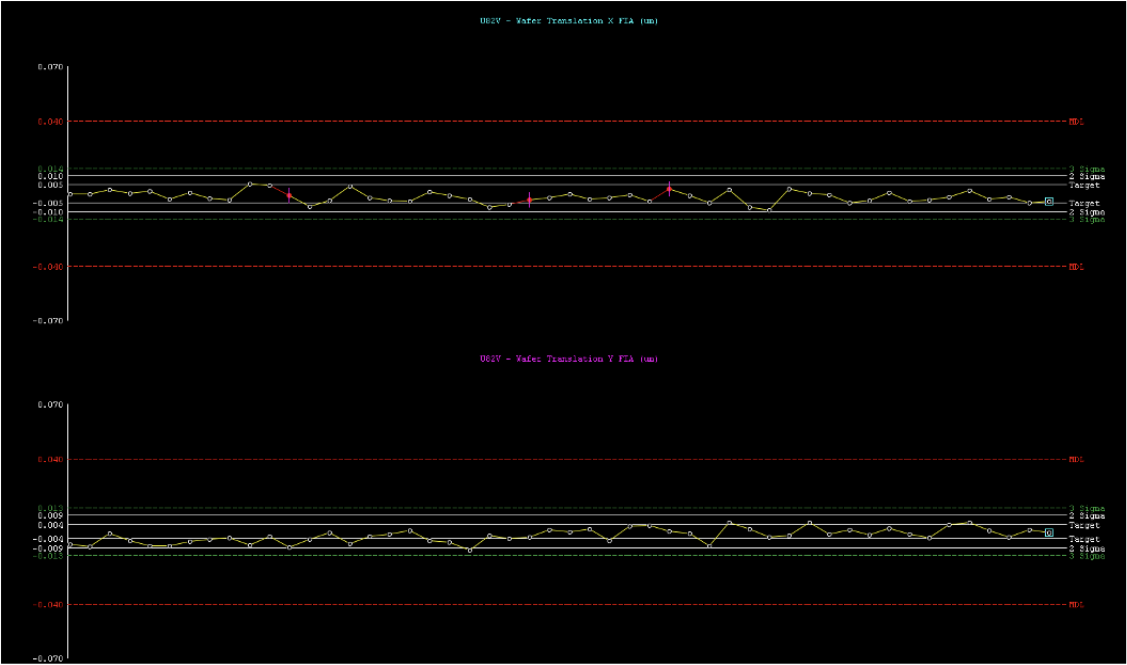


19-1 FIA (October 2024 - January 2025):

Result: FIA-EGA X = 15nm

FIA-EGA Y = 15nm

Data is from Overlay FIA Check

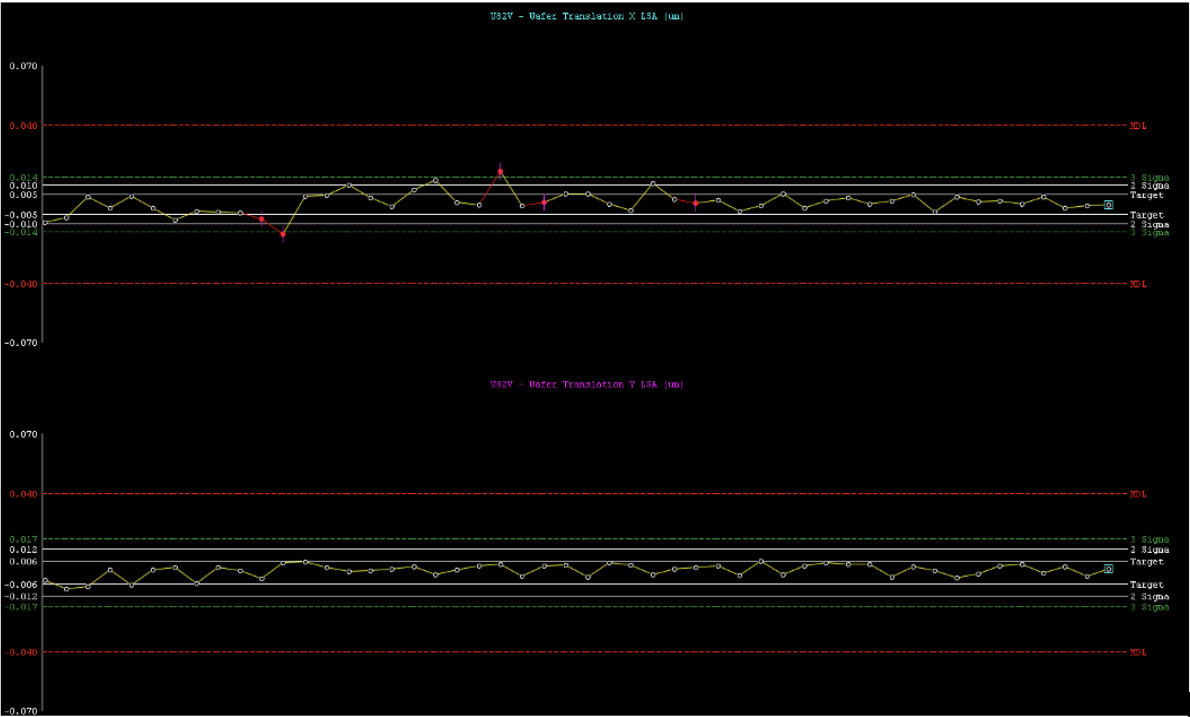


19-2 LSA (October 2024 - January 2025):

Result: LSA-EGA X = 28nm

LSA-EGA Y = 15nm

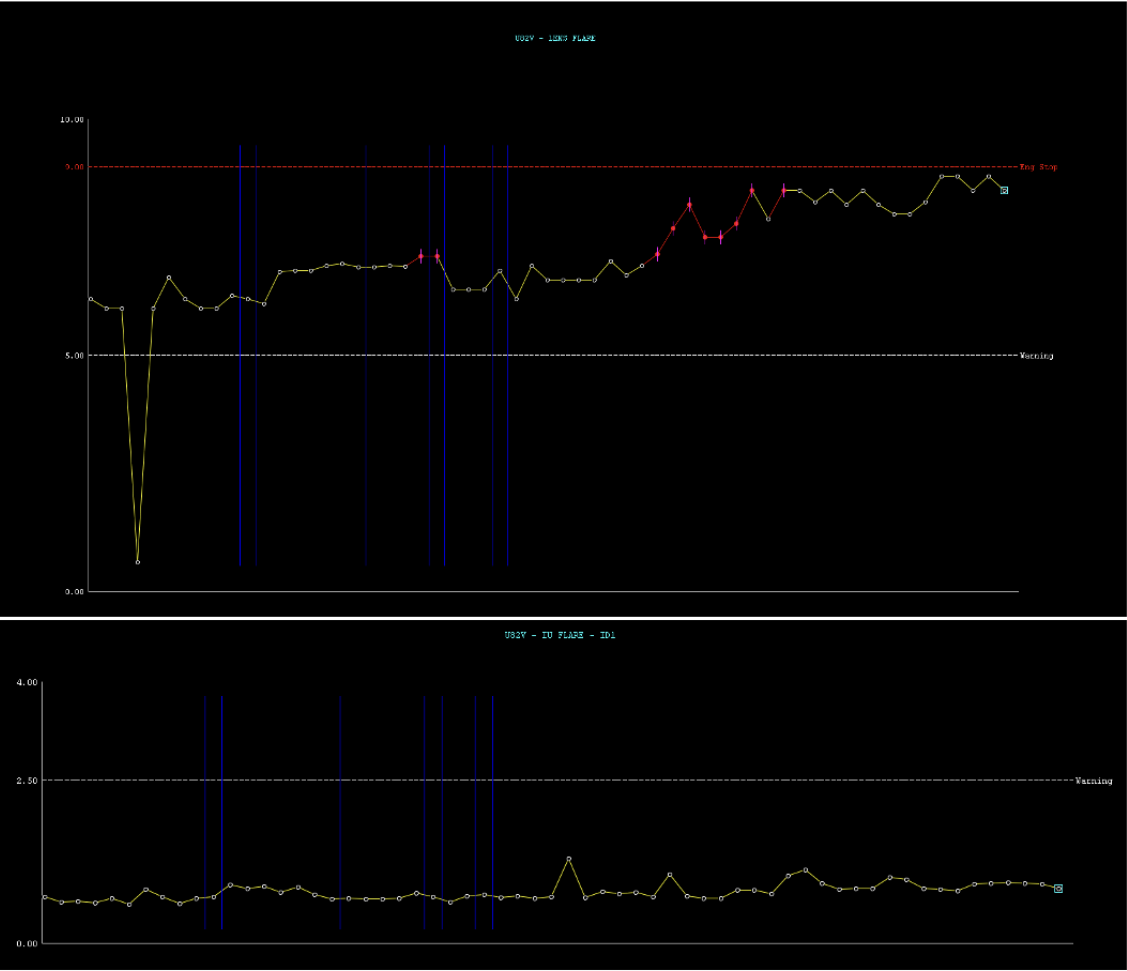
Data is from Overlay LSA Check



20. IU Flare / Lens Flare (2016-2025):

Conv NA/ σ = 0.68/0.75

Result: 0.84%/6.20%



YL MEAN Value : 10nm (-5nm ~ 5nm)

