

FPA-2500i3

Fine Pattern Aligner

ACCEPTANCE DATA

Product Name	FPA-2500i3
Serial No.	
Order No.	
Inspection Date	22 nd September 2006

Canon

Inspected by: Chris Howells

Applications Engineering Department

Canon Europa NV,

Paisley Grove,

Chilwell Meadows Business Park,

Beeston,

Nottingham, NG9 6DJ.



Acceptance Results for FPA-2500i3

UNIT	ITEM	SPEC	RESULT	JUDGE
1. ILLUMINATOR	Intensity (Normal illumination)	$\geq 550\text{mW}$	821	OK
	Uniformity (Normal Illumination)	Within $\pm 1.2\%$	0.9	OK
	Dose Control Accuracy	$\leq 1.2\%$	0.54	OK
	Masking Blade Accuracy	$\leq \pm 100\mu\text{m}$	-75	OK
2. AUTO FOCUS SYSTEM	Focus Repeatability	$\leq 0.12\mu\text{m}$	0.077	OK
	Die by Die levelling Repeatability - X (3S)	$\leq 10\text{ppm}$	2.95	OK
	Die by Die levelling Repeatability - Y (3S)	$\leq 10\text{ppm}$	2.70	OK
	Global Levelling Repeatability - X (3s)	$\leq 10\text{ppm}$	2.23	OK
	Global Levelling Repeatability - Y (3s)	$\leq 10\text{ppm}$	2.17	OK
3. AUTO ALIGNMENT SYSTEM	Reticle Rotation Accuracy	$\leq \pm 0.02\mu\text{m}$	0.007	OK
	Reticle Rotation Repeatability (Range)	$\leq \pm 0.03\mu\text{m}$	0.015	OK
	AGA Accuracy Mode 1 - X	$\leq 0.07\mu\text{m (M+3s)}$	0.063	OK
	AGA Accuracy Mode 1 - Y		0.044	OK
	AGA Accuracy Mode 4 - X		0.066	OK
	AGA Accuracy Mode 4 - Y		0.052	OK
	Total Overlay Mode 1 (to ref wafer) - X	$\leq 0.14\mu\text{m (M+3s)}$	0.076	OK
	Total Overlay Mode 1 (to ref wafer) - Y		0.085	OK
	Total Overlay Mode 4 (to ref wafer) - X		0.061	OK
	Total Overlay Mode 4 (to ref wafer) - Y		0.103	OK
4. XY STAGE PERFORMANCE	Scaling (Reference Wafer, X or Y)	$\leq \pm 1.0\text{ppm}$	0.06	OK
	Orthogonality (Reference Wafer)	$\leq \pm 1.0\text{ppm}$	-0.16	OK
	Stepping Accuracy - X-X (3s)	$\leq 0.060\mu\text{m}$	0.016	OK
	Stepping Accuracy - Y-Y (3s)	$\leq 0.060\mu\text{m}$	0.026	OK
5. PREALIGNMENT	Mechanical Prealignment Accuracy	$\leq \pm 40\mu\text{m 3s}$	23.4	OK
6. THROUGHPUT	HeNe Mode1, 45 shots 20mm Tilt ON	57wph	58.7	OK
	Expo 0.16 secs, Sub 4 Main 8. Tilt OFF	62wph	62.4	OK
7. RELIABILITY	Wafer Feeding : 500 wafers cycled (AGA)	500	511	OK
	75 times reticle handling	50	50	OK
8. LENS PERFORMANCE	Resolution (Normal Illumination - 0.40um L&S)	0.40um or better	0.40	OK
	CD Depth of Focus (Normal Illumination - 0.40um L&S)	$\geq 1.0\mu\text{m Range}$	1.47	OK
	Image Field Deviation (Normal Illumination - 0.40um L&S)	$\leq 0.50\mu\text{m}$	0.13	OK
	Distortion (Norm II Ex Mag) - Max	Within $\pm 0.070\mu\text{m}$	-0.034	OK
	Intrafield (Norm II Ex Mag - Si Ref Wafer) - Max	Within $\pm 0.070\mu\text{m}$	0.037	OK

Canon.**Intensity and Uniformity Data Sheet.**

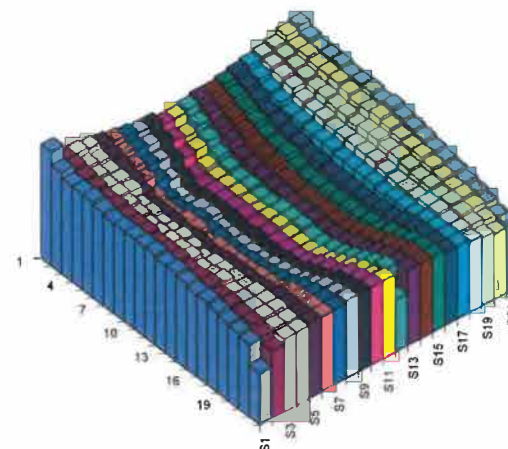
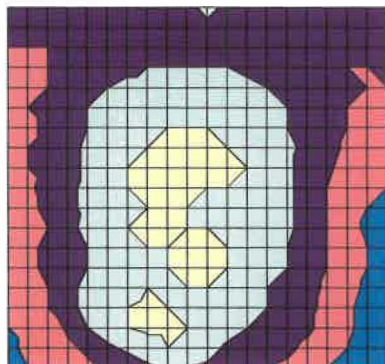
X Area mm X Step mm Intensity W/m² Machine Date IL Mode Lamp Hr

Y Area mm Y Step mm Uniform % Cust ID Cust

	-10.0	-9.0	-8.0	-7.0	-6.0	-5.0	-4.0	-3.0	-2.0	-1.0	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
11.3	102.4	101.9	101.7	101.7	101.7	101.6	101.5	101.5	101.5	101.5	101.5	101.4	101.4	101.3	101.2	101.2	101.1	101	100.9	100.8	100
10.1	101.8	101.8	101.7	101.6	101.5	101.5	101.4	101.4	101.4	101.3	101.3	101.3	101.2	101.2	101.2	101.1	101.1	101	101	100.8	100.6
9.0	101.8	101.6	101.5	101.4	101.4	101.3	101.2	101.1	101.1	101.1	101.1	101.1	101	101	101.1	101	101	101	101	100.9	100.8
7.9	101.7	101.5	101.4	101.4	101.3	101	101	100.9	100.9	101	100.9	100.8	100.9	100.9	100.9	100.9	101	101	101	100.9	100.8
6.8	101.6	101.4	101.3	101.1	100.9	100.7	100.7	100.7	100.6	100.7	100.6	100.6	100.7	100.7	100.7	100.7	100.8	100.9	100.9	100.9	100.9
5.6	101.5	101.3	101.1	100.9	100.5	100.3	100.3	100.5	100.5	100.3	100.4	100.4	100.4	100.4	100.5	100.5	100.6	100.8	100.9	100.9	100.9
4.5	101.4	101.2	100.9	100.6	100.2	100.1	100.2	100.3	100.2	100.2	100.1	100.1	100.2	100.2	100.3	100.4	100.5	100.7	100.8	100.9	100.9
3.4	101.3	101.1	100.8	100.4	100	100	100.2	100.2	100	100	100	100	100	100.1	100.2	100.3	100.4	100.6	100.8	100.9	101
2.3	101.3	101	100.6	100.2	99.9	99.9	100	100	100	99.9	100	99.9	99.9	100	100	100.2	100.4	100.5	100.8	100.9	101
1.1	101.1	100.8	100.4	100	99.9	100	100	100	100	99.9	99.9	99.9	99.9	99.9	100	100.2	100.4	100.5	100.8	100.9	101
0.0	101.1	100.7	100.5	100.1	100	100	100	99.9	99.9	100	100	99.9	99.9	99.9	100	100.1	100.3	100.5	100.7	100.8	101
-1.1	101.2	100.9	100.6	100.3	100.1	100	100	99.9	99.9	100	100	100	99.9	99.9	100	100.1	100.3	100.5	100.7	100.9	100
-2.3	101.3	101.1	100.8	100.6	100.3	100.2	100.1	100	100	100	100	100	99.9	100	100	100.2	100.3	100.5	100.7	100.8	100.9
-3.4	101.3	101.1	100.9	100.7	100.5	100.4	100.3	100.1	100.1	100	100	100	100	100	100.1	100.3	100.4	100.6	100.7	100.9	100.9
-4.5	101.4	101.2	101	100.8	100.6	100.5	100.5	100.3	100.2	100.2	100.2	100.2	100.2	100.2	100.3	100.3	100.5	100.6	100.8	100.9	100.9
-5.6	101.5	101.3	101.1	100.9	100.8	100.7	100.6	100.5	100.5	100.4	100.4	100.4	100.4	100.4	100.5	100.5	100.6	100.7	100.8	100.8	100.8
-6.8	101.6	101.4	101.2	101.1	100.9	100.9	100.8	100.8	100.8	100.7	100.7	100.7	100.7	100.6	100.7	100.7	100.7	100.8	100.8	100.8	100.8
-7.9	101.7	101.6	101.5	101.4	101.2	101.1	101.1	101	101	101	101	101	100.9	100.8	100.8	100.8	100.9	100.9	100.8	100.8	100.7
-9.0	101.8	101.7	101.6	101.5	101.4	101.4	101.3	101.3	101.2	101.3	101.3	101.2	101.2	101.1	101	100.9	101	100.9	100.8	100.6	100.6
-10.1	102	101.8	101.8	101.7	101.7	101.7	101.6	101.5	101.5	101.6	101.5	101.4	101.3	101.3	101.2	101.1	101	101	100.9	100.7	100.5
-11.3	102.1	101.9	101.8	101.8	101.8	101.7	101.7	101.7	101.6	101.7	101.6	101.5	101.4	101.3	101.2	101.1	101	100.9	100.8	100.6	100.6

Distribution	(Illumination)	=	0.9
Max	Value	=	101.8
Min	Value	=	99.9

Center Lamp	Position Input	Measurement Power	Uniformity	Checker	Light	Integrator
	1000 W		608 mW/cm ²		607 mW/cm ²	
	1500 W		821 mW/cm ²		819 mW/cm ²	
	Machine	Parameter	819 mW/cm ²		817 mW/cm ²	



Canon.**Dose Control Accuracy.****FPA-2500i3**

Machine Number :

Machine ID :

Customer :

Date : 11/9/2006

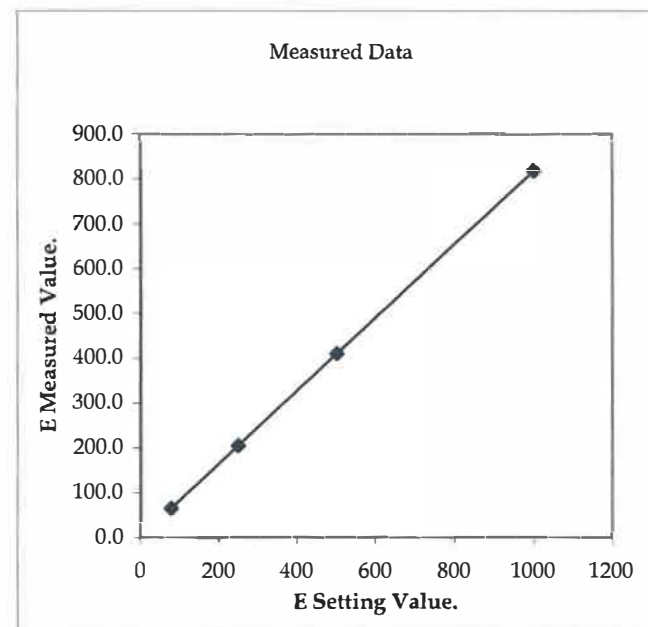
Lamp Intensity	819	W/m2
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Time (ms)	80	250	500	1000
Set Value	65.5	204.8	409.5	819.0
E _{max}	65.4	205.1	410.2	820.5
E _{min}	65.1	204.7	409.7	818.8
E _{mean}	65.2	204.9	410.0	819.7
Repeatability	0.23	0.10	0.06	0.10
Set Error	-0.49	0.07	0.12	0.09

Linearity	0.31
Overall Accuracy	0.54

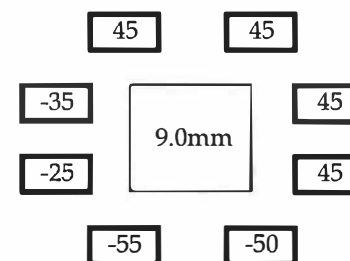
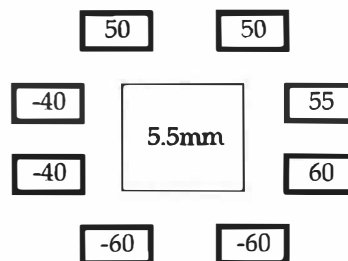
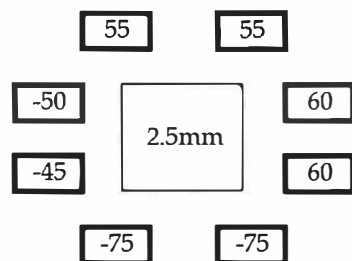
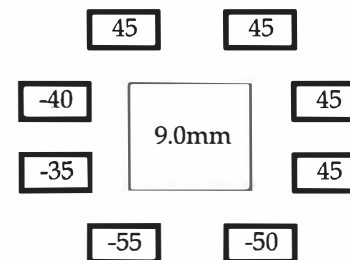
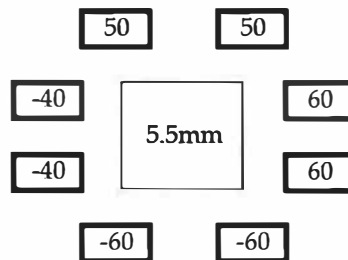
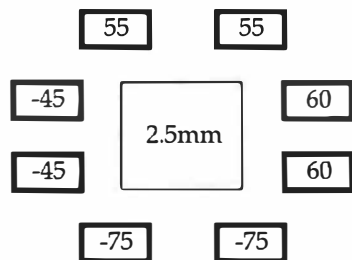
Spec +/-0.5 %

Spec +/-1.0 %





Masking Blade Accuracy



Rotation -739 ppm

	Focus Drive Repeatability Wafer 1.	Customer	I
		Date	11/09/06
		Machine	FPA-2500i3
		Serial Number	
		Wafer	Super Flat

☐ ***** Wafer No. = 1 *****
☐ *** Tilt Focus Parameter ***
☐ LED Light Control Mode : Auto LED Measure Mode : Averaging
☐ Wafer Condition : 0 Focus Option Mode : 0
☐ TILT Comp. Mode : D/D Open-Loop Best Focus Mode : Average
☐ Pattern Offset Mode : Auto
☐ Pattern Offset Value : CH-1 CH-2 CH-3 CH-4 CH-5
☐ main : -.02 -.02 0.00 -.01 -.02
☐ sub : -.02 -.02 -.01 -.01
☐ CH-1 CH-2 CH-3 CH-4 CH-5 FOCUS X_ppm Y_ppm
☐ *SH 1:(M M M M M .03 .02 0.00 .01 .06 .02 1.0 -.3
☐ *SH 2:(M M M M M 0.00 .04 .01 .01 .01 .01 1.0 .4
☐ *SH 3:(M M M M M -.05 0.00 -.05 -.03 0.00 -.02 2.4 -.3
☐ *SH 4:(M M M M M .05 .02 .03 .01 .03 .02 -.2 1.1
☐ *SH 5:(M M M M M -.05 .02 -.03 .01 -.04 -.01 .5 .1
☐ *SH 6:(M M M M M -.02 -.01 -.01 0.00 -.01 0.00 0.0 -.6
☐ *SH 7:(M M M M M 0.00 0.00 -.01 0.00 -.01 0.00 -.1 0.0
☐ *SH 8:(M M M M M -.02 0.00 -.04 -.01 -.03 -.02 0.0 .1
☐ *SH 9:(M M M M M 0.00 -.02 -.03 -.02 0.00 -.01 -.2 .1
☐ *SH 10:(M M M M M .03 .03 .03 .03 .02 .02 -.2 .4
☐ *SH 11:(M M M M M .08 -.01 .06 .01 .07 .04 -.8 -.3
☐ *SH 12:(M M M M M 0.00 -.03 -.03 -.02 -.02 -.01 -1.0 .3
☐ *SH 13:(M M M M M 0.00 -.02 0.00 .01 -.01 0.00 -.8 -.7
☐ *SH 14:(M M M M M .07 .06 0.00 .05 .02 .03 -1.2 1.7
☐ *SH 15:(M M M M M .04 .05 .04 .05 .03 .03 -.4 .4
☐ *SH 16:(M M M M M .04 .06 .04 .04 .05 .04 1.1 .3
☐ *SH 17:(M M M M M -.03 -.04 -.04 -.03 -.03 -.03 -.2 -.3
☐ *SH 18:(M M M M M -.05 -.09 -.06 -.04 -.04 -.05 -1.1 -2.1
☐ *SH 19:(M M M M M -.03 -.03 -.03 0.00 .01 -.01 .2 -1.8
☐ *SH 20:(M M M M M 0.00 -.06 0.00 -.02 -.01 -.01 -1.5 -1.1
☐ *SH 21:(M M M M M -.07 0.00 -.04 -.01 -.08 -.04 -.1 .5
☐ *SH 22:(M M M M M -.01 -.11 -.02 -.09 0.00 -.04 -.3 -.5
☐ *SH 23:(M M M M M -.08 .03 -.07 .03 -.07 -.03 0.0 -.3
☐ *SH 24:(M M M M M -.01 0.00 0.00 0.00 .01 0.00 .6 -.5
☐ *SH 25:(M M M M M -.01 -.03 .02 -.04 .01 -.01 1.1 -.1
☐ *SH 26:(M M M M M .02 0.00 .01 -.01 0.00 0.00 0.0 .6
☐ *SH 27:(M M M M M .04 .02 .01 0.00 -.02 0.00 -1.2 2.5
☐ *SH 28:(M M M M M 0.00 -.05 -.07 -.05 0.00 -.03 0.0 -.2
☐ *SH 29:(M M M M M .03 -.05 -.11 -.01 -.01 -.03 -2.3 0.0
☐ *SH 30:(M M M M M .01 .02 .01 0.00 .05 .01 1.8 -.2
☐ *SH 31:(M M M M M -.01 -.04 -.03 -.01 -.02 -.02 -1.3 -.4
☐ *SH 32:(M M M M M -.08 -.02 -.09 -.02 -.06 -.05 .5 -.6

Result :

	Focus	X Tilt	Y Tilt
3 Sigma	0.074um	2.95ppm	2.57ppm

	Focus Drive Repeatability Wafer 2.	Customer	
		Date	11/09/06
		Machine	FPA-2500i3
		Serial Number	
		Wafer	Super Flat

☐ ***** Wafer No. = 1 *****

☐ *** Tilt Focus Parameter ***

☐ LED Light Control Mode : Auto LED Measure Mode : Averaging

☐ Wafer Condition : 0 Focus Option Mode : 0

☐ TILT Comp. Mode : D/D Open-Loop Best Focus Mode : Average

☐ Pattern Offset Mode : Auto

☐ Pattern Offset Value : CH-1 CH-2 CH-3 CH-4 CH-5

☐ main : -.01 -.02 0.00 .03 .01

☐ sub : -.02 -.01 .03 .01

☐ CH-1 CH-2 CH-3 CH-4 CH-5 FOC X_ppm Y_ppm

☐ *SH 1:(M M M M M .03 0.00 -.01 .01 .03 .01 -.1 0.0

☐ *SH 2:(M M M M M .06 .08 .06 .08 .05 .06 -.4 .4

☐ *SH 3:(M M M M M .01 .04 0.00 .02 .02 .01 .8 .5

☐ *SH 4:(M M M M M .04 0.00 .04 .05 .05 .03 -.9 -1.6

☐ *SH 5:(M M M M M 0.00 .06 .02 .08 -.01 .02 -.7 -.2

☐ *SH 6:(M M M M M -.04 -.01 -.02 -.01 -.03 -.02 .3 -.1

☐ *SH 7:(M M M M M -.04 -.04 -.04 -.02 -.04 -.03 -.4 -.6

☐ *SH 8:(M M M M M -.02 0.00 -.02 .03 -.01 0.00 -.6 -1.1

☐ *SH 9:(M M M M M .01 -.01 -.01 -.01 -.01 0.00 -.8 .4

☐ *SH 10:(M M M M M -.06 -.07 -.05 -.02 -.05 -.04 -1.4 -1.6

☐ *SH 11:(M M M M M .01 -.06 0.00 -.06 0.00 -.02 -.1 .2

☐ *SH 12:(M M M M M -.01 -.02 -.02 -.03 -.02 -.01 -.1 .6

☐ *SH 13:(M M M M M .01 0.00 .01 .01 0.00 0.00 -.4 0.0

☐ *SH 14:(M M M M M .09 .08 .01 .07 .03 .05 -1.5 2.0

☐ *SH 15:(M M M M M 0.00 .03 .02 .05 .03 .02 .1 -1.2

☐ *SH 16:(M M M M M .01 .02 -.01 0.00 0.00 0.00 0.0 .8

☐ *SH 17:(M M M M M -.02 -.02 -.02 0.00 -.02 -.01 -.5 -.8

☐ *SH 18:(M M M M M -.04 -.09 -.06 -.04 -.04 -.05 -1.2 -1.5

☐ *SH 19:(M M M M M -.08 -.05 -.07 -.05 -.02 -.05 1.9 -1.5

☐ *SH 20:(M M M M M -.03 -.06 -.02 -.04 -.01 -.03 -.1 -1.1

☐ *SH 21:(M M M M M -.10 -.02 -.04 0.00 -.07 -.04 .3 -1.2

☐ *SH 22:(M M M M M 0.00 -.08 0.00 -.08 .02 -.02 .2 -.6

☐ *SH 23:(M M M M M -.06 .05 -.05 .04 -.04 -.01 .8 -.3

☐ *SH 24:(M M M M M -.02 -.02 -.02 -.03 -.04 -.02 -.3 .9

☐ *SH 25:(M M M M M 0.00 -.03 .02 -.04 -.02 -.01 -.1 .8

☐ *SH 26:(M M M M M -.03 -.03 -.02 -.03 -.02 -.02 .2 -.2

☐ *SH 27:(M M M M M -.04 -.02 -.02 -.03 -.02 -.02 .8 -.2

☐ *SH 28:(M M M M M .01 -.03 -.03 -.01 .04 0.00 .2 -1.5

☐ *SH 29:(M M M M M .03 -.01 -.09 -.01 .02 -.01 0.0 .1

☐ *SH 30:(M M M M M -.03 -.02 -.03 -.05 -.02 -.02 .9 .7

☐ *SH 31:(M M M M M -.04 -.04 -.04 -.02 -.02 -.03 .2 -1.3

☐ *SH 32:(M M M M M -.05 0.00 -.08 .01 -.05 -.03 -.2 -.2

Result :

	Focus	X Tilt	Y Tilt
3 Sigma	0.077um	2.10ppm	2.70ppm

Canon.	Focus Drive Repeatability Wafer 3.	Customer	
		Date	11/09/06
		Machine	FPA-2500i3
		Serial Number	
		Wafer	Super Flat

☐ ***** Wafer No. = 1 *****

☐ *** Tilt Focus Parameter ***

☐ LED Light Control Mode : Auto LED Measure Mode : Averaging

☐ Wafer Condition : 0 Focus Option Mode : 0

☐ TILT Comp. Mode : D/D Open-Loop Best Focus Mode : Average

☐ Pattern Offset Mode : Auto

☐ Pattern Offset Value : CH-1 CH-2 CH-3 CH-4 CH-5

☐ main : -.01 -.02 0.00 .02 -.01

☐ sub : -.02 -.02 .01 0.00

☐ CH-1 CH-2 CH-3 CH-4 CH-5 FOCUS X_ppm Y_ppm

☐ *SH 1:(M M M M M .04 .01 .01 .03 .06 .02 .2 -1.2

☐ *SH 2:(M M M M M .01 .02 .01 .03 .01 .01 0.0 -.3

☐ *SH 3:(M M M M M .03 .03 .01 .05 .02 .02 -.6 -.1

☐ *SH 4:(M M M M M .04 .02 .03 .02 .04 .02 .1 -.2

☐ *SH 5:(M M M M M -.03 0.00 -.03 .03 -.05 -.01 -1.6 -.2

☐ *SH 6:(M M M M M -.03 -.02 -.02 0.00 -.01 -.01 -.1 -1.0

☐ *SH 7:(M M M M M 0.00 -.02 -.01 .01 -.01 0.00 -.9 -.5

☐ *SH 8:(M M M M M .01 .05 .01 .03 .02 .02 .6 .4

☐ *SH 9:(M M M M M -.01 -.03 -.03 -.03 -.02 -.02 -.6 .4

☐ *SH 10:(M M M M M -.03 -.03 -.04 -.05 -.06 -.04 -.3 1.3

☐ *SH 11:(M M M M M .04 -.03 .03 -.05 .03 0.00 .1 .7

☐ *SH 12:(M M M M M 0.00 .01 0.00 -.01 .02 0.00 1.2 -.2

☐ *SH 13:(M M M M M -.04 -.06 -.04 -.04 -.05 -.04 -.8 -.2

☐ *SH 14:(M M M M M .04 .02 -.04 0.00 -.03 0.00 -1.5 2.7

☐ *SH 15:(M M M M M .02 .03 .02 .02 .01 .01 -.2 .4

☐ *SH 16:(M M M M M .03 .04 .02 .03 .04 .03 .7 0.0

☐ *SH 17:(M M M M M -.04 -.03 -.03 -.03 -.02 -.02 .4 -.3

☐ *SH 18:(M M M M M .03 -.01 0.00 .01 0.00 0.00 -1.0 .3

☐ *SH 19:(M M M M M .02 .01 -.01 .01 .01 0.00 -.1 .5

☐ *SH 20:(M M M M M .01 -.02 .02 -.02 .01 0.00 -.2 -.2

☐ *SH 21:(M M M M M -.02 .04 .02 .06 -.02 .01 -.5 -.8

☐ *SH 22:(M M M M M .02 -.07 .02 -.07 .03 -.01 .2 -.6

☐ *SH 23:(M M M M M -.04 .06 -.04 .04 -.05 0.00 .1 .7

☐ *SH 24:(M M M M M -.02 -.03 -.02 -.02 -.03 -.02 -.6 0.0

☐ *SH 25:(M M M M M -.01 -.05 .01 -.04 -.02 -.02 -.4 .1

☐ *SH 26:(M M M M M -.01 -.05 -.02 -.01 -.03 -.02 -1.4 -.7

☐ *SH 27:(M M M M M -.02 -.03 -.02 -.02 -.04 -.02 -.6 .3

☐ *SH 28:(M M M M M .01 -.05 -.06 -.04 .01 -.02 -.2 -.1

☐ *SH 29:(M M M M M .01 0.00 -.09 -.03 .04 -.01 2.0 0.0

☐ *SH 30:(M M M M M -.01 -.03 -.03 -.03 -.02 -.02 -.1 .3

☐ *SH 31:(M M M M M 0.00 -.03 -.03 -.02 -.03 -.02 -.9 .7

☐ *SH 32:(M M M M M -.04 0.00 -.05 .04 -.02 -.01 -.7 -1.6

Result :

	Focus	X Tilt	Y Tilt
3 Sigma	0.51um	2.24ppm	2.32ppm



Reticle Rotation Accuracy

Serial No

Date 19/9/06

	1	2	3	4	5	Average
1	0.027	0.017	0.024	0.016	0.015	0.020
2	0.013	0.011	0.022	0.019	0.013	0.015
3	0.020	0.010	0.020	0.021	0.012	0.016
4	0.002	-0.003	0.012	0.014	0.006	0.006
5	0.011	-0.003	0.012	0.003	0.017	0.008
Y						0.013

Wafer Summary

Y Max	0.027
Y Min	-0.003
Accuracy	0.007
Repeatability	0.015

Canon.**AGA Accuracy****Mode 1**

Meas No	X	Y
1	-0.007	-0.019
2	-0.002	-0.018
3	-0.001	-0.012
4	-0.010	-0.019
5	-0.035	-0.002
6	0.001	-0.003
7	-0.002	-0.009
8	0.004	-0.001
9	-0.003	-0.018
10	-0.003	-0.027
11	0.002	-0.011
12	0.005	-0.011
13	0.013	-0.008
14	0.010	-0.005
15	0.015	-0.009
16	0.006	-0.013
17	0.030	-0.003
18	0.022	0.009
19	0.020	0.002
20	0.014	0.004
21	0.019	-0.005
22	0.006	0.002
23	0.015	-0.003
24	0.020	0.010
25	0.028	0.004
26	0.031	0.005
27	0.027	0.010
28	0.029	0.005
29	0.035	-0.004
30	0.029	0.000
31	0.028	0.000
32	0.027	-0.008

Mean 0.012 -0.005
 3 Sigma 0.047 0.02773
M + 3s 0.058 0.033

Meas No	X	Y
1	0.026	0.014
2	0.033	0.011
3	0.039	0.019
4	0.033	0.010
5	-0.011	0.019
6	0.033	0.010
7	0.030	0.008
8	0.028	0.013
9	0.024	0.002
10	0.021	0.008
11	0.009	0.010
12	0.025	0.003
13	0.031	0.013
14	0.030	0.015
15	0.031	0.007
16	0.037	0.011
17	0.037	0.009
18	0.019	0.011
19	0.019	0.020
20	0.016	0.013
21	0.019	0.015
22	0.011	0.005
23	0.008	0.012
24	0.020	0.021
25	0.018	0.018
26	0.022	0.009
27	0.022	0.019
28	0.028	0.005
29	0.025	0.002
30	0.019	0.005
31	0.013	0.011
32	0.011	0.001

Mean 0.023 0.011
 3 Sigma 0.031 0.0166
M + 3s 0.054 0.027

Meas No	X	Y
1	0.013	-0.026
2	0.019	-0.019
3	0.015	-0.026
4	0.012	-0.018
5	-0.009	-0.009
6	0.036	-0.032
7	0.033	-0.028
8	0.014	-0.022
9	0.010	-0.022
10	0.005	-0.007
11	0.015	-0.011
12	0.028	-0.011
13	0.030	-0.018
14	0.032	-0.019
15	0.030	-0.028
16	0.030	-0.019
17	0.038	-0.027
18	0.030	-0.021
19	0.028	-0.036
20	0.028	-0.023
21	0.025	-0.010
22	0.027	-0.017
23	0.027	0.005
24	0.027	0.014
25	0.031	-0.002
26	0.039	0.000
27	0.035	0.007
28	0.037	-0.006
29	0.044	0.003
30	0.045	0.000
31	0.043	0.003
32	0.044	-0.004

Mean 0.027 -0.013
 3 Sigma 0.037 0.038
M + 3s 0.064 0.051

Total 3 wafers

	X	Y
Mean	0.020	-0.002
3 sig	0.043	0.042
M + 3 sig	0.063	0.044

Spec <0.070

Canon.**AGA Accuracy****Mode 4**

Meas No	X	Y
1	-0.032	-0.003
2	-0.023	0.002
3	-0.015	0.010
4	-0.012	-0.001
5	0.005	0.012
6	-0.006	0.018
7	-0.011	0.013
8	-0.016	0.004
9	-0.015	-0.002
10	-0.023	-0.014
11	-0.014	-0.004
12	-0.005	0.010
13	-0.010	0.009
14	-0.003	0.015
15	0.001	0.017
16	0.010	0.031
17	0.013	0.032
18	0.001	0.025
19	-0.008	0.023
20	-0.002	0.011
21	-0.010	0.022
22	-0.019	0.012
23	-0.014	0.015
24	-0.006	0.023
25	0.003	0.026
26	0.009	0.027
27	0.008	0.025
28	0.017	0.041
29	0.026	0.035
30	0.022	0.040
31	0.010	0.027
32	0.005	0.027

Mean -0.004 0.016
 3 Sigma 0.041 0.04014
 M + 3s 0.044 0.057

Meas No	X	Y
1	-0.028	0.011
2	-0.028	0.020
3	-0.021	0.026
4	-0.018	0.021
5	-0.013	0.028
6	-0.013	0.027
7	-0.018	0.023
8	-0.013	0.016
9	-0.019	0.017
10	-0.021	0.000
11	-0.018	0.006
12	-0.015	0.018
13	-0.010	0.020
14	-0.008	0.029
15	-0.012	0.027
16	0.006	0.026
17	-0.001	0.027
18	-0.011	0.013
19	-0.012	0.020
20	-0.016	0.003
21	-0.013	0.006
22	-0.025	0.000
23	-0.005	-0.004
24	-0.008	0.001
25	-0.001	0.010
26	-0.005	0.022
27	0.004	0.012
28	0.004	0.030
29	0.013	0.023
30	0.005	0.022
31	0.003	0.007
32	-0.002	-0.002

Mean -0.010 0.016
 3 Sigma 0.031 0.031
 M + 3s 0.041 0.047

Meas No	X	Y
1	0.007	0.019
2	0.015	0.017
3	0.012	0.016
4	0.016	0.010
5	0.029	0.038
6	0.015	0.022
7	0.017	0.023
8	0.016	0.018
9	0.010	0.021
10	0.007	0.006
11	0.019	0.015
12	0.022	0.024
13	0.026	0.016
14	0.028	0.018
15	0.029	0.022
16	0.035	0.037
17	0.038	0.039
18	0.036	0.023
19	0.034	0.032
20	0.024	0.022
21	0.018	0.020
22	0.014	-0.002
23	0.027	-0.005
24	0.030	0.016
25	0.033	0.012
26	0.036	0.024
27	0.039	0.025
28	0.046	0.043
29	0.059	0.024
30	0.052	0.020
31	0.047	0.016
32	0.036	0.006

Mean 0.027 0.020
 3 Sigma 0.039 0.032
 M + 3s 0.067 0.052

Total 3 wafers

	X	Y
Mean	0.005	0.017
3 sig	0.061	0.035
M + 3 sig	0.066	0.052

Spec <0.070

Canon.**AGA - Etched Wafer****Mode 1**

Meas No	X	Y
1	0.018	-0.015
2	0.019	-0.030
3	0.017	-0.024
4	0.025	-0.029
5	0.003	-0.015
6	0.003	-0.023
7	0.010	-0.020
8	0.025	-0.033
9	0.032	-0.023
10	0.026	0.008
11	0.027	0.020
12	0.015	-0.007
13	0.008	-0.009
14	-0.013	-0.072
15	0.003	-0.027
16	-0.009	-0.009
17	0.010	0.001
18	0.013	0.006
19	0.018	0.006
20	0.035	0.007
21	0.041	0.033
22	0.051	0.033
23	0.038	0.030
24	0.033	0.009
25	0.021	-0.008
26	0.032	-0.007
27	0.009	-0.013
28	0.017	-0.011
29	0.050	-0.005
30	0.050	-0.005
31	0.049	0.009
32	0.062	0.020

Mean 0.023 -0.006
 3 Sigma 0.054 0.06539
M + 3s 0.077 0.072

Meas No	X	Y
1	0.009	-0.032
2	0.001	-0.032
3	-0.002	-0.041
4	0.006	-0.050
5	-0.021	-0.022
6	-0.006	-0.040
7	0.006	-0.043
8	0.008	-0.050
9	0.010	-0.040
10	0.019	-0.007
11	0.019	0.029
12	0.007	-0.012
13	-0.001	-0.026
14	-0.020	-0.068
15	-0.029	-0.032
16	-0.039	-0.022
17	-0.018	-0.005
18	-0.015	-0.011
19	0.011	-0.010
20	0.017	0.012
21	0.026	0.016
22	0.028	0.045
23	0.038	0.037
24	0.037	0.010
25	0.012	0.005
26	0.007	0.006
27	-0.005	0.003
28	0.000	-0.014
29	0.034	-0.009
30	0.024	-0.005
31	0.032	0.013
32	0.053	0.020

Mean 0.008 -0.012
 3 Sigma 0.063 0.081
M + 3s 0.070 0.093

Meas No	X	Y
1	0.022	-0.028
2	0.008	-0.042
3	0.015	-0.052
4	0.013	-0.036
5	-0.013	-0.019
6	-0.007	-0.042
7	0.011	-0.041
8	0.014	-0.039
9	0.004	-0.050
10	0.022	-0.021
11	0.019	0.013
12	0.008	-0.011
13	0.007	-0.032
14	-0.020	-0.075
15	-0.018	-0.038
16	-0.020	-0.015
17	-0.004	-0.010
18	0.005	0.007
19	0.014	-0.008
20	0.019	-0.001
21	0.032	0.001
22	0.035	0.019
23	0.027	0.031
24	0.027	0.013
25	0.031	0.010
26	0.023	0.010
27	-0.001	0.001
28	0.005	0.003
29	0.042	-0.009
30	0.039	0.013
31	0.060	0.012
32	0.048	0.023

Mean 0.015 -0.013
 3 Sigma 0.058 0.078
M + 3s 0.073 0.091

Total 3 wafers

	X	Y
Mean	0.015	-0.010
3 sig	0.061	0.075
M + 3 sig	0.076	0.085

Spec <0.14

Canon.**AGA - Etched Wafer****Mode 4**

Meas No	X	Y
1	0.020	0.007
2	0.001	-0.012
3	-0.004	-0.017
4	0.000	-0.010
5	-0.015	-0.001
6	-0.029	0.000
7	-0.007	-0.012
8	0.000	-0.021
9	0.019	-0.009
10	0.030	0.012
11	0.010	0.021
12	0.005	-0.008
13	-0.022	-0.022
14	-0.041	-0.073
15	-0.037	-0.038
16	-0.035	-0.015
17	-0.023	-0.003
18	-0.013	-0.017
19	-0.013	-0.012
20	-0.005	-0.002
21	0.008	-0.005
22	0.015	0.029
23	0.012	0.009
24	0.010	-0.007
25	0.000	-0.019
26	-0.001	-0.011
27	-0.020	-0.011
28	-0.020	-0.017
29	0.014	-0.028
30	0.015	0.000
31	0.013	-0.015
32	0.031	-0.007

Mean -0.003 -0.010
 3 Sigma 0.057 0.05286
M + 3s 0.060 0.063

Meas No	X	Y
1	0.024	0.046
2	0.014	0.026
3	0.016	0.021
4	-0.001	0.022
5	-0.022	0.037
6	-0.010	0.020
7	-0.009	0.024
8	0.015	0.014
9	0.020	0.012
10	0.010	0.055
11	0.003	0.057
12	0.009	0.017
13	-0.008	0.018
14	-0.029	-0.038
15	-0.032	0.007
16	-0.024	0.026
17	-0.016	0.031
18	-0.010	0.029
19	-0.005	0.021
20	0.008	0.018
21	0.019	0.041
22	0.027	0.051
23	0.018	0.045
24	0.015	0.027
25	0.001	0.014
26	0.004	0.008
27	0.000	0.016
28	-0.014	0.020
29	0.007	0.001
30	0.026	0.014
31	0.020	0.016
32	0.030	0.024

Mean 0.003 0.023
 3 Sigma 0.051 0.053
M + 3s 0.054 0.076

Meas No	X	Y
1	0.001	-0.047
2	0.000	-0.064
3	-0.005	-0.070
4	-0.013	-0.049
5	-0.031	-0.038
6	-0.034	-0.039
7	-0.022	-0.048
8	-0.002	-0.056
9	0.002	-0.064
10	-0.002	-0.044
11	-0.018	-0.015
12	-0.024	-0.041
13	-0.035	-0.044
14	-0.049	-0.113
15	-0.039	-0.062
16	-0.044	-0.045
17	-0.031	-0.034
18	-0.024	-0.036
19	-0.009	-0.049
20	-0.002	-0.035
21	0.010	-0.018
22	0.020	-0.002
23	0.005	0.011
24	-0.006	-0.015
25	-0.008	-0.035
26	-0.014	-0.024
27	-0.026	-0.039
28	-0.026	-0.034
29	-0.004	-0.008
30	0.004	-0.014
31	0.009	-0.012
32	0.008	-0.007

Mean -0.013 -0.037
 3 Sigma 0.052 0.072
M + 3s 0.065 0.109

Total 3 wafers

	X	Y
Mean	-0.004	-0.008
3 sig	0.057	0.095
M + 3 sig	0.061	0.103

Spec <0.14



Stepping Accuracy

FPA-2500i3

Serial No

Wafer 1					Wafer 2					Wafer 3				
Shot	X-X	Y-X	X-Y	Y-Y	Shot	X-X	Y-X	X-Y	Y-Y	Shot	X-X	Y-X	X-Y	Y-Y
1	0.0017	0.0118	-0.0480	-0.0087	1	0.0004	0.0249	-0.0472	-0.0102	1	-0.0018	0.0350	-0.0502	-0.0112
2	-0.0082	0.0204	-0.0399	-0.0172	2	-0.0135	0.0236	-0.0402	-0.0129	2	-0.0127	0.0129	-0.0396	-0.0119
3	-0.0097	0.0403	-0.0519	-0.0181	3	-0.0123	0.0293	-0.0519	-0.0153	3	-0.0161	0.0326	-0.0493	-0.0261
4	-0.0107	0.0274	-0.0579	-0.0197	4	-0.0100	0.0299	-0.0535	-0.0257	4	-0.0161	0.0203	-0.0625	-0.0366
5	0.0037	0.0379	-0.0623	-0.0319	5	0.0014	0.0291	-0.0567	-0.0220	5	-0.0023	0.0291	-0.0570	-0.0435
6	-0.0083	0.0422	-0.0469	-0.0271	6	-0.0084	0.0340	-0.0482	-0.0211	6	-0.0144	0.0339	-0.0477	-0.0384
7	-0.0070	0.0319	-0.0592	-0.0268	7	-0.0087	0.0280	-0.0530	-0.0284	7	-0.0126	0.0273	-0.0604	-0.0403
8	0.0022	0.0361	-0.0424	-0.0306	8	0.0008	0.0298	-0.0433	-0.0302	8	-0.0026	0.0267	-0.0440	-0.0422
9	-0.0011	0.0259	-0.0442	-0.0221	9	-0.0037	0.0286	-0.0419	-0.0256	9	-0.0047	0.0303	-0.0399	-0.0399
10	-0.0078	0.0233	-0.0509	-0.0239	10	-0.0116	0.0262	-0.0485	-0.0272	10	-0.0136	0.0226	-0.0435	-0.0414
11	-0.0111	0.0264	-0.0334	-0.0092	11	-0.0093	0.0275	-0.0310	-0.0248	11	-0.0149	0.0299	-0.0313	-0.0193
12	0.0016	0.0254	-0.0281	-0.0054	12	-0.0007	0.0251	-0.0288	-0.0156	12	-0.0020	0.0317	-0.0232	-0.0094
13	-0.0092	0.0293	-0.0404	-0.0021	13	-0.0095	0.0190	-0.0431	-0.0188	13	-0.0112	0.0214	-0.0376	-0.0120
14	0.0011	0.0241	-0.0462	-0.0007	14	-0.0028	0.0283	-0.0460	-0.0110	14	-0.0064	0.0258	-0.0449	-0.0136
15	-0.0093	0.0156	-0.0410	-0.0031	15	-0.0147	0.0277	-0.0384	-0.0148	15	-0.0149	0.0299	-0.0379	-0.0147
16	-0.0090	0.0248	-0.0520	-0.0026	16	-0.0079	0.0295	-0.0505	-0.0188	16	-0.0122	0.0211	-0.0444	-0.0171
17	-0.0101	0.0274	-0.0452	-0.0020	17	-0.0168	0.0374	-0.0441	-0.0140	17	-0.0162	0.0337	-0.0376	-0.0221
18	-0.0038	0.0339	-0.0524	-0.0142	18	-0.0046	0.0333	-0.0544	-0.0125	18	-0.0053	0.0252	-0.0503	-0.0195
19	-0.0082	0.0314	-0.0549	-0.0046	19	-0.0087	0.0358	-0.0562	-0.0143	19	-0.0143	0.0326	-0.0498	-0.0357
20	0.0004	0.0360	-0.0520	-0.0277	20	0.0007	0.0343	-0.0537	-0.0250	20	-0.0038	0.0306	-0.0477	-0.0142
21	-0.0086	0.0375	-0.0472	-0.0277	21	-0.0097	0.0368	-0.0428	-0.0273	21	-0.0156	0.0298	-0.0445	-0.0182
22	-0.0085	0.0315	-0.0546	-0.0276	22	-0.0078	0.0306	-0.0519	-0.0258	22	-0.0118	0.0290	-0.0540	-0.0127
23	0.0039	0.0324	-0.0481	-0.0292	23	0.0033	0.0341	-0.0433	-0.0271	23	-0.0011	0.0267	-0.0396	-0.0182
24	-0.0111	0.0306	-0.0562	-0.0291	24	-0.0104	0.0262	-0.0522	-0.0266	24	-0.0141	0.0206	-0.0517	-0.0169
25	-0.0076	0.0224	-0.0519	-0.0315	25	-0.0102	0.0192	-0.0469	-0.0308	25	-0.0147	0.0201	-0.0473	-0.0197
26	-0.0032	0.0302	-0.0387	-0.0288	26	-0.0015	0.0266	-0.0397	-0.0257	26	-0.0050	0.0258	-0.0314	-0.0208
27	-0.0102	0.0267	-0.0474	-0.0326	27	-0.0088	0.0154	-0.0437	-0.0395	27	-0.0153	0.0254	-0.0383	-0.0214
28	-0.0011	0.0343	-0.0323	-0.0259	28	-0.0048	0.0314	-0.0275	-0.0354	28	-0.0039	0.0273	-0.0257	-0.0166
29	-0.0093	0.0292	-0.0319	-0.0206	29	-0.0090	0.0287	-0.0331	-0.0155	29	-0.0163	0.0260	-0.0229	-0.0298
30	-0.0075	0.0301	-0.0263	-0.0268	30	-0.0120	0.0272	-0.0298	-0.0215	30	-0.0131	0.0288	-0.0287	-0.0229
31	-0.0013	0.0276	-0.0232	-0.0263	31	0.0000	0.0266	-0.0265	-0.0125	31	-0.0057	0.0234	-0.0167	-0.0207
32	-0.0110	0.0336	-0.0348	-0.0284	32	-0.0160	0.0282	-0.0352	-0.0295	32	-0.0182	0.0279	-0.0307	-0.0187
33	-0.0083	0.0285	-0.0308	-0.0204	33	-0.0078	0.0264	-0.0348	-0.0285	33	-0.0155	0.0289	-0.0281	-0.0172
34	-0.0016	0.0241	-0.0369	-0.0189	34	0.0000	0.0314	-0.0368	-0.0261	34	-0.0064	0.0310	-0.0341	-0.0155
35	-0.0124	0.0332	-0.0482	-0.0238	35	-0.0093	0.0445	-0.0487	-0.0263	35	-0.0177	0.0394	-0.0365	-0.0166
36	-0.0086	0.0368	-0.0407	-0.0305	36	-0.0109	0.0413	-0.0392	-0.0290	36	-0.0154	0.0388	-0.0299	-0.0162
37	-0.0005	0.0297	-0.0502	-0.0254	37	-0.0044	0.0425	-0.0497	-0.0243	37	-0.0071	0.0325	-0.0432	-0.0132
38	-0.0105	0.0354	-0.0505	-0.0323	38	-0.0121	0.0438	-0.0495	-0.0268	38	-0.0153	0.0309	-0.0484	-0.0176
39	0.0002	0.0345	-0.0440	-0.0436	39	-0.0003	0.0466	-0.0411	-0.0257	39	-0.0076	0.0372	-0.0334	-0.0195
40	-0.0072	0.0319	-0.0550	-0.0256	40	-0.0112	0.0435	-0.0540	-0.0195	40	-0.0158	0.0329	-0.0526	-0.0196
41	-0.0074	0.0263	-0.0493	-0.0203	41	-0.0079	0.0401	-0.0577	-0.0234	41	-0.0135	0.0339	-0.0535	-0.0292
42	0.0011	0.0337	-0.0424	-0.0249	42	-0.0014	0.0420	-0.0431	-0.0232	42	-0.0034	0.0277	-0.0394	-0.0282
43	-0.0106	0.0292	-0.0491	-0.0235	43	-0.0098	0.0349	-0.0562	-0.0231	43	-0.0176	0.0300	-0.0480	-0.0269
44	-0.0087	0.0255	-0.0396	-0.0282	44	-0.0102	0.0357	-0.0405	-0.0201	44	-0.0117	0.0177	-0.0384	-0.0243
45	-0.0017	0.0234	-0.0521	-0.0318	45	0.0005	0.0254	-0.0533	-0.0258	45	-0.0082	0.0277	-0.0476	-0.0219
46	-0.0134	0.0277	-0.0473	-0.0283	46	-0.0124	0.0225	-0.0498	-0.0251	46	-0.0167	0.0190	-0.0440	-0.0257
47	-0.0106	0.0223	-0.0345	-0.0285	47	-0.0105	0.0233	-0.0345	-0.0213	47	-0.0150	0.0239	-0.0278	-0.0245
48	0.0001	0.0256	-0.0386	-0.0316	48	0.0024	0.0282	-0.0371	-0.0258	48	-0.0047	0.0246	-0.0324	-0.0216
49	-0.0089	0.0281	-0.0337	-0.0245	49	-0.0132	0.0261	-0.0339	-0.0209	49	-0.0193	0.0220	-0.0269	-0.0234
50	-0.0106	0.0271	-0.0263	-0.0251	50	-0.0119	0.0231	-0.0240	-0.0220	50	-0.0167	0.0324	-0.0213	-0.0145
51	-0.0043	0.0237	-0.0079	-0.0162	51	-0.0030	0.0270	-0.0063	-0.0152	51	-0.0058	0.0251	-0.0095	-0.0177
52	-0.0127	0.0255	-0.0114	-0.0147	52	-0.0154	0.0247	-0.0120	-0.0162	52	-0.0181	0.0256	-0.0129	-0.0172
53	0.0009	0.0281	-0.0313	-0.0130	53	-0.0004	0.0249	-0.0281	-0.0140	53	-0.0041	0.0299	-0.0248	-0.0131
54	-0.0109	0.0355	-0.0211	-0.0151	54	-0.0126	0.0235	-0.0200	-0.0113	54	-0.0155	0.0254	-0.0177	-0.0168
55	-0.0105	0.0291	-0.0363	-0.0157	55	-0.0131	0.0331	-0.0341	-0.0093	55	-0.0186	0.0305	-0.0335	-0.0209
56	-0.0057	0.0351	-0.0357	-0.0107	56	-0.0033	0.0327	-0.0367	-0.0149	56	-0.0083	0.0262	-0.0343	-0.0150
57	-0.0141	0.0258	-0.0293	-0.0103	57	-0.0092	0.0308	-0.0298	-0.0110	57	-0.0195	0.0291	-0.0201	-0.0162
58	-0.0123	0.0224	-0.0427	-0.0165	58	-0.0118	0.0268	-0.0411	-0.0156	58	-0.0194	0.0302	-0.0361	-0.0165
59	0.0006	0.0308	-0.0335	-0.0214	59	-0.0015	0.0293	-0.0319	-0.0198	59	-0.0083	0.0313	-0.0272	-0.0151
60	-0.0116	0.0284	-0.0466	-0.0226	60	-0.0105	0.0303	-0.0495	-0.0262	60	-0.0156	0.0344	-0.0493	-0.0281
61	0.0029	0.0235	-0.0360	-0.0264	61	-0.0002	0.0194	-0.0368	-0.0275	61	-0.0081	0.0235	-0.0303	-0.0304
62	-0.0110	0.0205	-0.0461	-0.0258	62	-0.0112	0.0237	-0.0448	-0.0280	62	-0.0159	0.0223	-0.0398	-0.0298
63	-0.0068	0.0316	-0.0428	-0.0300	63	-0.0105	0.0288	-0.0448	-0.0301	63	-0.0176	0.0194	-0.0400	-0.0334
64	-0.0095	0.0313	-0.0307	-0.0293	64	-0.0111	0.0258	-0.0332	-0.0309	64				



Mechanical PA Accuracy

	XI	YI	Xr	Yr	
1	0.01429	-0.02158	0.01445	0.01079	
2	0.01046	-0.01065	0.01089	0.00556	
3	0.00827	-0.02064	0.00861	0.01022	
4	-0.00452	0.00369	-0.00425	0.00731	
5	0.00899	-0.00914	0.00901	0.00752	
6	0.00567	-0.01248	0.00598	0.017	
7	0.00179	-0.01231	0.002010	0.00357	
8	0.00577	-0.01178	0.00609	0.01009	
9	0.00025	-0.01556	0.000310	0.00259	
10	0.01267	-0.00104	0.01289	0.00754	
Average	0.00636	-0.01115	0.00660	0.00822	mm
3 Sigma	0.01754	0.02342	0.01756	0.01238	mm

Accuracy	17.5	23.4	17.6	12.4	um
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Matching	X	Y	um
	6.5	-1.5	

Y-Diff	19.4	um
Rot	193.7	ppm



Type IV AF EBR Adjustment

EBR Width Setting Value in ED P
PASH I/O SW orig setting

SW5

4.0 mm

SW3

8

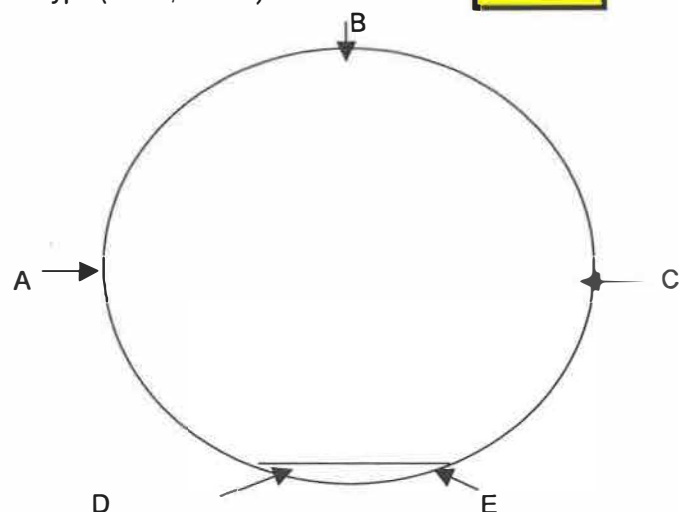
SW6

8

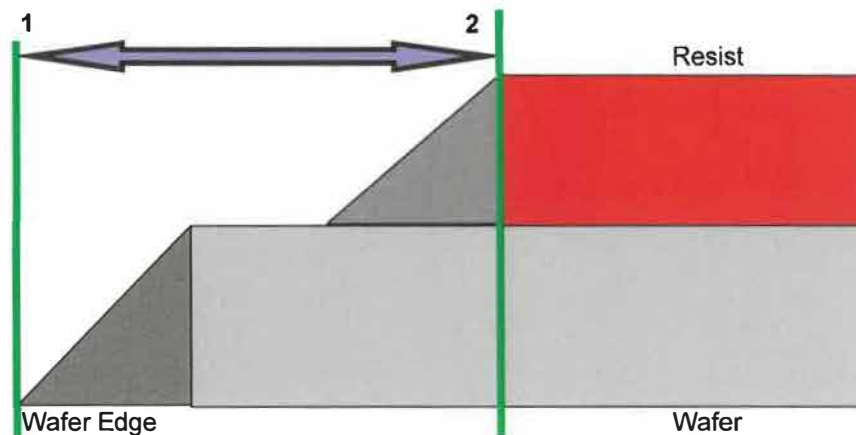
(8 = zero setting)

Wafer Type (SEMI, JEIDA)

JEIDA



	Accuracy	Spec
Edge	0.0	+/-0.2
Flat	0.1	+/-0.3



Edge

	1	2	Diff
A	74.951	70.925	4.026
B	74.655	70.720	3.935
C	75.026	71.042	3.984
			4.0 mm

Flat

	1	2	Diff
D	71.402	67.625	3.777
E	71.497	67.375	4.122
			3.9 mm
Rotation			-0.4 Deg



Throughput

45 shots, 160ms timed exposure

D/D Tilt ON

wno	load_wafer	load_wafer	v_pre_alig	aga	index	[ms]
1	6298	32341	8423	66838	144039	
2	6291	10838	1586	13011	62042	
3	6265	10647	1574	12973	61537	
4	6284	10726	1570	12932	61456	
5	6280	10738	1566	12827	61381	
6	6290	10722	1567	12897	61550	
7	6285	10657	1563	12830	61247	
8	6283	10785	1562	12856	61230	
9	6287	10500	1562	12653	60728	
9	6287	10500	1562	12653	60728	

Average Index Time 61322.11
(Not inc. Wafer 1)

Throughput **58.7** wph

D/D Tilt OFF

wno	load_wafer	load_wafer	v_pre_alig	aga	index	[ms]
1	6299	32786	8341	66636	140171	
2	6294	10503	1562	12510	57400	
3	6262	10543	1561	12486	57629	
4	6282	10683	1563	12574	57692	
5	6295	10755	1563	12540	57643	
6	6283	10743	1552	12555	57845	
7	6302	10631	1564	12473	57609	
8	6293	10673	1553	12536	57759	
9	6256	10605	1555	12506	57620	
10	6272	10645	1554	12558	57672	

Average Index Time 57652.11
(Not inc. Wafer 1)

Throughput **62.4** wph

Canon

Depth of Focus Performance

0.40 L&S

FPA-2500i3

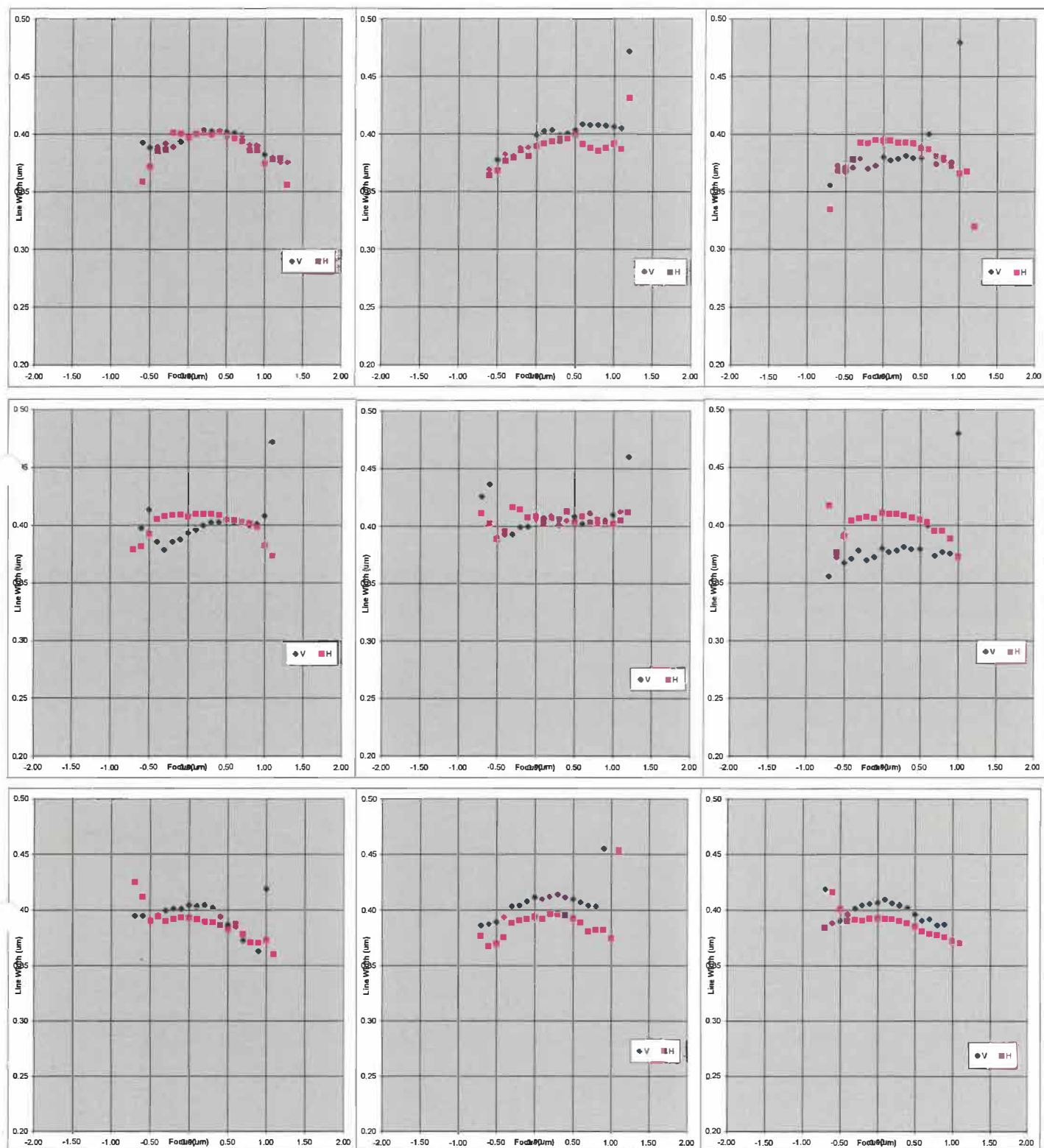
UL	V	V	T/B	Angle	T/B %	H	H	T/B	Angle	T/B %
Bottom	Top					Bottom	Top			
1.30										
1.20	0.3746	0.1758	0.469	83.4	46.9	0.3559				
1.10	0.3748	0.2105	0.562	84.6	56.2	0.3783	0.1690	0.447	83.1	44.7
1.00	0.3795	0.2185	0.576	84.7	57.6	0.3784	0.1903	0.503	83.8	50.3
0.90	0.3818	0.2324	0.609	85.0	60.9	0.3745	0.2123	0.567	84.6	56.7
0.80	0.3898	0.2512	0.644	85.4	64.4	0.3862	0.2441	0.632	85.3	63.2
0.70	0.3899	0.2525	0.648	85.4	64.8	0.3858	0.2491	0.633	85.4	63.8
0.60	0.3907	0.2601	0.652	85.4	65.2	0.3936	0.2592	0.659	85.5	65.9
0.50	0.4008	0.2612	0.652	85.4	65.2	0.3961	0.2624	0.662	85.6	66.2
0.40	0.4017	0.2620	0.652	85.4	65.2	0.3989	0.2632	0.675	85.7	67.5
0.30	0.4024	0.2654	0.660	85.4	66.0	0.4018	0.2683	0.668	85.6	66.8
0.20	0.4021	0.2602	0.647	85.3	64.7	0.3995	0.2669	0.668	85.6	66.8
0.10	0.4038	0.2570	0.636	85.1	63.6	0.4012	0.2649	0.660	85.5	66.0
0.00	0.3998	0.2559	0.640	85.2	64.0	0.4000	0.2588	0.647	85.3	64.7
-0.10	0.3965	0.2418	0.610	84.9	61.0	0.3872	0.2406	0.608	84.8	60.8
-0.20	0.3933	0.2360	0.600	84.8	60.0	0.4004	0.2332	0.582	84.4	58.2
-0.30	0.3639	0.1867	0.480	83.3	48.0	0.4011	0.2125	0.530	83.7	53.0
-0.40	0.3917	0.1090	0.278	80.7	27.8	0.3865	0.0914	0.178	79.5	17.8
-0.50	0.3889					0.3855				
-0.60	0.3880					0.3716				
-0.70	0.3921					0.3586				
-0.80										
-0.90										
-1.00										
-1.10										
-1.20										
Mean	0.3919					Mean	0.3875			

CL	V	V	T/B	Angle	T/B %	H	H	T/B	Angle	T/B %
Bottom	Top					Bottom	Top			
1.30										
1.20						0.3732				
1.10	0.4717									
1.00	0.4077	0.2285	0.560	84.1	56.0	0.3822	0.2235	0.585	84.7	58.5
0.90	0.4007	0.2404	0.600	84.7	60.0	0.3982	0.2386	0.599	84.7	59.9
0.80	0.3998	0.2590	0.633	85.1	63.3	0.4015	0.2689	0.670	85.6	67.0
0.70	0.4020	0.2497	0.621	84.9	62.1	0.4022	0.2662	0.662	85.5	66.2
0.60	0.4022	0.2446	0.633	85.1	63.3	0.4042	0.2786	0.679	85.7	67.9
0.50	0.4040	0.2559	0.633	85.1	63.3	0.4045	0.2828	0.696	86.0	69.6
0.40	0.4023	0.2541	0.632	85.1	63.2	0.4069	0.2801	0.685	85.7	68.5
0.30	0.4022	0.2502	0.622	84.9	62.2	0.4092	0.2821	0.688	85.8	68.8
0.20	0.3996	0.2465	0.617	84.9	61.7	0.4092	0.2848	0.696	85.9	69.6
0.10	0.3961	0.2458	0.621	85.0	62.1	0.4092	0.2832	0.691	85.8	69.1
0.00	0.3894	0.2381	0.605	84.8	60.5	0.4072	0.2745	0.674	85.6	67.4
-0.10	0.3873	0.2295	0.577	84.6	57.7	0.4092	0.2698	0.659	85.4	65.9
-0.20	0.3860	0.2163	0.567	84.5	56.7	0.4088	0.2625	0.642	85.1	64.2
-0.30	0.3786	0.1757	0.464	83.3	46.4	0.4073	0.2457	0.603	84.6	60.3
-0.40	0.3657	0.0824	0.240	80.3	24.0	0.4049	0.1864	0.460	82.8	46.0
-0.50	0.4132	0.1124	0.272	80.1	27.2	0.3920	0.1254	0.320	81.2	32.0
-0.60	0.3972					0.3817				
-0.70						0.3793				
-0.80										
-0.90										
-1.00										
-1.10										
-1.20										
Mean	0.4016					Mean	0.3997			

DL	V	V	T/B	Angle	T/B %	H	H	T/B	Angle	T/B %
Bottom	Top					Bottom	Top			
1.30										
1.20						0.3593				
1.10										
1.00	0.4186	0.0906	0.238	79.5	23.8	0.3724	0.0998	0.267	81.0	26.7
0.90	0.3623	0.1451	0.400	82.8	40.0	0.3702	0.1451	0.392	82.5	39.2
0.80	0.3700	0.2029	0.546	84.5	54.6	0.3706	0.2029	0.547	84.4	54.7
0.70	0.3723	0.1951	0.524	84.1	52.4	0.3706	0.1951	0.516	83.9	51.6
0.60	0.3645	0.2286	0.595	84.8	59.5	0.3671	0.2286	0.591	84.7	59.1
0.50	0.3884	0.2347	0.607	85.0	60.7	0.3821	0.2347	0.614	85.1	61.4
0.40	0.3935	0.2464	0.626	85.1	62.6	0.3862	0.2464	0.638	85.4	63.8
0.30	0.4016	0.2537	0.632	85.1	63.2	0.3890	0.2537	0.652	85.5	65.2
0.20	0.4039	0.2587	0.641	85.2	64.1	0.3884	0.2587	0.664	85.7	66.4
0.10	0.4031	0.2601	0.645	85.2	64.5	0.3916	0.2601	0.664	85.6	66.4
0.00	0.4041	0.2601	0.645	85.2	64.4	0.3926	0.2601	0.665	85.6	66.3
-0.10	0.4008	0.2554	0.637	85.2	63.7	0.3931	0.2554	0.650	85.4	65.0
-0.20	0.4010	0.2581	0.636	85.2	63.6	0.3914	0.2551	0.652	85.5	65.2
-0.30	0.3982	0.2489	0.623	85.0	62.3	0.3900	0.2469	0.638	85.3	63.8
-0.40	0.3890	0.2191	0.547	84.1	54.7	0.3941	0.2161	0.548	84.1	54.8
-0.50	0.3998	0.1786	0.453	82.9	45.3	0.3897	0.1786	0.453	82.9	45.3
-0.60	0.3945					0.4112				
-0.70	0.3935					0.4250				
-0.80										
-0.90										
-1.00										
-1.10										
-1.20										
Mean	0.3930					Mean	0.3875			

UC	V	V	T/B	Angle	T/B %	H	H	T/B	Angle	T/B %
Bottom	Top					Bottom	Top			
1.30										
1.20	0.4717					0.4314				
1.10	0.4049	0.2387	0.580	84.5	59.0	0.3872	0.1429	0.369	81.9	36.9
1.00	0.4061	0.2492	0.614	84.8	61.4	0.3920	0.1777	0.453	82.9	45.3
0.90	0.4077	0.2634	0.648	85.2	64.6	0.3882	0.1929	0.497	83.5	49.7
0.80	0.4081	0.2632	0.645	85.2	64.5	0.3869	0.2182	0.585	84.4	58.5
0.70	0.4078	0.2685	0.659	85.4	65.9	0.3879	0.2119	0.546	84.2	54.6
0.60	0.4088	0.2713	0.684	85.4	68.4	0.3913	0.2162	0.553	84.2	55.3
0.50	0.4032	0.2593	0.658	85.5	65.8	0.3965	0.2166	0.547	84.0	54.7
0.40	0.4093	0.2736	0.684	85.8	68.4	0.3962	0.2185	0.539	83.9	53.9
0.30	0.3998	0.2646	0.684	85.6	66.4	0.3943	0.2166	0.549	84.1	54.9
0.20	0.4036	0.2686	0.668	85.5	66.8	0.3937	0.1955	0.497	83.4	49.7
0.10	0.4024	0.2565	0.637	85.2	63.7	0.3918	0.1980	0.505	83.8	50.5
0.00	0.3968	0.2557	0.641	85.2	64.1	0.3895	0.2266	0.582	84.6	58.2
-0.10	0.3884	0.2334	0.601	84.9	60.1	0.3812	0.1849	0.485	83.5	48.5
-0.20	0.3877	0.2311	0.596	84.8	59.6	0.3862	0.1874	0.485	83.4	48.5
-0.30	0.3802	0.1992	0.524	84.0	52.4	0.3797	0.1449	0.382	82.2	38.2
-0.40	0.3822	0.0684	0.162	79.7	16.2	0.3769	0.1272	0.337	81.7	33.7
-0.50	0.3774					0.3682				
-0.60	0.3689					0.3941				
-0.70										
-0.80										
-0.90										
-1.00										
-1.10										
-1.20										
Mean	0.4003					Mean	0.3887			

CC	V					H				
	Bottom	Top	T/B	Angle	T/B%	Bottom	Top	T/B	Angle	T/B%
1.30										
1.20	0.4595	0.2363	0.514	82.8	51.4	0.4118				
1.10	0.4125	0.2633	0.638	85.0	63.8	0.4052	0.2205	0.544	83.9	54.4
1.00	0.4096	0.2745	0.670	85.5	67.0	0.4016	0.2382	0.593	84.6	59.3
0.90	0.4048	0.2750	0.679	85.7	67.9	0.4029	0.2584	0.641	85.2	64.1
0.80	0.4029	0.2838	0.704	86.0	70.4	0.4052	0.2764	0.682	85.7	68.2
0.70	0.4107	0.2835	0.690	85.8	69.0	0.4098	0.2724	0.676	85.7	67.6
0.60	0.4016	0.2808	0.724	86.3	72.4	0.4079	0.2855	0.700	85.9	70.0
0.50	0.4080	0.2877	0.705	86.0	70.5	0.4021	0.2833	0.703	86.0	70.3
0.40	0.4044	0.2873	0.710	86.1	71.0	0.4134	0.2870	0.698	85.8	69.8
0.30	0.4007	0.2890	0.721	86.3	72.1	0.4087	0.2845	0.701	86.0	70.1
0.20	0.4085	0.2813	0.689	85.8	68.9	0.4068	0.2814	0.692	85.8	69.2
0.10	0.4067	0.2791	0.686	85.8	68.6	0.4026	0.2747	0.682	85.7	68.2
0.00	0.4005	0.2634	0.648	85.2	64.8	0.4079	0.2554	0.626	84.9	62.6
-0.10	0.3980	0.2574	0.644	85.3	64.4	0.4075	0.2388	0.594	84.4	59.4
-0.20	0.3904	0.2539	0.637	85.2	63.7	0.4145	0.2401	0.579	84.2	57.9
-0.30	0.3922	0.2328	0.594	84.7	59.4	0.4165	0.2205	0.529	83.5	52.9
-0.40	0.3923	0.1550	0.395	82.1	39.5	0.3863	0.0790	0.192	79.5	19.2
-0.50	0.3690	0.0872	0.224	80.0	22.4	0.3881				
-0.60	0.4362					0.4020				
-0.70	0.4293					0.4107				
-0.80										
-0.90										
-1.00										
-1.10										
-1.20										
Mean	0.4085					Mean	0.4055			

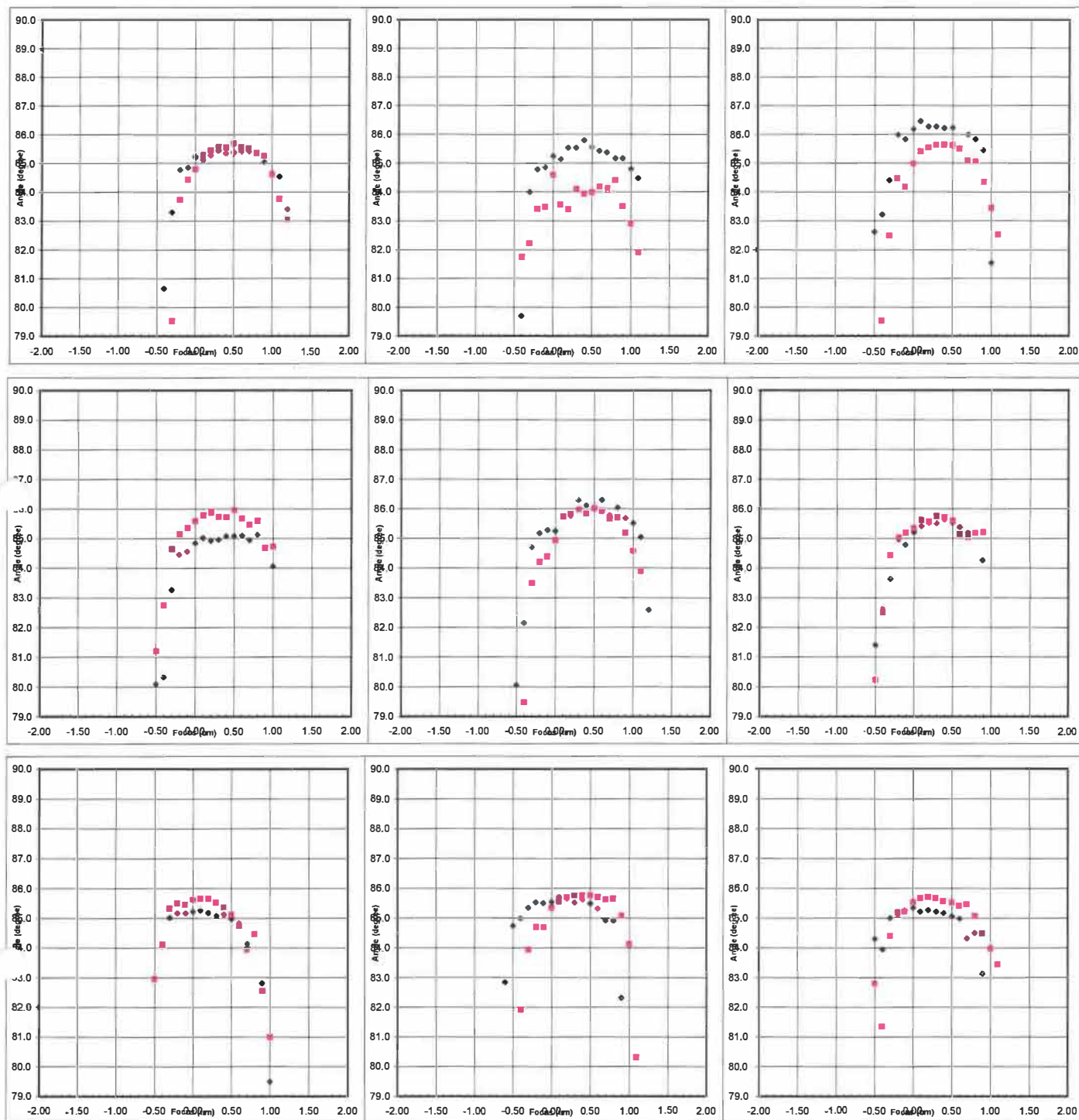


Rt	0.86 umt	Reticle	C705	Customer's ID No.	p	NA	0.60	Illumination	Standard	Date of exposure	18/9/2006
Resist	OiR 620	Exposure	225 j/m2	Serial No.		Sigma	0.60	Line width	0.40 um	Feature	L&S

Canon

CD Performance - 9 Fields

FPA-2500i3



Rt	0.86 um	Reticle	C705	Customer's ID No.	ppe	NA	0.60	Illumination	Standard	Date of exposure	18/9/2006
Mask	QR 020	Exposure	225 j/m ²	Serial No.	#506480	Sigma	0.60	Line width	0.40 um	Feature	LAS

Canon

Profile Performance - 9 Fields

FPA-2500i3

Canon

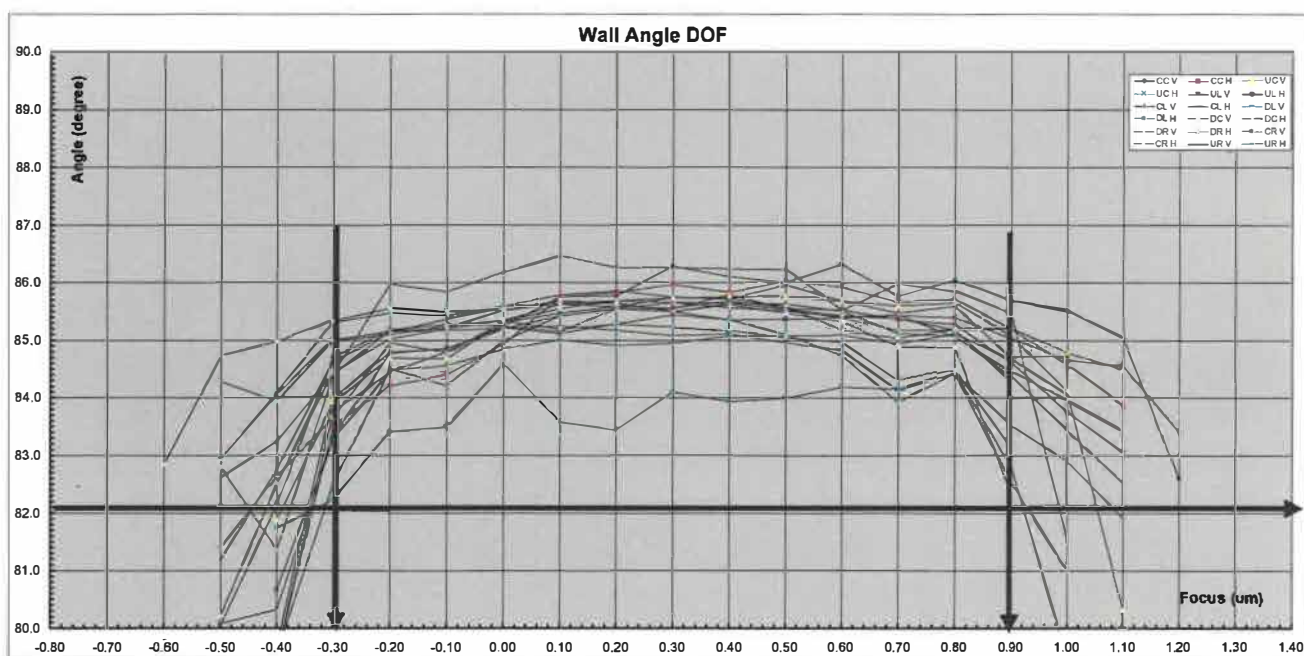
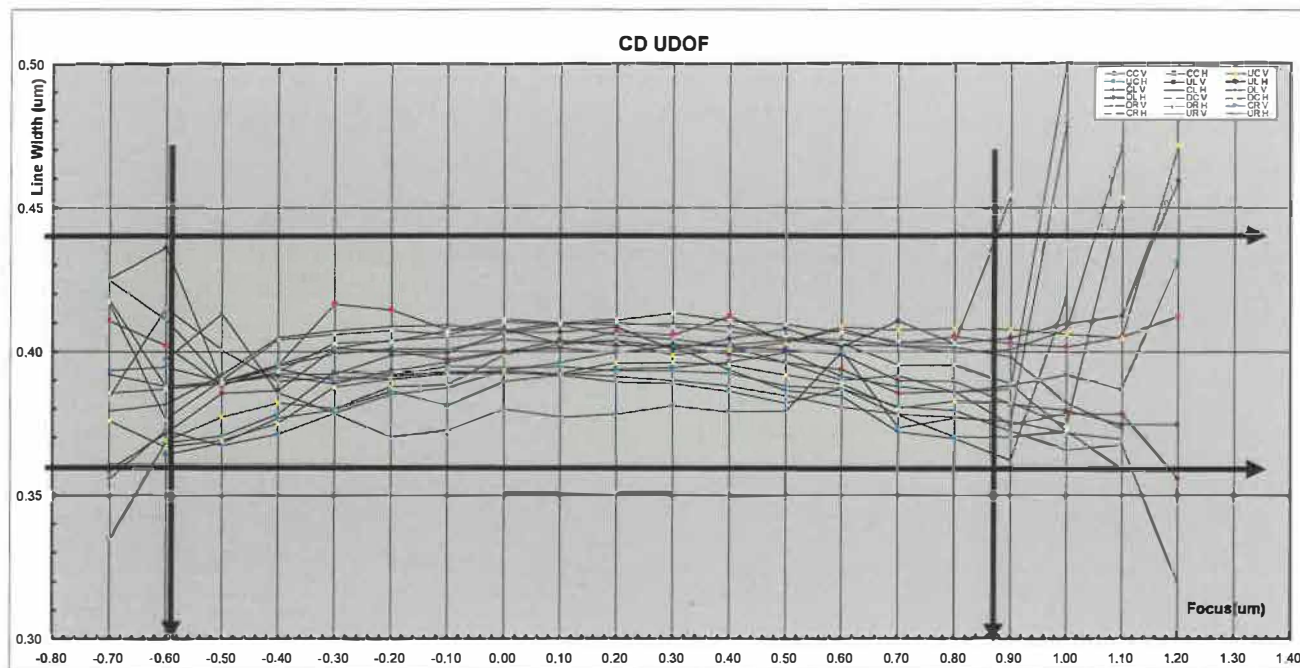
DOF performance

L&S

0.40 μm

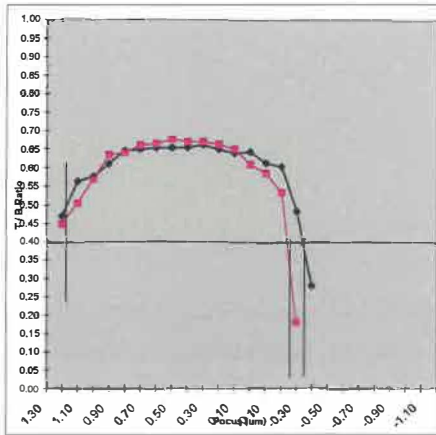
FPA-2500i3

Date of exposure	18/9/2006	Rt	0.86 μm	Reticle	C705	Customer's ID No.	ppp	NA	0.60	Illumination	Standard
Resist	OIR 620	Exposure	225 J/m^2	Serial No.		Sigma	0.80	Line width	0.40 μm		

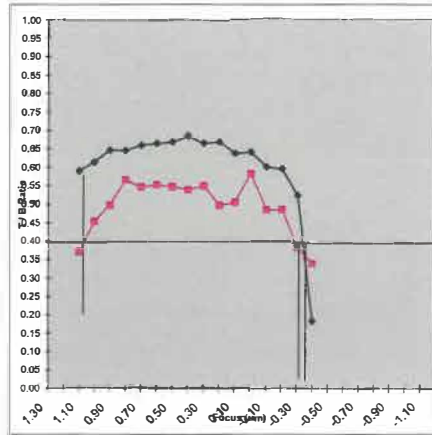


CD Depth of Focus @ 0.40 μm 1.47 μm

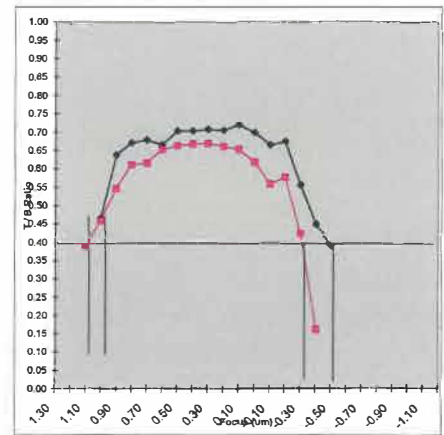
Wall Angle Depth of Focus for 0.35 μm @ 82.1 deg 1.20 μm



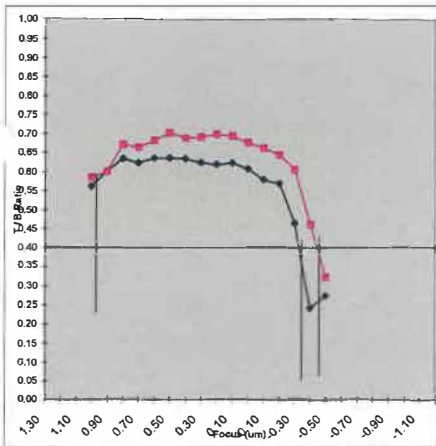
V L R BF
H 1.100 -0.440 0.330 Blue
1.100 -0.320 0.390 Pink



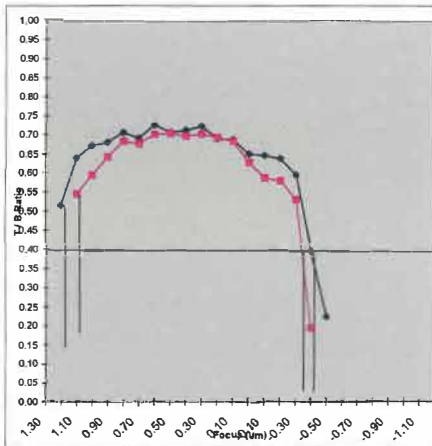
V L R BF
H 1.000 -0.440 0.280 Blue
1.000 -0.380 0.310 Pink



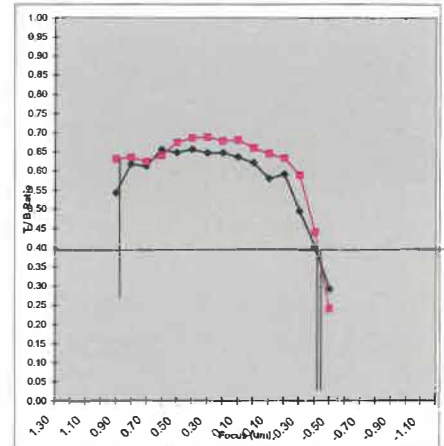
V L R BF
H 0.990 -0.800 0.195 Blue
0.900 -0.410 0.245 Pink



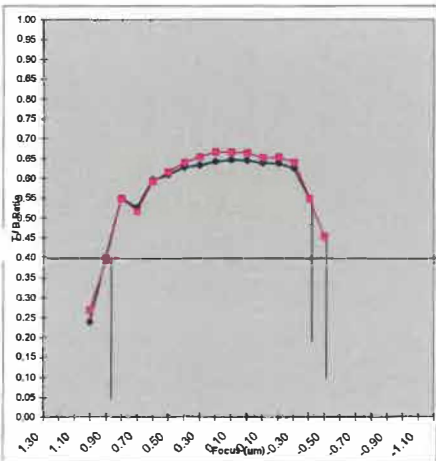
V L R BF
H 0.900 -0.410 0.245 Blue
0.900 -0.530 0.185 Pink



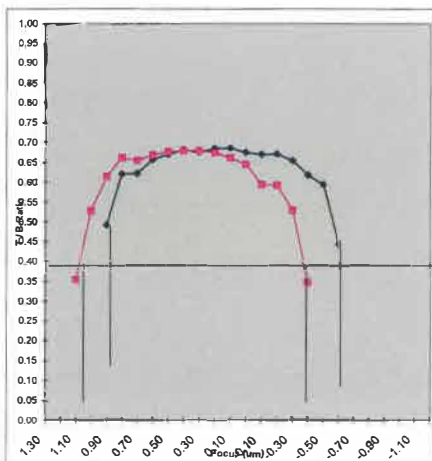
V L R BF
H 1.100 -0.500 0.300 Blue
1.000 -0.420 0.290 Pink



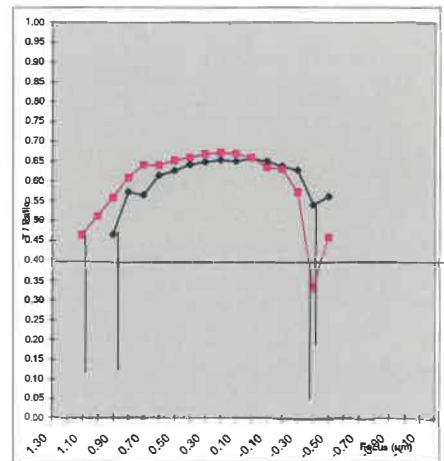
V L R BF
H 0.800 -0.500 0.150 Blue
0.800 -0.510 0.145 Pink



V L R BF
H 0.800 -0.500 0.150 Blue
0.800 -0.600 0.100 Pink



V L R BF
H 0.990 -0.700 0.145 Blue
0.800 -0.480 0.160 Pink



V L R BF
H 0.800 -0.500 0.150 Blue
1.000 -0.460 0.280 Pink

Rt	0.86	umt	Reticle	C705	Customer's ID No.	pp	NA	0.60	Illumination	Standard	Date of exposure	18/8/2006	
Resist	OR 620	Exposure	225	j/m2	Serial No.		Sigma	0.60	Line width	0.40	um	Feature	L&S

Canon Image Field Deviation - 9 Fields (T / B vs Focus)

FPA-2500i3

Canon**Lens Performance Data****FPA-2500i3**

Rt	0.86 umt	Reticle	C705	Customer's ID No.	pp	NA	0.60	Illumination	Standard
Resist	OiR 620	Exposure	225 j/m2	Serial No.		Sigma	0.60	Line width	0.40 um
				Date of exposure	18/9/2006	Feature	L&S		

From SEM measurement data :

Best Focus

0.330	0.280	0.195
0.245	0.300	0.150
0.150	0.145	0.150

Vertical

Horizontal

0.390	0.310	0.245
0.185	0.290	0.145
0.100	0.160	0.260

Horizontal

	-10	0	10	Ave Y
10	0.360	0.295	0.220	0.292
0	0.215	0.295	0.148	0.219
-10	0.125	0.153	0.205	0.161
Ave X	0.233	0.248	0.191	

Ave X

Tilt

V

HV Diff

Focus

	X	Y
-10	0.233	0.161
0	0.248	0.219
10	0.191	0.292
Tilt V	2.13	-6.54 ppm
		6.88 ppm

-0.060	-0.030	-0.050
0.060	0.010	0.005
0.050	-0.015	-0.110
		-0.110 um

Centre	0.295 um
Average	0.224 um

Compensation Amount for Tilt

	-10	0	10
10	-0.087	-0.065	-0.044
0	-0.021	0.000	0.021
-10	0.044	0.065	0.087

After compensation

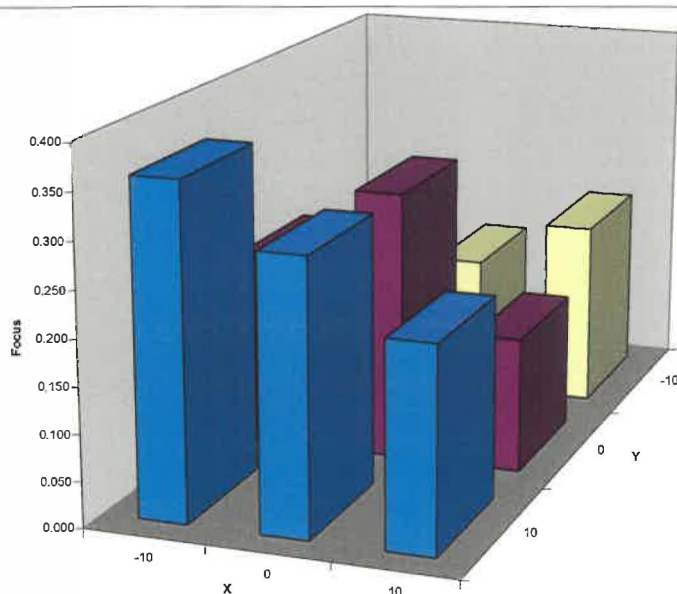
0.273	0.230	0.176	0.226
0.194	0.295	0.169	
0.169	0.218	0.292	0.226
0.212		0.212	

4 corners focus only

0.273	0.176
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0.169	0.292
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Image Field Deviation - Tilt Comp	0.13 um
Image Field Deviation - Tilt Incl.	0.24 um
(Max - Min)	
Field Curvature - Tilt Comp	-0.07 um
Field Curvature - Tilt Incl.	-0.07 um
(Four corner average - centre)	
Astigmatism	0.11 um



Canon**CD Uniformity****FPA-2500i3**

Rt	0.86 umt	Reticle	C705	Customer's ID No.	NA	0.60	Illumination	Standard	Date of exposure	18/9/2006
Resist	OiR 620	Exposure	225 j/m2	Serial No.	Sigma	0.60	Line width	0.40 um	Feature	L&S

Focus	V	Angle	H	Angle
0.1	0.4006	85.4	0.3961	85.6
BF	0.4017	85.4	0.3989	85.7
-0.1	0.4024	85.4	0.4018	85.6
Average	0.4016	85.4	0.3989	85.6

Focus	V	Angle	H	Angle
0.1	0.4032	85.5	0.3995	84.0
BF	0.4003	85.8	0.3962	83.9
-0.1	0.3986	85.6	0.3943	84.1
Average	0.4007	85.6	0.3967	84.0

Focus	V	Angle	H	Angle
0.1	0.3793	86.2	0.3880	85.6
BF	0.3792	86.2	0.3923	85.7
-0.1	0.3813	86.3	0.3932	85.7
Average	0.3799	86.2	0.3912	85.6

Focus	V	Angle	H	Angle
0.1	0.4040	85.1	0.4045	86.0
BF	0.4023	85.1	0.4089	85.7
-0.1	0.4022	84.9	0.4099	85.8
Average	0.4028	85.0	0.4078	85.8

Focus	V	Angle	H	Angle
0.1	0.4080	86.0	0.4031	86.0
BF	0.4044	86.1	0.4124	85.8
-0.1	0.4007	86.3	0.4057	86.0
Average	0.4044	86.1	0.4071	85.9

Focus	V	Angle	H	Angle
0.1	0.3793	85.5	0.4049	85.6
BF	0.3792	85.6	0.4068	85.7
-0.1	0.3813	85.5	0.4086	85.7
Average	0.3799	85.6	0.4068	85.7

Focus	V	Angle	H	Angle
0.1	0.3864	85.0	0.3821	85.1
BF	0.3935	85.1	0.3862	85.4
-0.1	0.4016	85.1	0.3890	85.5
Average	0.3938	85.1	0.3858	85.3

Focus	V	Angle	H	Angle
0.1	0.4094	85.5	0.3919	85.8
BF	0.4108	85.6	0.3953	85.7
-0.1	0.4135	85.5	0.3961	85.7
Average	0.4112	85.5	0.3944	85.7

Focus	V	Angle	H	Angle
0.1	0.3959	85.0	0.3848	85.5
BF	0.4017	85.2	0.3881	85.6
-0.1	0.4043	85.2	0.3900	85.7
Average	0.4006	85.2	0.3876	85.6

BF used **0.20** um**Total Range (H&V, 9 points)****0.0313** um**Minimum Wall Angle****84.0** deg

X Data	-2	-1	0	1	2
2	-0.017	0.000	-0.015	-0.020	-0.010
1	0.027	0.006	0.009	0.014	0.005
0	0.020	0.011	0.018	0.017	0.012
-1	0.022	0.001	0.001	0.007	-0.014
-2	-0.011	-0.006	-0.014	-0.028	-0.034

Y Data	-2	-1	0	1	2
2	0.009	-0.011	0.003	-0.002	0.017
1	-0.007	0.013	0.012	0.019	0.009
0	-0.004	0.001	0.008	0.003	0.013
-1	0.000	-0.006	-0.003	-0.011	0.008
-2	-0.014	-0.007	-0.019	-0.018	-0.012

D 22 Max

D 22 Min

X	Y	
0.027	0.019	um
-0.034	-0.019	um

Magnification

0.09 ppm

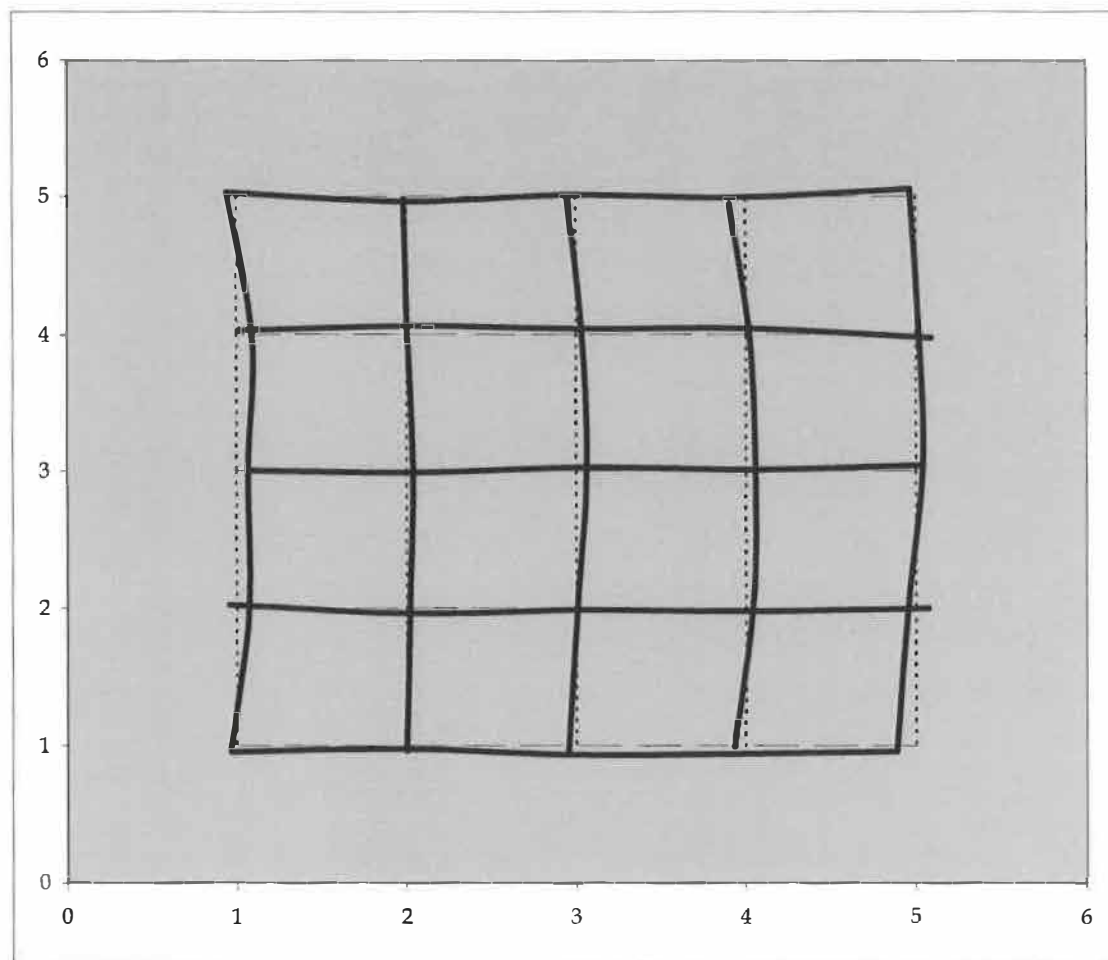
Compensation Amounts

Magnification

Rotation

Shift

		Average	
-0.79	0.97	0.1	ppm
3.15	2.29	2.7	ppm
-0.008	0.021		um



Distortion Matching to Silicon Ref Wafer (Including Magnification)

X Data	-2	-1	0	1	2
2	0.007	0.003	0.013	0.011	0.028
1	-0.026	-0.006	-0.007	-0.022	0.006
0	-0.017	0.004	-0.007	-0.024	0.010
-1	-0.023	0.005	-0.001	-0.004	0.019
-2	-0.014	-0.005	0.013	0.014	0.022

Y Data	-2	-1	0	1	2
2	0.052	0.043	0.020	0.026	0.032
1	0.023	-0.008	-0.017	-0.017	0.013
0	-0.010	-0.023	-0.031	-0.028	-0.010
-1	-0.014	-0.007	0.007	0.001	-0.002
-2	-0.014	-0.023	-0.020	-0.007	0.014

D 20 Max

D 20 Min

X	Y	
0.028	0.052	um
-0.026	-0.031	um

Magnification

1.58 ppm

Compensation Amounts

Magnification

Rotation

Shift

		Average	
Magnification	1.22	1.94	1.6 ppm
Rotation	-0.92	-1.01	-1.0 ppm
Shift	0.012	0.001	um

