

TECHNICAL SPEC FOR Stepper

System Model:

Canon FPA 3000 i5 SN 0112664

Tool has been shut down by Litho tech.

Electricity, cooling water, Vacuum and CCA are closed.

Cables between Main unit and power box are still connected, locking kit and demounting for transport to be provided by buyer.

Wafer size: 6 inch

Wafer type: Jeida flat

Chuck type: 6 inch pin chuck

Reticle changer type: Canon standard

Inline right or left: left

Particle checker (PPC): Yes

Touch panel type: Canon standard

Options:

Reticle size: 6 inch

Reticle alignment: see specs below

Wafer alignment: see specs below

Auto focus: see specs below

Auto feeder: Yes

Wafer tilt:

Wafer feeder: Yes

Track interface: Yes, tool was used inline, interface is track part

Laser: Hene

Lens data: see below

Stage and U-lens

Intensity: 800 mW/cm²

Uniformity: 4.5 %

Stage vibration data:

Used for 0.35micron line and space? Y

Chuck maintenance tool: No

Reticle bar code reader: Yes

Cassette bar code reader: No

SW Version:

OS:

Vintage: 2014

Missing/defective parts: none

**FPA-3000i5+**

Lens Replacement Check Results

For : ON Semiconductor
User ID : Stepper 18

Serial No.	0112664
Work Begin	29-Sep-14
Period End	12-Dec-14
Staff in Charge	A.Day, C.Perry & P.Wells

Classification	Item	Results	Spec.	Judge	Remark
1 Exposure	Resolution	0.35 μm	0.35 μm	O	
Performance	CD DOF	1.2 μm	$\geq 1.2\mu\text{m}$	O	
	IFD	0.19 μm	$\leq 0.30\mu\text{m}$	O	
	Distortion	DX 0.030 μm	DX,DY $\leq +0.035\mu\text{m}$	O	
	Normal (63,65)	DY 0.019 μm			
2 Illuminator	Illumination Intensity	Normal (63,65) 11553 W/m^2	$\geq 10000\text{W/m}^2$	O	New Lamp
		SiB 5341 W/m^2	$\geq 5500\text{W/m}^2$	X	With in 50 hours
	Illumination Uniformity	Normal (63,65) 0.952 %	$\leq 1.0 \%$	O	New Lamp
		SiB 0.796 %	$\leq 1.3\%$	O	With in 50 hours
	Dose Control Accuracy	0.57 %	$\leq 1.0\%$	O	80,250,500,1000msec
	Masking Accuracy	Total 73 μm	$\leq +100\mu\text{m}$	O	
3 Alignment	Reticle Rotation Accuracy	4.7 nm	$\leq 10\text{nm}$	O	
Accuracy	Reticle Rotation Repeatability	10.2 nm	$\leq 20\text{nm}$	O	
	He-Ne AGA Overlay	X 25.9 nm	$ m +3\sigma$	O	Center/32 shot
	Mode 1	Y 32.8 nm	$\leq 40\text{nm}$		5 wafers
	Broad Band AGA Overlay	X 33.9 nm	$ m +3\sigma$	O	Center/32 shot
	Mode 4	Y 27.5 nm	$\leq 40\text{nm}$		5 wafers
4 Auto Focus	Focus Leveling Repeatability	0.06 μm	$3\sigma \leq 0.10\mu\text{m}$	O	
5 Die by Die	Leveling	3sigma X 2.5 ppm	$3\sigma \leq 7\text{ppm}$	O	
Leveling	Repeatability	3sigma Y 2.8 ppm			
6 XY Stage	Stepping	XX 13.7 nm	$3\sigma \leq 30\text{nm}$	O	Sample 3 Wafers data
Accuracy	Accuracy	YY 12.6 nm			
	Orthogonality	-0.05 ppm	$\leq 0.5\text{ppm}$	O	
	Scaling	X -0.35 ppm	$\leq 0.5\text{ppm}$	O	
		Y -0.15 ppm			
7 PreAlignment		XI 8.3 μm			
Accuracy	Mechanical Pre Alignment	Xr 9.0 μm	$3\sigma \leq 30\mu\text{m}$	O	
	Accuracy	YI 5.7 μm			
		Yr 5.0 μm			
	TV PreAlignment	X 0.26 μm	$\leq 3 \mu\text{m}$	O	Max X +Max DR
	Accuracy	Y 0.55 μm			
8 Throughput	DXD Tilt On	125.7 wph	$\geq 120 \text{ wafers / hour}$	O	32shot 90msec shutter
	DXD Tilt Off	128.8 wph	$\geq 120 \text{ wafers / hour}$	O	time (Sub=0, main=4)



MODEL	FPA-3000 i5	INSTALLATION CHECK LIST	
SN	8032195	START DATE	4/4/2011
CUSTOMER	ON Semi	END DATE	8/11/2011

	DESCRIPTION		Results	UNIT	SPECIFICATION
	LENS DISTORTION (Normal)	DX	0.029	μm	≤ ± 0.04
		DY	0.022		
ILLUMINATION SYSTEM	Standard/Normal Illumination	Uniformity	2.2	%	≤ 1.0
		Intensity	9118.0	W/m ²	≥ 9000
	L.I. ACCURACY		0.3	%	≤ 1.0
	MASKING BLADE ACCURACY	θ	1818	ppm	≤ 3000
		GZW	15	μm	≤ 60
		Total	55	μm	≤ ± 110
FOCUS TILT SYSTEM	FOCUS - TILT STABILITY	F(3σ)	0.039	μm	3σ ≤ 0.08
		X(3σ)	1.397	ppm	3σ ≤ 6
		Y(3σ)	2.755		
	FOCUS - TILT REPEATABILITY	F(3σ)	0.068	μm	3σ ≤ 0.10
		X(3σ)	2.4	ppm	3σ ≤ 7
		Y(3σ)	3.2		
	GLOBAL - TILT MEASUREMENT REPEATABILITY	X(3σ)	0.4	ppm	3σ ≤ 4
		Y(3σ)	0.4		
	GLOBAL - TILT ACCURACY	X(3σ)	1.0	ppm	3σ ≤ 8
		Y(3σ)	1.1		
	TILT SENSOR UNEVEN FOCUS (DxD ON)	V	0.0	ppm	≤ ± 4
	UNEVEN FOCUS (TSOC) (DxD OFF)	V	0.3	ppm	≤ ± 6
	ALFC MEASUREMENT REPEATABILITY	3σ	0.06	μm	3σ ≤ 0.10
TVPA	TV PRE-ALIGNMENT ACCURACY (DARK FIELD)	X	1.12	μm	≤ 3.0
		Y	1.55		
WAFER STAGE	XYSA	Ortho	-0.10	ppm	≤ ± .5
		Scal X	0.05		
		Scal Y	0.08		
	STEPPING ACCURACY	XX (3σ)	0.031	μm	3σ ≤ 0.040
		YY(3σ)	0.024		
	STEPPING REPEATABILITY	X(3σ)	0.026	μm	3σ ≤ 0.035
		Y(3σ)	0.012		
SRC	SRC MEASUREMENT REPEATABILITY	3σ	0.26	ppm	3σ ≤ 0.5

RETICLE ALIGNMENT	ROC MEASUREMENT REPEATABILITY	XL(3 σ)	0.003	μm	$3\sigma \leq 0.01$
		YL(3 σ)	0.001		
		XR(3 σ)	0.004		
		YR(3 σ)	0.001		
	RETICLE ROTATION ACCUARACY		0.000	μm	$\leq \pm 0.01$
	RETICLE ROTATION REPEATABILITY		0.002	μm	$\leq \pm 0.02$
BASELINE	BLCC STABILITY (MODE 1)	X(3 σ)	0.006	μm	$3\sigma \leq 0.030$
		Y(3 σ)	0.005		
		RNG(X)	0.008	μm	Range ≤ 0.03
		RNG (Y)	0.007		
	BLCC STABILITY (MODE 2)	X(3 σ)	0.007	μm	$3\sigma \leq 0.030$
		Y(3 σ)	0.004		
		RNG(X)	0.012	μm	Range ≤ 0.03
		RNG (Y)	0.005		
	BLCC STABILITY (MODE 4)	X(3 σ)	0.005	μm	$3\sigma \leq 0.031$
		Y(3 σ)	0.005		
		RNG(X)	0.006	μm	Range ≤ 0.03
		RNG (Y)	0.007		
AUTO ALIGNMENT	AGA ACCURACY MODE 1 ($ m + 3\sigma$)	X	0.038	μm	$ \text{mean} + 3\sigma < 0.05$
		Y	0.027		
	AGA ACCURACY MODE 2 ($ m + 3\sigma$)	X	0.037	μm	$ \text{mean} + 3\sigma < 0.05$
		Y	0.036		
	AGA ACCURACY MODE 4 ($ m + 3\sigma$)	X	0.044	μm	$ \text{mean} + 3\sigma < 0.05$
		Y	0.035		
WAFER FEEDER	WAFER FEEDER ADJUSTMENT ACURACY (MECH PA)	θ	3.92	μm	$3\sigma \leq 30$
		XL	6.289	μm	$3\sigma \leq 40$
		XR	6.388		
		YL	18.21		
		YR	5.951		
TPD	THROUGHPUT 6" WAFER TYPE-L WF	DxD ON	131.0	WPH	>102
		DxD OFF	129.4		>102
	WAFER CHUCK FLATNESS	\square 22mm		μm	



MODEL	FPA-3000 i5	INSTALLATION CHECK LIST	
SN	7122157		
CUSTOMER	ON Semi	STEPPER NAME	STEPPER 16

	DESCRIPTION		Results	UNIT	SPECIFICATION	
LENS DISTORTION	LENS DISTORTION (NA63σ65)	DX	0.034	μm	≤ ± 0.04	OK
		DY	0.029			
	LENS DISTORTION Special Mode 1	DX	0.041	μm	NA	NA
		DY	0.057			
	LENS DISTORTION Special Mode 2	DX	0.043	μm	NA	NA
		DY	0.064			
	LENS DISTORTION Special Mode 4	DX	0.024	μm	NA	NA
		DY	0.032			
EXPOSURE FOCUS STABILITY	SP1 NA0.52σ0.60	Initial	0.00	μm	Range < 0.3μm	OK
		Heated	-0.05			
		Cooled	0.05			
		Range	0.10			
	SP2 NA0.55σ0.50	Initial	0.00	μm	Range < 0.3mm	OK
		Heated	0.10			
		Cooled	0.15			
		Range	0.15			
	SP4 NA0.63σ0.70	Initial	0.05	μm	Range < 0.3μm	OK
		Heated	0.05			
		Cooled	0.00			
		Range	0.05			
EXPOSURE MAGNIFICATION STABILITY	SP1 NA0.52σ0.60	Initial	3.22	ppm	Range < 2.0 ppm	OK
		Heated	2.61			
		Cooled	3.52			
		Range	0.92			
	SP2 NA0.55σ0.50	Initial	3.32	ppm	Range < 2.0 ppm	OK
		Heated	3.25			
		Cooled	3.77			
		Range	0.51			
	SP4 NA0.63σ0.70	Initial	3.34	ppm	Range < 2.0 ppm	OK
		Heated	3.22			
		Cooled	2.77			
		Range	0.57			

ILLUMINATION SYSTEM	Standard/Normal Illumination	Uniformity	1.6	%	≤ 1.0	NG
		Intensity	8235.0	W/m²	≥ 9000	
	Special Illumination Mode 1	Uniformity	1.7	%	NA	NG
		Intensity	11478	W/m²	NA	
	Special Illumination Mode 2	Uniformity	2.1	%	NA	NG
		Intensity	11908	W/m²	NA	
	Special Illumination Mode 4	Uniformity	1.3	%	NA	NG
		Intensity	10890	W/m²	NA	
	L.I. ACCURACY		0.45	%	≤ 1.0	OK
	MASKING BLADE ACCURACY	θ	-113.6	ppm	≤ 3000	OK
GZW		20	μm	≤ 60		
Total		32.5	μm	≤ ± 110		
FOCUS TILT SYSTEM	FOCUS - TILT STABILITY	F(3σ)	0.038	μm	3σ ≤ 0.08	OK
		X(3σ)	2.909	ppm	3σ ≤ 6	
		Y(3σ)	2.754			
	FOCUS - TILT REPEATABILITY	F(3σ)	0.08	μm	3σ ≤ 0.10	OK
		X(3σ)	2.7	ppm	3σ ≤ 7	
		Y(3σ)	3.8			
	GLOBAL - TILT MEASUREMENT REPEATABILITY	X(3σ)	0.6	ppm	3σ ≤ 4	OK
		Y(3σ)	0.7			
	GLOBAL - TILT ACCURACY	X(3σ)	1.8	ppm	3σ ≤ 8	OK
		Y(3σ)	1.0			
	TILT SENSOR UNEVEN FOCUS (DxD ON)	V	0.0	ppm	≤ ± 4	OK
UNEVEN FOCUS (TSOC) (DxD OFF)	V	1.5	ppm	≤ ± 6	OK	
ALFC MEASUREMENT REPEATABILITY	3σ	0.03	μm	3σ ≤ 0.10	OK	
TVPA	TV PRE-ALIGNMENT ACCURACY (DARK FIELD)	X	1.94	μm	≤ 3.0	OK
		Y	2.55			

WAFER STAGE	XYSA	Ortho	-0.05	ppm	$\leq \pm .5$	OK
		Scal X	0.01			
		Scal Y	-0.03			
	STEPPING ACCURACY WAFER 1	XX (3 σ)	0.011	μm	$3\sigma \leq 0.040$	OK
		XY (3 σ)	0.011			
		YX (3 σ)	0.011			
		YY(3 σ)	0.014			
	STEPPING ACCURACY WAFER 2	XX (3 σ)	0.010	μm	$3\sigma \leq 0.040$	OK
		XY (3 σ)	0.009			
		YX (3 σ)	0.015			
		YY(3 σ)	0.015			
	STEPPING ACCURACY WAFER 3	XX (3 σ)	0.011	μm	$3\sigma \leq 0.040$	OK
		XY (3 σ)	0.009			
		YX (3 σ)	0.014			
		YY(3 σ)	0.011			
	STEPPING REPEATABILITY	X(3 σ)	0.023	μm	$3\sigma \leq 0.035$	OK
		Y(3 σ)	0.013			
SRC	SRC MEASUREMENT REPEATABILITY	3 σ	0.30	ppm	$3\sigma \leq 0.5$	OK
RETICLE ALIGNMENT	ROC MEASUREMENT REPEATABILITY	XL(3 σ)	0.004	μm	$3\sigma \leq 0.01$	OK
		YL(3 σ)	0.002			
		XR(3 σ)	0.005			
		YR(3 σ)	0.002			
	RETICLE ROTATION ACCURACY		-0.003	μm	$\leq \pm 0.01$	OK
	RETICLE ROTATION REPEATABILITY		0.001	μm	$\leq \pm 0.02$	OK
BASELINE	BLC STABILITY (MODE 1)	X(3 σ)	0.005	μm	$3\sigma \leq 0.030$	OK
		Y(3 σ)	0.008			
		RNG(X)	0.007	μm	Range ≤ 0.03	OK
		RNG (Y)	0.012			
	BLC STABILITY (MODE 2)	X(3 σ)	0.005	μm	$3\sigma \leq 0.030$	OK
		Y(3 σ)	0.004			
		RNG(X)	0.006	μm	Range ≤ 0.03	OK
		RNG (Y)	0.006			
	BLC STABILITY (MODE 4)	X(3 σ)	0.007	μm	$3\sigma \leq 0.031$	OK
		Y(3 σ)	0.006			
		RNG(X)	0.009	μm	Range ≤ 0.03	OK
		RNG (Y)	0.008			

AUTO ALIGNMENT	AGA ACCURACY MODE 1 ($ m + 3\sigma$)	X	0.023	μm	$ mean + 3\sigma < 0.05$	OK
		Y	0.026			
	AGA ACCURACY MODE 2 ($ m + 3\sigma$)	X	0.035	μm	$ mean + 3\sigma < 0.05$	OK
		Y	0.027			
	AGA ACCURACY MODE 4 ($ m + 3\sigma$)	X	0.024	μm	$ mean + 3\sigma < 0.05$	OK
		Y	0.031			
		XL	5.796	μm	$3\sigma \leq 40$	OK
		XR	6.016			
		YL	8.58			
		YR	7.315			
TPD	THROUGHPUT 6" WAFER TYPE-L WF	DxD ON	128.5	WPH	>120	OK
		DxD OFF	130.1		>120	OK
	WAFER CHUCK FLATNESS	$\varnothing 22\text{mm}$	0.44	μm		