

ASML 5500/22 ACCEPTANCE TEST SPECIFICATIONS

Customer:	EOTS
Site:	Vancouver, WA
Machine serial number:	7446
Model:	5500/22
Wafer size:	200mm
Purchase order no:	
Software Release:	8.8.6
Test completion date:	

NA: 0.56 (unless noted) & Coherence: 0.75 (conventional setting, unless otherwise noted)

Parameter	Specification (absolute values)	FAT		SAT	
		Measured	Accept	Measured	Accept
1. Illumination and dose control					
1.1 Integrated uniformity					
22.0 x 22.0 mm [%]	≤ 2.0	2.59	3/27/2018		
14.7 x 27.4 mm [%]	≤ 2.0	2.81	3/27/2018		
Illumination intensity [mW/cm ²]	≥ 1000	1116	3/27/2018		
1.2 Dose Repeatability and Accuracy					
Dose Repeatability [%]	≤ 1.0	75 mj = .23 100 mj = .17 150 mj = .05 200 mj = .07 250 mj = .10 300 mj = .07	10/30/2017	75 mj = 100 mj = 150 mj = 200 mj = 250 mj = 300 mj =	

Dose Accuracy [%]	≤ 1.0	75 mj = .14 100 mj = .15 150 mj = .17 200 mj = .17 250 mj = .18 300 mj = .17	10/30/2017	75 mj = 100 mj = 150 mj = 200 mj = 250 mj = 300 mj =	
1.3 Dose matching [%]	≤ 2.0	On Site			
2. Reticle masking					
2.1 Reticle masking [μm]	≤ 475	325	11/6/2017		
3. Imaging performance					
<i>0.35 μm dense H&V lines, biased up to maximum 10%, ±10% CD range, 9 points/field.</i>					
3.1 Usable Depth of Focus [μm]	≥ 2.0	SEM			
3.2 Intra-field CD uniformity at best focus and best energy [nm]	≤ 40	SEM			
<i>Focal plane performance, using FOCAL technique, 13 points/field, H&V lines</i>					
3.3 Focal plane deviation [μm]	≤ 0.75	0.647	3/27/2018		
3.4 Astigmatism [μm]	≤ 0.5	0.451	3/27/2018		
4. Lens distortion					
<i>Measured at 139 points/field</i>					
4.1 Non-correctable error [nm]					
NCE X	≤ 100	69.2	3/27/2018		
NCE Y	≤ 100	56.6			
Parameter	Specification (absolute values)	FAT		SAT	
		Measured	Accept	Measured	Accept

		(date)	Accept	(date)	Accept
5. AERIAL™ Illuminator performance					
Settings: NA = 0.54, annular setting: $\sigma_{out} = 0.80$, $\sigma_{in} = 0.45$					
5.1 Integrated uniformity					
22.0 x 22.0 mm [%]	≤ 1.4	N/A			
14.7 x 27.4 mm [%]	≤ 1.4				
Illumination intensity [mW/cm ²]	≥ 1500				
Focal plane performance, using FOCAL technique, 13 points/field, H&V lines					
5.2 Focal plane deviation [μm]	≤ 0.45	N/A			
5.3 Astigmatism [μm]	≤ 0.35	N/A			
7. Focus and levelling					
7.1 Focus repeatability (3σ) [μm]	≤ 0.05	0.03	3/27/2018		
7.2 Levelling repeatability					
Rx (3σ) [μrad]	≤ 3.0	1.17	3/27/2018		
Ry (3σ) [μrad]	≤ 3.0	1.26			
8. Overlay performance					
8.1 Stage repeatability					
X [nm]	≤ 15	7.4	10/20/2017		
Y [nm]	≤ 15	6.3			
8.2 Single machine overlay (99.7%) (worst case, from stable phase) [nm]					
X - Max 99.7%	≤ 70	61.1	10/31/2017		
Y - Max 99.7%	≤ 70	31.9			
8.3 Matched machine overlay (99.7%) to /200B or ex-factory /100D [nm]	≤ 175	N/A	N/A		
Serial No. of reference machine					
Parameter	Specification (absolute values)	FAT		SAT	
		Measured	Accept	Measured	Accept

	Specification	Measured	Accept	Measured	Accept
9. Wafer throughput					
9.1 Wafer throughput at 200 m]/cm2	≥ 74	74.3	3/27/2018		
9.4 Reticle exchange time Machines with ARMS (option) [s]	≤ 29	27	3/27/2018		
9.5 Batch overhead time with batch streaming for ARMS	≤ 20	N/A	N/A		
10. Material handling					
10.1 Pre-alignment accuracy					
X position (3σ) [μm]	≤ 8.5	1.56	3/27/2018		
Y position (3σ) [μm]	≤ 8.5	2.61			
Rotation θ (3σ) [μrad]	≤ 180	67.4			
10.3 Wafer contamination (top side)	≤ 2.6 ≤ 5.0				
Number of particles (≥ 0.3 μm) added per wafer pass					
150 mm wafers [particles] 200 mm wafers [particles]					
11. Image quality control					
Parameter	Specification (absolute values)	FAT		SAT	
		Measured	Accept	Measured	Accept
11.1 3σ Image sensor measurements					
Focus repeatability	≤ 50	N/A	N/A		
Image tilt repeatability (Rx)	≤ 2.0				
Image tilt repeatability (Ry)	≤ 2.0				
Translation repeatability	≤ 20				
Magnification repeatability	≤ 2.0				
Die rotation repeatability	≤ 2.0				
12. Reticle inspections, systems with IRIS option					
12.1 Detection of particles at lower detection limit [particles]	≥ 50				
12.2 Reproducibility based on 10 scans of 108 patterns [particles]	108				

12.3 Inspection time [s]	≤ 150				
Note: Shaded sections in the table above show system options with their relevant specifications.					

