



CIN : U33125KL1993PTC006984  
GST No: 32AAACH9492C1ZQ

ISO 9001:2015

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OPTO-MECHATRONICS PVT.LTD

B-7., H.M.T. Industrial Estate, H.M.T. PO, Kalamassery  
Kochi - 683 503 Kerala, India.  
Email : sales@holmarc.com, PH : 91-484-2540075



### QA/Test Report

Equipment name : Silar coating unit

Date: 28/08/2021

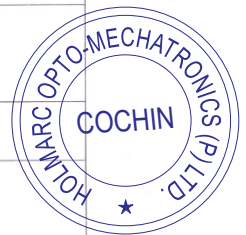
Model No./ Serial no. : H0-74-03C

Customer/Job card No. : DO-166 DY Patel Educational Society.

#### Standard Test Procedure:

(All the tests are performed based on the theory of the respective experiment and/or by calibrated instruments.)

Sl No	Specific Test Conducted	Test Result	Specification/ Accepted values	Pass /Fail	Remarks
1.	Basic Inspection	OK	Model No., Painting , Finishing , stability and other visual parameters		
2.	Vibration and noise checking	OK	Run a sample program and check		
3.	Keyboard/ Touch screen checking	OK	Enter all the alpha numeric values and check its functioning		
4.	Up-Down travel and limit checking	OK	Move the sample holder up side and down side till it reaches the limit		
5.	Travel length	50 mm	Verify the travel length by running a sample program with specific travel length say 50 mm		
6.	Travel speed	6mm/sec.	Verify the travel speed by running a sample program with specific travel speed (both Dip and retrieval) in um/Sec and mm/Sec		
7.	Dip & dry duration	60 sec.	Run a sample program with specific Dip and Dry duration. Sec., Min. & Hour		
8.	Sample holder positioning. ( centering to the beaker)	OK	Run a sample program with Dip in all the beakers and check the centering at each dip position.		
9.	Magnetic stirrer Function	OK	Check the magnetic stirrer with beaker and run @ max rpm.		
10.	Heater Function	100°C	Turn on the heater and check the temperature.		
11	PC -Software testing	OK	Compose and run a sample program in PC-Software.		

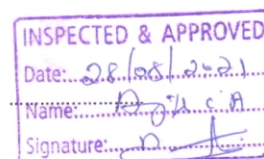


*[Signature]*

**JOLLY CYRIAC**  
Managing Director

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### QA/Test Report

Equipment name : Syringe pump.

Date: 08/04/2021

Model No./ Serial no. :

Customer/Job card No. 724/20-21 Customer - IIT BHU

#### Standard Test Procedure:

(All the tests are performed based on the theory of the respective experiment and/or by calibrated instruments.)

Sl No	Specific Test Conducted	Test Result	Specification/ Accepted values				Pass/Fail
1.	Basic Inspection	✓	Model No., Painting, Finishing, stability and other visual parameters				✓
2.	Vibration and noise checking	✓	Run a sample program and check				✓
3.	Keyboard/ Touch screen checking	OK	Enter all the alpha numeric values and check its functioning				✓
4.	Limit switch positioning	OK	Adjust the far limit sensor position as suitable for 20ml glass syringe.				✓
5.	Limit checking	OK	Run home and far -check the stage movement stops in home and far position.				✓
6.	Syringe pump	OK	Run sample programs and check the flow rates and corresponding volumes.				✓
7.	PC -Software testing	OK	Run sample programs in software also				✓
	Flow rate		Sl. No.	Set(ml/min)	Measured( ml/min)	Error (%)	Permissible Error (%)
			1	5	5	0	✓
			2	10	10	0	
			3	15	15	0	
	Volume		1	5	5	0	✓
			2	10	10	0	
			3	15	15	0	



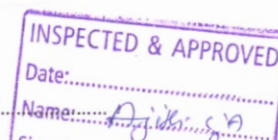
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*Silvestre R. A.*

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### QA / Test Report

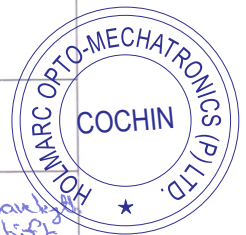
Equipment name : Michelson Interferometer  
Model No./ Serial no. : HO-ED-INT-06  
Customer/Job card No. : 2/21-22

Date: 14/07/2021

#### Standard Test Procedure:

All the tests are performed based on the theory of the respective experiment and/or by calibrated instruments.

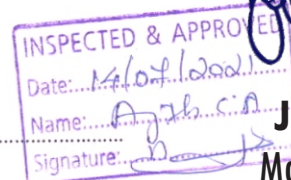
No	Specific Test Conducted	Test Result	Specification/ Accepted values	Pass/ Fail	Remarks
1.	Micrometer Calibration	280 $\mu$ m	(250-300 Microns)	Pass	
2.	Laser: beam quality, power	5.1mw	5 mW 10% Error Accepted	Pass	
3.	Pressure cell	Refractive index of air = 1.002	Max. 5% less of the value accepted	Pass	
4.	Glass Slide rotation stage	8 degree	8 Degree With 10% Error	Pass	
5.	Wavelength of the Laser	652nm (+2nm)	650 +/- 10 nm	Pass	+2nm wavy shift
6.	Visual Inspection	Visually Inspected	As per design	Pass	



Checked by

*[Signature]*  
14/07/21  
M. Edwin

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### QA / Test Report

Equipment name : Optical chopper  
Model No./ Serial no. : HO - ID- 02  
Customer/Job card No. : 10/21-22

Date: 24/08/2021

#### Standard Test Procedure:

All the tests are performed based on the theory of the respective experiment and/or by calibrated instruments.

No	Specific Test Conducted	Test Result	Specification/ Accepted values	Pass/ Fail	Remarks
1.	Frequency	200hz - 3.7kHz for 30 slots 20-200 (2 slots) 50-500 (5 slots)	10Hz - 3.7kHz	Pass	
2.	Chopper discs	2 slot, 5 slot 30 slots.	2 slot, 5 slot, 30 slot	Pass	
3.	Visual Inspection	Visually Inspected okay	As per design	Pass	

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M. Edwards

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### QA/Test Report

Equipment name : Nanofiber electrospinning unit

Date: 12/08/2021

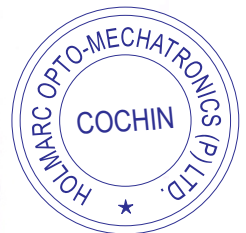
Model No./ Serial no. : Ho-NFES-040

Customer/Job card No. : Ho-57d Balajipatel Kollam

#### Standard Test Procedure:

(All the tests are performed based on the theory of the respective experiment and/or by calibrated instruments.)

Sl No	Specific Test Conducted	Test Result	Specification/ Accepted values	Pass/Fail
1.	Basic Inspection	OK	Model No., Painting, Finishing, stability and other visual parameters	
2.	MCB, Stop, lamps, Fan etc	OK	Verify the functioning of MCB, emergency stop button, chamber lamp, exhaust fan, controller power switch and halogen lamp.	
3.	PC Connectivity	OK	Connect the system with computer using cables and check connection	
4.	Vibration, noise & RPM checking	OK	Run the Mandrel at max rpm and check vibration /RPM/Noise	
5.	Electrical Continuity	OK	Verify the electrical continuity from the mandrel body to the negative terminal, for all the mandrels.	
6.	Syringe pump-Vibration and noise	OK	Check the noise and vibration level of the syringe pump	
7.	Limit testing	OK	Run the syringe pump to home and far limits	
8.	Limit adjustment	OK	Adjust the far limit sensor position as suitable for 20ml glass syringe	
9.	Flow rate	Int.	Measure the actual flow rates for different values of set flow rates	
10.	Limit switch-XYstage	OK	Verify the functioning of home and far limit sensors of the XY stages	
11.	XY stage	100mm	Travel length > / =spec.	
12.	Halogen lamp intensity	good.	Verify the functioning of the intensity control knob of the halogen lamp	
14.	Door safety lock	good.	Verify the functioning of the high voltage interlock, by opening the door of the hood when the power supply is on	
15.	High voltage test	30.1KV	30KV.	
16.	Electro spinning	good.	Test with proper solution.	
17.	Coaxial spinneret	good.	Verify the functioning of co-axial spinneret by connecting it to the syringe pump and dispensing	



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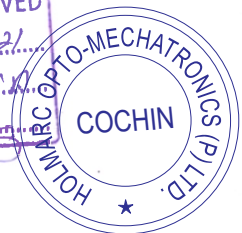
			solution through each of its needles					
18.	Temperature controller and sensor	25°C	1 % error max.					
19.	Flow rate	OK	Sl. No.	Set(ml/min)	Measured( ml/min)	Error (%)	Permissible Error (%)	
			1	5	5	0		/
			2	10	10	0	—	
			3	15	15	0		
20.	Volume	OK	1	5	5	0		/
			2	10	10	0	—	
			3	15	15	0		

Checked by

.....Silvestro K-X.

Approved by

INSPECTED & APPROVED  
Date: 12/08/2021  
Name: Jolly Cyriac  
Signature: [Signature]



[Signature]

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### QA/Test Report

Equipment name : Spin coater

Date: 04/05/2021

Model No./ Serial no. : H0-TH-05

Customer/Job card No. : PO-856 - SRM University.

#### Standard Test Procedure:

Sl No	Specific Test Conducted	Test Result	Specification/ Accepted values	Pass /Fail	Remarks
1.	Basic Inspection	OK	Model No., Painting , Finishing , stability and other visual parameters	✓	
2.	Vacuum checking	OK	Place the substrate and run at maximum RPM	✓	
3.	Vibration and noise checking	OK	Run at high rpm and observe noise /vibration	✓	
4.	RPM testing using Tachometer		1 % error maximum for all rpm		
		59	60 rpm		
		260	200 rpm		
		1000	1000 rpm		
		2001	2000 rpm		
		3000	3000 rpm		
		4000	4000 rpm		
		5000	5000 rpm		
		7000	7000 rpm		
		9003	9000 rpm		
		9999	10000 rpm		
5.	Acceleration testing By using a Tachometer		10 rpm / sec -10 sec - 100 rpm		
		50	50 rpm/sec-10 sec-500 rpm		
		100	100 rpm/sec-10 sec-1000 rpm		
		250	250 rpm/sec-10 sec-2500 rpm		
		500	500 rpm/sec-10 sec-5000 rpm		
		2000	2000 rpm/sec-5 sec-10000 rpm		



*[Signature]*

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6.	Keyboard/ Touch screen checking	OK	Enter all the alpha numeric values and check its functioning	✓	
7.	Test multi-step sample program	OK	Verify the speed, acceleration and duration at each step.	✓	
8.	Duration test		Run a sample program with below durations between the steps		
		5	5 sec	✓	
		100	100 sec		
		1000	1000 sec		
9.	Lid switch testing	OK	Machine stops working if we open lid while running (Also run a program by opening the lid)	✓	
10.	UV led testing	OK	By running a sample program check the UV led lighting	✓	
11.	Accessories checking	OK	AC cord, vacuum pump, Drain hose ,touch pen , user manual, software CD etc		



Checked by

*Silvester K. A*

Approved by

INSPECTED & APPROVED  
Date: 04/06/2021  
Name: Jolly Cyriac  
Signature: *Jolly Cyriac*

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### QA/Test Report

Equipment name : Spray Pyrolysis Equipment

Date: 21/08/2021

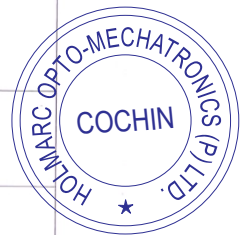
Model No./ Serial no. : H07H-04

Customer/Job card No. : DO-224 / IIT BHU

#### Standard Test Procedure:

(All the tests are performed based on the theory of the respective experiment and/or by calibrated instruments.)

Sl No	Specific Test Conducted	Test Result	Specification/ Accepted values	Pass /Fail	Remarks
1.	Basic Inspection	OK	Model No., Painting , Finishing , stability and other visual parameters	✓	
2.	Vibration and noise checking	OK	Run a sample program and check	✓	
3.	Functioning of home and far limit sensors of the XY stage.	OK	Run to Home and far position and it will stop automatically.	✓	
4.	Speed and travel of the XY stage	10 mm/sec 100 mm	Max. 1 % error for all speeds	✓	
5.	Functioning of home and far limit sensors of the dispenser	OK	Operate the dispenser throughout its travel range in 'load' and 'drain' mode.	✓	
6.	Exhaust fan and the chamber light	OK	Switch on the Exhaust fan and chamber and check working.	✓	
7.	Check the voltage at solenoid valves input	OK	Voltage 0.1 % Error	✓	
8.	Compressor pressure	OK	Verify that the compressor cuts off at the set pressure level	✓	
9.	Connectivity	OK	RS232/USB cable	✓	
10.	Flow rate	10 ml/minute	1 % error max.	✓	
11.	Flow switch	OK	Verify the functioning of the flow switch at various modes like load, drain and spray	✓	



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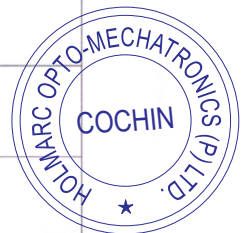
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12.	Flow test	ok	Load water from a beaker to the container, drain it and check for continuous flow	✓	
13	Flow rate and Speed	1ml/sec.	Operate the instrument using different sample programs of different flow rates and speed.	✓	
14	Spray quality	good	Verify the quality of spray varying the pressure level	✓	
15	Nozzle test	good.	Test all the three types of nozzles - regular, syringe pump and ultrasonic types	✓	
16	Ultrasonic nozzle	good.	Ensure that the ultrasonic nozzle power supply is not heating up excessively during operation.	✓	
17	Temperature controller and sensor	470°C.	Verify the parameters entered in the temperature controller - sensor type (K type), low set point (15 Degree) and high set point (500 Degree).	✓	
18.	Temperature controller and sensor	100°C / 5min	Auto-tune the controller at 300 Degree Celsius set point	✓	
19.	Temperature controller and sensor	OK	Verify the displayed temperature using an external temperature sensor. Check for uniformity of the temperature across the whole area of the top plate	✓	
20.	Temperature controller and sensor	OK	. Compare the displayed temperature with the external sensor display at different set points	✓	
21.	Hot plate	OK	Check continuous functioning of the hot plate for one hour	✓	



*[Signature]*

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*Silvester k x*

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## Quality Assurance Plan

Quality Assurance Plan is a critical part of any project, as it enables to agree a set of quality targets with the customers. It then helps in monitoring and controlling the level of quality, which further indicates the level of adherence to the targets. The purpose of quality assurance plan is to direct and facilitate the establishment of quality assurance activities within processes used to deliver right products and services to the clients. This also makes sure of the quality of the goods delivered.

### Policy

Quality Assurance Plan describes the principles, processes and procedures used to support the regular delivery of high quality products and competitive services. The quality assurance process is concerned with establishing the authority of the quality assurance function, standards, procedures and their monitoring and evaluation to determine quality in relation to established standards. Quality assurance activities concentrate on the prevention of problems through the continuous improvement of processes.

### Quality Assurance Team

At Holmarc, there is a dedicated quality assurance team. Management is determined to protect the team's independence in dealing with the process quality - for both products and services. Management also helps the team to formulate the roles and responsibilities of each individual of the team.

### Roles & Responsibilities

The main function of the quality assurance team is to guide the technical staff to gradually improve the standards relating to quality. Quality assurance team will initiate the process and will take part in each and every phase of the process. The roles and responsibilities of quality assurance team are:

- To develop and maintains the quality assurance plan.
- To conduct the audits and reviews.
- To ensure the quality assurance processes and procedures adequately control processes.
- To review and approve specifies deliverables.
- To promptly report the results of audits to management.
- To implement task level quality control based on quality assurance standards.
- To manage defects, errors and corrections.



### Quality Assurance Procedures

Different methods and techniques are applied for the specific quality assurance activity. These are:

Structured walkthroughs are applied for detecting errors and improving products at any process stage.

Independent evaluation of process activities or finished products is done through checklists and meetings.

Independent examination of the products is carried out according to standards or contractual agreements.

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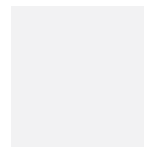
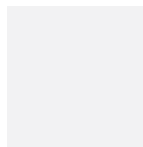
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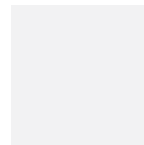
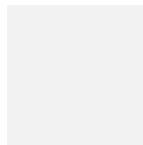
## Review Process

The various parameters on which the review of any process is done are:

Correctness  
Timeliness  
Reliability  
Productivity



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