

Service Report

AC SPE LEEM III with R200 Energy Analyzer, Max-IV

Engineer	Begin date	End date	PO-Number
Torsten Franz, Florian Schuetz	22/07/2024	26/07/2024	
Customer	Addressee		Technical representative
MAX IV Laboratory Lund University	Fotongatan 22594 LUND Sweden		Dr. Alexei Zakharov

Service rendered:

22/07/24 Field of view calibration, mounting of compensation coil in MCH, repairing of MCH TSP, Measuring of compensation currents,
23/07/24 dismounting of intermediate optics, exchanging of LaB ₆ source, mounting of CA and Slit motors, checking / repairing of illumination aperture motion and new Titanium for TSP in Main chamber
24/07/24 leak check, bake out
25/07/24 degassing of filaments and TSPs, wiring up of CA and Slit motors, testing of motors, mounting of camera and pumping
26/07/23 start imaging, programming of aperture / slit presets, aligning of electron source

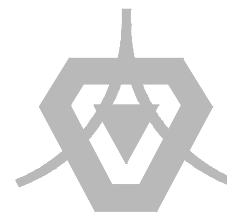
Summery:

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The Customer and the ELMITEC Engineer agree with this report	Date:	Authorized Customer Signature:	ELMITEC Engineer:
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1. Opening Voltage of LaB₆ source

The Wehnelt opens at 270V after the exchange of the cathode.



2. Field of view calibration AC SPE LEEMIII

HV= -20kV; MObj=2150mA; MTL1/MTL2= 408mA; MFL1/MFL2= 601mA;

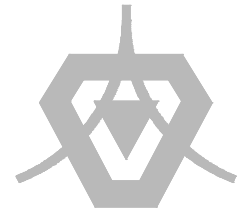
TL_{without Mirror}= 542mA; InL= 3713V; Bias=1024,5V;

Ratio (Selo/Seli) =1.976; Ratio (MSelo/MSeli)=1.960;

Diff. Stig. A_{without Mirror}= -51mA; Diff. Stig. B_{without Mirror}= 66mA;

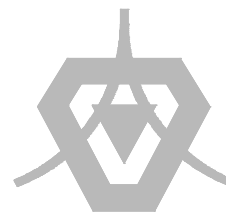
Obj. Align. X= 24mA; Obj. Align. Y= -23mA;

<i>Field of view /μm</i>	<i>FL /mA</i>	<i>IL /mA</i>	<i>P1 /mA</i>	<i>RL /V</i>	<i>Al /V</i>	<i>P2 /mA</i>	<i>P3 /mA</i>	<i>Rot. "on" /°</i>	<i>Rot. "off" /°</i>
120	2936	1063	1250	7709	281	979	2200		-19
100	2950	1115	1228	7709	281	979	2200		-3
75	2267	1187	1182	7709	281	979	2200		5
50	2045	1293	1162	7709	370	1007	2200		8
40	2045	1293	1162	7709	497	1058	2200		5.5
30	2045	1293	1162	7709	652	1153	2200		1.5
25	1960	1360	1140	7709	652	1153	2200		1.5
20	1854	1477	1111	7709	652	1153	2200		1.5
15	1769	1625	1090	7709	652	1153	2200		-1.5
10	1683	1928	1077	7709	652	1153	2200		-13
7.5	1611	2475	1058	7709	652	1153	2200		-33
5	1559	2850	1042	7709	680	1170	2200		-55
2.5	1559	2850	1042	7709	945	1579	2200		-76
LEED	2552	927	120	7709	356	989	2200		



3. Magnetic compensation

<i>MOBJ/mA</i>	<i>Mag. Comp/mA MOBJ +</i>	<i>Mag. Comp/mA MOBJ -</i>
1400	41	48
1450	-8	80
1500	-36	113
1550	-72	144
1600	-87	177
1650	-116	212
1700	-143	239
1750	-170	275
1800	-201	314
1850	-226	352
1900	-262	396
1950	-300	438
2000	-341	473
2050	-383	500
2100	-428	-
2150	-477	-



4. Contrast Aperture

Backlash Z: 0 steps
Steps per μm Z: 0.250
Frequency Z: 30Hz
Step Z: $\frac{1}{4}$

Backlash T: 0 steps
Steps per μm T: 0.250
Frequency T: 5Hz
Step T: $\frac{1}{4}$

Label	Z μm	T μm
Open	-1000	0
1mm	-5600	0
70 μm	-11020	-40
60 μm	-16140	-75
40 μm	-21180	-80
30 μm	-26250	-70
25 μm	-31340	-60
10 μm	-36415	-65

5. Energy Slit

Backlash Z: 0 steps
Steps per μm Z: 0,250
Frequency Z: 25Hz
Step: $\frac{1}{4}$

Label	Z μm
Open	-1600
250 μm	-9700
125 μm	-17750
60 μm	-25780
25 μm	-33790
12,5 μm	-41810
5 μm	-49850