

Preventative Maintenance Schedule

AXIS Ultra^{DLD}

Customer Name: Bruce Brunswick, Noah Plymale _____
 Company/Organisation: CALTECH _____
 Instrument: Axis Ultra DLD _____
 Service Contract: 2015 _____
 Date: May 29 2015 _____
 Engineers Name: Stephen Brown _____
 Service Report Number: _____

Part 1: Operational Checks

1. X-Ray Sources

1.1 Dual Anode Source (Fitted ✓)

- (i) Check anode faces
- (ii) Replace anode
- (iii) Check the condition of filaments
- (iv) Replace filaments
- (v) Replace aluminum window

Req.	Done	Code
x		NA
x		NA
x		NA
x		NA
x		NA

1.2 Monochromator (Fitted ✓)

- (i) Check anode face(s)
- (ii) Replace anode
- (iii) Check the condition of filament(s)
- (iv) Replace filament(s)
- (v) Check alignment of monochromator with analysis area.

Req.	Done	Code
x		NA
x		NA
x		NA
x		NA
✓	✓	

2. Water System

- (i) Clean/replace water bifilar filter
- (ii) Check deioniser cartridge (if fitted)
- (iii) Replace deioniser cartridge
- (iv) Check and note water flow rates, for:-
Dual Anode
Mono Source
- (v) Check water interlocks
- (vi) Check and note leakage current

Req.	Done	Code
✓	NR	
x	x	
x	x	
✓	-	
✓	6.2lm	
✓	✓	
✓	<1mA	

3. Pumping and Vacuum System

- (i) Replace the rotary pump oil
- (ii) Recharge foreline traps
- (iv) Check operation of ion pumps
- (v) Check operation of sublimation pumps
- (vi) Check bake-out system
- (vii) Pump, leak check and bake overnight
- (viii) Replace scroll pumps tip seals

Req.	Done	Code
x		NA
x		NA
✓	✓	
x		NR
x		NR
x		NR
✓		

4. General Instrument Checks

- (i) Check insertion lock or STC seals
- (ii) Replace seals
- (iii) Plateau Channelplates
- (iv) Check sample transfer.

Req.	Done	Code
✓	✓	SR
✓	x	SR
✓	✓	
✓	✓	SR

5. General Instrument Checks (Optional Parts)

	Req.	Done	Code
(i) Check sample heating/cooling system	x		NR
(ii) Check operation of sample magazine	✓	✓	
(iii) Check operation of fast entry lock	✓	✓	

6. Ion Gun Checks (MB1, 3,4,PAH or GCIS) (4 Fitted)

	Req.	Done	Code
(i) Replace grid filament assembly	x		NR
(ii) Check emission current is correct and stable	✓	✓	
(iii) Check raster functions	✓	✓	
(iv) Check alignment of gun with analysis area	✓	✓	
(v) Check size and focus of principal ion spot	✓	✓	

PAH Option Only

(i) Replace Oven/filament assembly	x		NA
(ii) Replace Coronene	x		NA

7. Auger – FEG Source (Fitted x)

	Req.	Done	Code
(i) Check condition of the source	x		Na
(ii) Replace the source	x		Na
(iii) Check alignment of electron gun with the analysis area.	x		Na
(iv) Check image quality	x		Na

9. AXIS Ultra Imaging

	Req.	Done	Code
(i) Check trim coil setting	✓	✓	
(ii) Check map to image alignment	✓	✓	
(iii) Check spatial calibration of both images and maps	✓	✓	
(iv) Check FOV2/FOV4 alignment	✓	✓	
(vi) Check black level	✓	✓	

11. Charge Neutralization

- (i) Check for existence of filament
- (ii) Replace filament
- (iii) Check charge neutralisation settings

Req.	Done	Code
✓	✓	
x		Na
x		Na

Part 2: Performance Checks

Functional check of data acquisition and sample analysis

- (i) Check pass energy alignment
- (ii) Check of system operation and calibration
 - a) XPS (spectrum mode):- (using each X-ray source)
 - i) Wide scan of Ag
 - ii) Narrow scan of Ag 3d peaks
 - iii) Narrow scan of Cu and Au peaks
 - b) AES – Cu Auger grid sample
 - i) SEM image
 - ii) FRR copper spectra
- iii) Take an XPS image in each mode

Req.	Done	Code
✓	✓	
✓	✓	
✓	✓	
✓	✓	
x		Na
x		Na
✓	✓	

Key

✓ Signifies work required or work done.

× Signifies work not required or work not done.

N.R. Not required by customer

S.C. Not req. serviced by customer

N.P. No parts

S.R. See service report

N.A. Not applicable

N.T. No time

Work not carried out by customers request

No breaking of vacuum

Further Work Proposed

Parts replaced during visit

Service Engineer's Signature:



Customer's Signature:
