Yichao

For shutting off, go through the checklist in the following order

- ☐ Turn off equipments
- ☐ Turn off power supplies
- ☐ Turn off computers

Wait before everyone else finish their corresponding steps before starting the next one.
For powering up, go through the checklist in the following order

- ☐ Turn on computers
- ☐ Turn on power supplies
- ☐ Turn on equipments
- ☐ Check computer connection to devices

Also wait before everyone else finish their corresponding steps before starting the next one.

Please check to make sure the temperature controller for a laser is not turned off before the laser itself is. If a temperature controller is powered by homebuilt power supply, mark the output so that it won't be unplugged from the power supply and plug the whole power supply into the UPS instead of turning off. Homebuilt power supplies on the UPS should still be switched off if there's no load on it that needs to be on to reduce load on the UPS/external power.

For machine table and 1.5 table, use a normal power strip to collect devices that needs to be on the UPS. We'll plug the power strip into an actual UPS after the computer is shut down and the UPS's are freed up.

All numbering are from bottom to top and from left to right.

Equipments and power supplies are mostly located around the laser table facing the wall.

Equipment list

ID	Equipment	Location
Laser table facing computer or the wall west → south		
1	Benchtop power 2chn for Cs MOT beat lock	Lv1 above 1.0 Cs MOT
2	PLL for Cs MOT	Below Cs MOT
3	Home power (±15,5)	Lv2 above Cs MOT
4	Valan	1.5 amplifier stack Lv1 above 1.0 Cs MOT
5	Till driver v2 for 1.5 Na Raman	Lv1 above 1.5 Na Raman

6	Temp servo for 1.5 Na Raman seed	Lv1 above 1.5 Na Raman
7	Temp servo for 1.5 Na Raman doubler	Lv1 above 1.5 Na Raman
8	PLL for Cs Raman	Next to 1.0 Cs Raman
9	New Focus driver x2 for Cs Raman	Lv1 above 1.0 Cs Raman
10	Benchtop power (x3)	Lv2 above 1.0 Cs MOT
11	Home power (24V) x2	Lv2 above 1.0 Cs Raman
12	Benchtop power	Lv1 next to New Focus drivers
13	Shutter driver	Lv1 above 1.0 Cs Raman
14	New Focus lock box for 1.0 Cs Raman	Lv1 above 1.0 Cs Raman
15	Thorlabs temp servo for 1.0 Na Raman doubler	Lv1 above 1.0 Na seed
16	Timebase drivers for 1.0 Na Raman and Na D2	Lv1 above Thorlabs temp servo
17	Benchtop power for 1.0 Cs Raman	Lv2 above New Focus lock box
18	High voltage power	Lv2 above timebase drivers
19	Home lock box for Na D2	Lv1 above 1.0 Na seed
20	MPB Raman laser	Lv1 above 1.0 Na MOT
21	Oscilloscope for Na D2 lock	Lv1 above MPB Raman laser
22	Benchtop power for 1.0 Na Raman seed	Lv2 above oscilloscope

1 Equipments

- Off On **PLL for Cs MOT [2]**
  Below Cs MOT

  Turn off check list
  - Unplug all signals (zip tie together)
  - Unplug 15V and 5V powers (zip tie together)

  Turn on check list
  - Plugin 15V and 5V powers
  - Plugin all signals
  - Apply settings

- Off On **Valan [4]**
  1.5 amplifier stack Lv1 above 1.0 Cs MOT
  Check with 1.5 to record setting

Frequency	
Amplitude	

  Turn on check list
  - Restore settings

- Off On **Till driver v2 for 1.5 Na Raman [5]**
  Lv1 above 1.5 Na Raman
  Record current values:

Current	

  Turn off check list
  - Turn off
  - Unplug power (zip tie to controller)

  Turn on check list
  - Plug in power
  - Turn on

- Off On **Temp servo for 1.5 Na Raman seed [6]**
  Lv1 above 1.5 Na Raman
  Check plugged into UPS.

- Off On **Temp servo for 1.5 Na Raman doubler [7]**
  Lv1 above 1.5 Na Raman
  Check plugged into UPS.

- Off On **PLL for Cs Raman [8]**
  Next to 1.0 Cs Raman

  Turn off check list
  - Unplug all signals (zip tie together)
  - Unplug 15V and 5V powers (zip tie together)

  Turn on check list
  - Plugin 15V and 5V powers
  - Plugin all signals
  - Apply settings

- Off On **New Focus driver x2 for Cs Raman [9]**
  Lv1 above 1.0 Cs Raman
  Record Temperature, Current, Piezo voltage
  Temperature is accessible in the menu under system status

F3 Current	
F3 Piezo Voltage	
F3 Temperature	
F4 Current	
F4 Piezo Voltage	
F4 Temperature	

  Turn off check list
  - Turn off output.
  - Check plugged into UPS.

  Turn on check list
  - (Turn on)

- Off On **Shutter driver [13]**
  Lv1 above 1.0 Cs Raman
  Switch off/on with the switch on the back.

- Off On **New Focus lock box for 1.0 Cs Raman [14]**
  Lv1 above 1.0 Cs Raman
  Unplug power.

- Off On **Thorlabs temp servo for 1.0 Na Raman doubler [15]**
  Lv1 above 1.0 Na seed
  Record temperature settings

Setpoint	

  Check plugged into UPS.

- Off On **Timebase drivers for 1.0 Na Raman and Na D2 [16]**
  Lv1 above Thorlabs temp servo
  Record current and T1 settings

Raman Current	
Raman T1	
D2 Current	
D2 T1	

  Turn off check list
  - Turn off output.
  - Check plugged into UPS.

  Turn on check list
  - Turn on

- Off On **Home lock box for Na D2 [19]**
  Lv1 above 1.0 Na seed
  Turn on-off together with the adjustable high voltage power supply above
  Record high voltage power supply output

Voltage	

  Turn off check list
  - ☐ Unlock
  - ☐ Turn down the voltage of the high voltage power supply to 0
  - ☐ Unplug high voltage power on lockbox (zip tie)
  - ☐ Unplug 15V from lockbox (zip tie)
  - ☐ Turn off high voltage power supply
  - ☐ Unplug high voltage power supply from wall

  Turn on check list
  - ☐ Plug high voltage power supply into the wall
  - ☐ Turn on high voltage power supply (make sure the output is 0)
  - ☐ Plug in 15V to lockbox
  - ☐ Plug in high voltage to lockbox
  - ☐ Turn up the voltage of the high voltage power supply
  - ☐ Check HV output

- Off On **MPB Raman laser [20]**
  Lv1 above 1.0 Na MOT

  Turn off check list
  - ☐ Power off
  - ☐ Unplug from wall

  Turn on check list
  - ☐ Plug into wall
  - ☐ Power on

- Off On **Oscilloscope for Na D2 lock [21]**
  Lv1 above MPB Raman laser
  - ☐ Unplug from wall

2 Power supplies

- Off On **Benchtop power 2chn for Cs MOT beat lock [1]**
  Lv1 above 1.0 Cs MOT
  Record voltage/current values:

Left Voltage	
Left Current	
Right Voltage	
Right Current	

  Turn off check list
  - ☐ Unplug loads
  - ☐ Label and zip tie loads to the power supply
  - ☐ Turn off the power supply
  - ☐ Unplug from wall

  Turn on check list
  - ☐ Plug into the wall
  - ☐ Turn on the power supply **Do NOT do this with loads pluged in**
  - ☐ Plug the load back in

- Off On **Home power (±15,5) [3]**
  Lv2 above Cs MOT

  Turn off check list
  - Unplug load
  - Label and zip tie loads to the power supply
  - Switch off on the back

  Turn on check list
  - Switch on
  - Plug the load back in

- Off On **Benchtop power (x3) [10]**
  Lv2 above 1.0 Cs MOT
  Record voltage/current values:

No. 1 Voltage	
No. 1 Current	
No. 2 Voltage	
No. 2 Current	
No. 3 Voltage	
No. 3 Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **Home power (24V) x2 [11]**
  Lv2 above 1.0 Cs Raman

  Turn off check list
  - Unplug load
  - Label and zip tie loads to the power supply
  - Switch off on the back

  Turn on check list
  - Switch on
  - Plug the load back in

- Off On **Benchtop power [12]**
  Lv1 next to New Focus driver
  Record voltage/current values:

Voltage	
Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **Benchtop power for 1.0 Cs Raman [17]**
  Lv2 above New Focus lock box
  Record voltage/current values:

Voltage	
Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **High voltage power [18]**
  Lv2 above timebase drivers
  Follow home lock box for Na D2 [19].

- Off On **Benchtop power for 1.0 Na Raman seed [22]**
  Lv2 above oscilloscope
  Record voltage/current values:

Voltage	
Current	

  Check plugged into UPS.

3 Computers

- Off On **Control computers**

Turn off check list

- Check update.
- Turn off.
- Unplug from UPS.

Turn on check list

- Get UPS back
- Turn on.

- Off On **Computer UPS**

Turn off check list

- Move to the lab.
- Plug into backup power.
- Plug in pump/temp controllers.

Turn on check list

- Plug load back into the wall (or where they belongs).
- Move back.
- Plug computers back in.

Kenneth

For shutting off, go through the checklist in the following order

- ☐ Turn off equipments
- ☐ Turn off power supplies
- ☐ Turn off computers

Wait before everyone else finish their corresponding steps before starting the next one.
For powering up, go through the checklist in the following order

- ☐ Turn on computers
- ☐ Turn on power supplies
- ☐ Turn on equipments
- ☐ Check computer connection to devices

Also wait before everyone else finish their corresponding steps before starting the next one.

Please check to make sure the temperature controller for a laser is not turned off before the laser itself is. If a temperature controller is powered by homebuilt power supply, mark the output so that it won't be unplugged from the power supply and plug the whole power supply into the UPS instead of turning off. Homebuilt power supplies on the UPS should still be switched off if there's no load on it that needs to be on to reduce load on the UPS/external power.

For machine table and 1.5 table, use a normal power strip to collect devices that needs to be on the UPS. We'll plug the power strip into an actual UPS after the computer is shut down and the UPS's are freed up.

All numbering are from bottom to top and from left to right.

Equipments and power supplies are mostly located between the machine table and the laser table.

Equipment list

ID	Equipment	Location
Laser table side facing machine table north → east		
1	671 EOM stack	Floor
2	1550 Amp	Floor
3	Radio computer	Lv2
4	Benchtop power 2chn	Lv2 next to radio computer
5	High voltage power	Lv2 next to benchtop power

6	Variac for Na cell	Lv1 above 1.0 Na MOT
7	Shutter driver	Lv1 next to variac
8	Home lock box for 1.0 Na D1	Lv1 next to shutter driver
9	1038 Amp	Floor
10	1038 Timebase laser	Table
11	FPGA box for 1.0	Lv2
12	Thorlabs temp servo for Na D1 doubler	Lv1 above Na D1
13	Thorlabs temp servo for Na D1 seed	Lv1 above Na D1
14	Thorlabs current for Na D1 seed	Lv1 above Na D1
15	Benchtop power 2chn	Lv2 above Thorlabs controllers for Na D1 seed
16	Home power (24)	Lv2 next to benchtop power
17	Benchtop power x2 (2chn x1)	Lv2 next to Home power (24)
18	Till driver v2 for 976	Lv1 above Na D1 doubler
19	Thorlabs temp servo for Cs tweezer	Lv1 above Timebase 1038 beam
20	Thorlabs current (2A) (off)	Lv1 above Thorlabs temp servo
21	Till driver v2 for 671	Lv1 above Thorlabs current
22	Temp servo x2	Lv1 above Timebase 1038 control box
23	Oscilloscope	Lv1
Machine table side facing laser table south		
24	Thorlabs current for 1.5 Cs MOT	Lv1 above 1.5 Cs
25	Till driver v2 for 1.5 Cs RP	Lv1 above 1.5 Cs
26	Temp servo (x2) for 1.5 Cs MOT/RP	Lv1 above 1.5 Cs
27	Oscilloscope for 1.5 Cs	Lv1 above 1.5 Cs
28	Home lock box for 1.5 Cs	Lv1 above 1.5 Cs
29	Novatec for 1.5 Cs lock	Lv1 above 1.5 Cs

30	Benchtop power 2chn	Lv2 1.5 Cs MOT/RP current
31	Home power (24) x2	Lv2 next to benchtop power
32	Benchtop power	Lv2 on two home power (24)
33	Home power (±15,5)	Lv2 middle
34	Benchtop power (x2) for uWave Amp	Lv2 next to home power (±15,5)
35	Benchtop power (x2)	Lv1 above 1.5 Na
36	High voltage power	Lv1 next to 2 benchtop power
37	Function generator for 1.0 MOT piezo	Lv1
38	Temperature and pump controllers for cavity	Lv1 next to function generator
39	Water chiller for uWave breadboard	Floor
40	SAES pump	Lv1 above 1.0 chamber
41	Benchtop power x2 (2chn x1)	Lv2 next to coil servo

1 Equipments

- Off On **671 EOM stack [1]**

Floor

Record voltage/current values:

No. 1 Left Voltage	
No. 1 Left Current	
No. 1 Right Voltage	
No. 1 Right Current	
Thorlabs Current	
No. 2 Voltage	
No. 2 Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall
-
-

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in
-
-

- Off On **1550 Amp [2]**

Floor

Turn off check list

-
-

Turn on check list

-
-

- Off On **Variac for Na cell [6]**

Lv1 above 1.0 Na MOT

Record temperature and voltage settings

Voltage	
Temperature	

Check if we can use the backup power. (Through the UPS)

Turn off check list

- Turn voltage to 0
- Switch off
- Unplug from wall

Turn on check list

- Plug into wall
- Switch on
- Turn the voltage up **SLOWLY** and monitor the temperature at the same time.

- Off On **Shutter driver [7]**

Lv1 next to variac

Switch off/on with the switch on the back.

- Off On **Home lock box for 1.0 Na D1 [8]**
  Lv1 next to shutter driver
  Turn on-off together with the fixed high voltage power supply above

  Turn off check list

  – Unlock
  – Unplug high voltage power on lockbox (zip tie)
  – Unplug 15V from lockbox (zip tie)
  – Unplug high voltage power supply from walls

  Turn on check list

  – Plug high voltage power supply into the wall
  – Plug in 15V to lockbox
  – Plug in high voltage to lockbox
  – Check HV output

- Off On **1038 Amp [9]**
  Floor

  Turn off check list

  –
  –

  Turn on check list

  –
  –

- Off On **1038 Timebase laser [10]**
  Table

  Turn off check list

  –
  –

  Turn on check list

  –
  –

- Off On **Thorlabs temp servo for Na D1 doubler [12]**
  Lv1 above Na D1
  Record temperature settings

Setpoint	

  Check plugged into UPS.

- Off On **Thorlabs temp servo for Na D1 seed [13]**
  Lv1 above Na D1
  Record temperature settings

Setpoint	

  Check plugged into UPS.

- Off On **Thorlabs current for Na D1 seed [14]**
  Lv1 above Na D1
  Record current settings

Current	

  Turn off check list
  - Turn off
  - Unplug power

  Turn on check list
  - Plug in power
  - Check current setting
  - Turn on

- Off On **Till driver v2 for 976 [18]**
  Lv1 above Na D1 doubler
  Record current values:

Current	

  Turn off check list
  - Turn off
  - Unplug power (zip tie to controller)

  Turn on check list
  - Plug in power
  - Turn on

- Off On **Thorlabs temp servo for Cs tweezer [19]**
  Lv1 above Timebase 1038 beam
  Record temperature settings

Setpoint	

  Check plugged into UPS.

- Off On **Till driver v2 for 671 [21]**
  Lv1 above Thorlabs current
  Record current values:

Current	

  Turn off check list
  - Turn off
  - Unplug power (zip tie to controller)

  Turn on check list
  - Plug in power
  - Turn on

- Off On **Temp servo x2 [22]**
  Lv1 above Timebase 1038 control box
  Check plugged into UPS.

- Off On **Oscilloscope [23]**
  Lv1
  - Unplug from wall

- Off On **Thorlabs current for 1.5 Cs MOT [24]**
  Lv1 above 1.5 Cs
  Record current settings

Current	

  Turn off check list
  - Turn off
  - Unplug power

  Turn on check list
  - Plug in power
  - Check current setting
  - Turn on

- Off On **Till driver v2 for 1.5 Cs RP [25]**
  Lv1 above 1.5 Cs
  Record current values:

Current	

  Turn off check list
  - Turn off
  - Unplug power (zip tie to controller)

  Turn on check list
  - Plug in power
  - Turn on

- Off On **Temp servo (x2) for 1.5 Cs MOT/RP [26]**
  Lv1 above 1.5 Cs
  Check plugged into UPS.

- Off On **Oscilloscope for 1.5 Cs [27]**
  Lv1 above 1.5 Cs
  - Unplug from wall

- Off On **Home lock box for 1.5 Cs [28]**
  Lv1 above 1.5 Cs

  Turn off check list
  - Unlock
  - Unplug 15V from lockbox (zip tie)

  Turn on check list
  - Plug in 15V to lockbox

- Off On **Novatec for 1.5 Cs lock [29]**
  Lv1 above 1.5 Cs

  Turn off check list
  - Save settings

  Turn on check list
  - Restore settings

- Off On **Function generator for 1.0 MOT piezo [37]**
  Lv1

  Turn on-off together with the HV amplifiers for 1.0 piezo mirrors above and the high voltage power supply on the left
  Turn off check list
  - Turn off the function generator
  - Unplug function generator output (zip tie and label)
  - Unplug HV power supply from the wall

  Turn on check list
  - Plugin HV power supply to the wall
  - Plugin function generator output
  - Turn on the function generator

- Off On **Temperature and pump controllers for cavity [38]**
  Lv1 next to function generator

  Check plugged into UPS.

- Off On **Water chiller for uWave breadboard [39]**
  Floor

- Off On **SAES pump [40]**
  Lv1 above 1.0 chamber

  Check plugged into UPS.

2 Power supplies

- Off On **Benchtop power 2chn [4]**
  Lv2 next to radio computer
  Record voltage/current values:

Left Voltage	
Left Current	
Right Voltage	
Right Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **High voltage power [5]**
  Lv2 next to benchtop power
  Follow home lock box for Na D2 [8].

- Off On **Benchtop power 2chn [15]**
  Lv2 above Thorlabs controllers for Na D1 seed
  Record voltage/current values:

Left Voltage	
Left Current	
Right Voltage	
Right Current	

  Turn off check list
  - ☐ Unplug loads
  - ☐ Label and zip tie loads to the power supply
  - ☐ Turn off the power supply
  - ☐ Unplug from wall

  Turn on check list
  - ☐ Plug into the wall
  - ☐ Turn on the power supply **Do NOT do this with loads pluged in**
  - ☐ Plug the load back in

- Off On **Home power (24) [16]**
  Lv2 next to benchtop power

  Turn off check list
  - ☐ Unplug load
  - ☐ Label and zip tie loads to the power supply
  - ☐ Switch off on the back

  Turn on check list
  - ☐ Switch on
  - ☐ Plug the load back in

- Off On **Benchtop power x2 (2chn x1) [17]**
  Lv2 next to Home power (24)
  Record voltage/current values:

No. 1 Voltage	
No. 1 Current	
No. 2 Left Voltage	
No. 2 Left Current	
No. 2 Right Voltage	
No. 2 Right Current	

  Turn off check list
  - ☐ Unplug loads
  - ☐ Label and zip tie loads to the power supply
  - ☐ Turn off the power supply
  - ☐ Unplug from wall

  Turn on check list
  - ☐ Plug into the wall
  - ☐ Turn on the power supply **Do NOT do this with loads pluged in**
  - ☐ Plug the load back in

- Off On **Benchtop power 2chn [30]**
  Lv2 1.5 Cs MOT/RP current
  Record voltage/current values:

Left Voltage	
Left Current	
Right Voltage	
Right Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **Benchtop power [32]**
  Lv2 on two home power (24)
  Record voltage/current values:

Voltage	
Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **Home power (24) x2 [31]**
  Lv2 next to benchtop power

Turn off check list

- Unplug load
- Label and zip tie loads to the power supply
- Switch off on the back

Turn on check list

- Switch on
- Plug the load back in

- Off On **Home power (±15,5) [33]**
  Lv2 middle

Turn off check list

- Unplug load
- Label and zip tie loads to the power supply
- Switch off on the back

Turn on check list

- Switch on
- Plug the load back in

- Off On **Benchtop power (x2) for uWave Amp [34]**
  Lv2 next to home power (±15,5)
  Record voltage/current values:

No. 1 Voltage	
No. 1 Current	
No. 2 Voltage	
No. 2 Current	

Turn off check list

- – ☐ Unplug uWave input (tie).
- – ☐ Turn low voltage one to (-)5V.
- – ☐ Turn down higher voltage one to 0.
- – ☐ Unplug load, label/tie.
- – ☐ Switch off power supplies.
- – ☐ Unplug from wall.

Turn on check list

- – ☐ Plug into the wall.
- – ☐ Turn on the power supply **Do NOT do this with loads pluged in**.
- – ☐ Plug -5V.
- – ☐ Plug higher voltage one.
- – ☐ Turn higher voltage up to original value.
- – ☐ Turn low voltage one down.
- – ☐ Plug uWave back in.

- Off On **Benchtop power (x2) [35]**
  Lv1 above 1.5 Na
  Record voltage/current values:

No. 1 Voltage	
No. 1 Current	
No. 2 Voltage	
No. 2 Current	

Turn off check list

- – ☐ Unplug loads
- – ☐ Label and zip tie loads to the power supply
- – ☐ Turn off the power supply
- – ☐ Unplug from wall

Turn on check list

- – ☐ Plug into the wall
- – ☐ Turn on the power supply **Do NOT do this with loads pluged in**
- – ☐ Plug the load back in

- Off On **High voltage power [36]**
  Lv1 next to 2 benchtop power

- Off On **Benchtop power x2 (2chn x1) [41]**
  Lv2 next to coil servo
  Record voltage/current values:

No. 1 Left Voltage	
No. 1 Left Current	
No. 1 Right Voltage	
No. 1 Right Current	
No. 2 Voltage	
No. 2 Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **FPGA box for 1.0 [11]**
  Lv2
  Turn off check list
  - (Do following three steps quickly)
  - Turn off the box by flipping the switch on the front side of the box
  - Unplug the high voltage (48V) power supply (circular plug) on the front side of the box. Then unplug the power supply itself fromm the outlet.
  - Unplug the 12V board power supply. (L.T.E. one with a rectangular connector in the front)
  - Unplug USB power on the front side near the fan.
  - Zip tie the three unpluged powers to the computer control box.

  Turn on check list
  - Connect to 3.5G Windfrek clock generator from Tweezer1. Set frequency to 3.5G and amplitude to max.
  - (Remove power connection zip ties and) Plug in USB power supply.
  - (Do following three steps quickly)
  - Plug in the 12V board power supply.
  - Plug in high voltage power supply.
  - Turn on the power switch of the box. The fans should start spinning.

3 Computers

- Off On **Radio computer [3]**
  Lv2
  Ask Yichao

Jessie and Lewis

For shutting off, go through the checklist in the following order

- ☐ Turn off equipments
- ☐ Turn off power supplies
- ☐ Turn off computers

Wait before everyone else finish their corresponding steps before starting the next one.
For powering up, go through the checklist in the following order

- ☐ Turn on computers
- ☐ Turn on power supplies
- ☐ Turn on equipments
- ☐ Check computer connection to devices

Also wait before everyone else finish their corresponding steps before starting the next one.

Please check to make sure the temperature controller for a laser is not turned off before the laser itself is. If a temperature controller is powered by homebuilt power supply, mark the output so that it won't be unplugged from the power supply and plug the whole power supply into the UPS instead of turning off. Homebuilt power supplies on the UPS should still be switched off if there's no load on it that needs to be on to reduce load on the UPS/external power.

For machine table and 1.5 table, use a normal power strip to collect devices that needs to be on the UPS. We'll plug the power strip into an actual UPS after the computer is shut down and the UPS's are freed up.

All numbering are from bottom to top and from left to right.

Equipments and power supplies are mostly located between the machine table and the 1.5 table.

Equipment list

ID	Equipment	Location
Machine table Facing the wall north		
1	Benchtop power 2chn	Lv2
2	Home power (24)	Lv2 above 1.0 tweezer breadboard
3	Home power (±15,5)	Lv2 above home power (24)
4	Benchtop power x9 (2chn x3)	Lv2 next to home power (24) and (±15,5)
5	Current servo for compensation coil	Lv1 below home power (24)

6	Kenneth servo for 1.0 Cs tweezer	Lv1
7	High voltage Amp for 630 lock	Lv1
8	Vincent servo x2 for STIRAP lasers	Lv1
9	Greiner servo for 1.0 Na tweezer	Lv1 above Vincent servos
10	Rack for STRAP	Lv1 next to Vincent servos
11	Till driver v2 x2 for STIRAP lasers	Lv1 above rack for 1.5
12	Temp servo x3 for STIRAP	Lv2 next to 9x benchtop power
13	FPGA box for 1.5	Lv2
14	Home power (±15,5)	Lv2 next to FPGA box
15	Benchtop power x2	Lv2 on home power (±15,5)
16	Benchtop power	Lv2 next to home power (±15,5)
17	Benchtop power x2 (2chn x1)	Floor rack Lv1
18	Till driver v2 x2 for 1.5 Cs Raman	Floor rack Lv2
19	Kenneth servo for 1.5 Cs Raman phase lock	Floor rack Lv2 above Till drivers
20	Benchtop power	Floor rack Lv2 next to Till drivers
21	Temp servo x2 for 1.5 Cs Raman	Floor rack Lv2
22	Piezo driver for 1.5 Cs Raman	Floor rack Lv2 above home temp servos
23	Delay generator for 1.5 Na	Lv1 below 1.5 output panel
24	Till driver v2 for 1.0 Innolume	Lv1 next to delay generator
25	Kenneth servo for 1.5 tweezers	Lv1
26	Temp servo for 1.0 Innolume	Lv1
27	Shutter driver	Lv1 on M2 controller
28	TiSapph	Floor
29	Function generator for 1.0 Na switching	Lv1 above TiSapph
30	Keithley power for 1.0 Innolume	Lv2 above TiSapph

31	Till driver v2 for 1.0 Cs MOT	Lv2 above 1.5 Cs MOT
32	Temp servo for 1.0 Cs MOT	Lv2 on Till driver v2
33	Benchtop power 2chn	Lv2 facing computer
34	High voltage power	Above Lv2 on power outlet
1.5 Rack		
35	Home power (24)	Bottom level
36	SAES pump controller	Middle left
37	Benchtop power	Middle next to pump controller
38	Oscilloscope for 1.5 monitor	Above pump controller
39	Benchtop power 2chn for 1.5 coil	Above oscilloscope
40	High voltage Amp for 1.5 MOT piezo	Top level
41	Function generator for 1.5 MOT piezo	Top level on high voltage Amp
Below 1.5 table		
42	Benchtop power x3	Near outer edge
43	IGBT stack	Floor
44	LED driver	Near inner edge
45	AWG computer	Floor
Above 1.5 table		
46	Benchtop power	Lv1
47	Benchtop power	Lv2
48	Radio computer	Lv2

1 Equipments

- Off On **Current servo for compensation coil [5]**
  Lv1 below home power (24)
  Ask Lewis

- Off On **High voltage Amp for 630 lock [7]**
  Lv1
  Ask Lewis

- Off On **Vincent servo x2 for STIRAP lasers [8]**
  Lv1
  Ask Lewis

- Off On **Rack for STRAP [10]**
  Lv1 next to Vincent servos
  Ask Lewis

- Off On **Till driver v2 x2 for STIRAP lasers [11]**
  Lv1 above rack for 1.5
  Record current values:

No. 1 Current	
No. 2 Current	

  Ask Lewis
  Turn off check list
  - Turn off
  - Unplug power (zip tie to controller)

  Turn on check list
  - Plug in power
  - Turn on

- Off On **Temp servo x3 for STIRAP [12]**
  Lv2 next to 9x benchtop power

  Ask Lewis
  Check plugged into UPS.

- Off On **Till driver v2 x2 for 1.5 Cs Raman [18]**
  Floor rack Lv2
  Record current values:

No. 1 Current	
No. 2 Current	

  Turn off check list
  - Turn off
  - Unplug power (zip tie to controller)

  Turn on check list
  - Plug in power
  - Turn on

- Off On **Kenneth servo for 1.5 Cs Raman phase lock [19]**
  Floor rack Lv2 above Till drivers

- Off On **Temp servo x2 for 1.5 Cs Raman [21]**
  Floor rack Lv2
  Check plugged into UPS.

- Off On **Piezo driver for 1.5 Cs Raman [22]**
  Floor rack Lv2 above home temp servos

- Off On **Delay generator for 1.5 Na [23]**
  Lv1 below 1.5 output panel
  Record current values:

  Turn off check list
  -
  -
  -

  Turn on check list
  -
  -
  -

- Off On **Till driver v2 for 1.0 Innolume [24]**
  Lv1 next to delay generator
  Record current values:

Current	

  Turn off check list
  - Turn off
  - Unplug power (zip tie to controller)

  Turn on check list
  - Plug in power
  - Turn on

- Off On **Temp servo for 1.0 Innolume [26]**
  Lv1
  Check plugged into UPS.

- Off On **Shutter driver [27]**
  Lv1 on M2 controller
  Switch off/on with the switch on the back.

- Off On **TiSapph [28]**
  Floor
  Turn off check list
  - Turn off pump, unplug from wall
  - Turn off controller, unplug from wall
  - Turn off chiller, unplug from wall

  Turn on check list
  - Plug into wall, turn on chiller
  - Plug into wall, turn on controller
  - Plug into wall, turn on pump

- Off On **Function generator for 1.0 Na switching [29]**
  Lv1 above TiSapph
  Record High, Low, Frequency, Phase, Duty cycle

No. 1 High V	
No. 1 Low V	
No. 1 Frequency	
No. 1 Phase	
No. 1 Duty cycle	
No. 2 High V	
No. 2 Low V	
No. 2 Frequency	
No. 2 Phase	
No. 2 Duty cycle	

- Off On **Keithley power for 1.0 Innolume [30]**
  Lv2 above TiSapph
  Record voltage/current values:

Voltage	
Current	

  Turn off after the Innolume is off.

- Off On **Till driver v2 for 1.0 Cs MOT [31]**
  Lv2 above 1.5 Cs MOT
  Record current values:

Current	

  Turn off check list
  - Turn off
  - Unplug power (zip tie to controller)

  Turn on check list
  - Plug in power
  - Turn on

- Off On **Temp servo for 1.0 Cs MOT [32]**
  Lv2 on Till driver v2
  Check plugged into UPS.

- Off On **SAES pump controller [36]**
  Middle left

  Check plugged into UPS.

- Off On **Oscilloscope for 1.5 monitor [38]**
  Above pump controller
  - Unplug from wall

- Off On **High voltage Amp for 1.5 MOT piezo [40]**
  Top level

- Off On **Function generator for 1.5 MOT piezo [41]**
  Top level on high voltage Amp

  1.0 turn off procedure for reference:
  Turn on-off together with the HV amplifiers for 1.0 piezo mirrors above and the high voltage power supply on the left
  Turn off check list
  - Turn off the function generator
  - Unplug function generator output (zip tie and label)
  - Unplug HV power supply from the wall

  Turn on check list
  - Plugin HV power supply to the wall
  - Plugin function generator output
  - Turn on the function generator

- Off On **IGBT stack [43]**
  Floor

- Off On **LED driver [44]**
  Near inner edge

2 Power supplies

- Off On **Benchtop power 2chn [1]**

Lv2

Record voltage/current values:

Left Voltage	
Left Current	
Right Voltage	
Right Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **Home power (24) [2]**

Lv2 above 1.0 tweezer breadboard

Turn off check list

- Unplug load
- Label and zip tie loads to the power supply
- Switch off on the back

Turn on check list

- Switch on
- Plug the load back in

- Off On **Home power (±15,5) [3]**

Lv2 above home power (24)

Turn off check list

- Unplug load
- Label and zip tie loads to the power supply
- Switch off on the back

Turn on check list

- Switch on
- Plug the load back in

- Off On **Benchtop power x9 (2chn x3) [4]**
  Lv2 next to home power (24) and (±15,5)
  Record voltage/current values:

No. 1 Voltage/Current	
No. 2 Left Voltage/Current	
No. 2 Right Voltage/Current	
No. 3 Voltage/Current	
No. 4 Voltage/Current	
No. 5 Left Voltage/Current	
No. 5 Right Voltage/Current	
No. 6 Left Voltage/Current	
No. 6 Right Voltage/Current	
No. 7 Voltage/Current	
No. 8 Voltage/Current	
No. 9 Voltage/Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **Home power (±15,5) [14]**
  Lv2 next to FPGA box

  Turn off check list
  - Unplug load
  - Label and zip tie loads to the power supply
  - Switch off on the back

  Turn on check list
  - Switch on
  - Plug the load back in

- Off On **Benchtop power x2 [15]**
  Lv2 on home power (±15,5)
  Record voltage/current values:

No. 1 Voltage	
No. 1 Current	
No. 2 Voltage	
No. 2 Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **Benchtop power [16]**
  Lv2 next to home power (±15,5)
  Record voltage/current values:

Voltage	
Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **Benchtop power x2 (2chn x1) [17]**
  Floor rack Lv1
  Record voltage/current values:

No. 1 Voltage	
No. 1 Current	
No. 2 Left Voltage	
No. 2 Left Current	
No. 2 Right Voltage	
No. 2 Right Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **Benchtop power [20]**

Floor rack Lv2 next to Till drivers
Record voltage/current values:

Voltage	
Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **Benchtop power 2chn [33]**

Lv2 facing computer
Record voltage/current values:

Left Voltage	
Left Current	
Right Voltage	
Right Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **High voltage power [34]**

Above Lv2 on power outlet

- Off On **Home power (24) [35]**
  Bottom level

  Turn off check list
  - Unplug load
  - Label and zip tie loads to the power supply
  - Switch off on the back

  Turn on check list
  - Switch on
  - Plug the load back in

- Off On **Benchtop power [37]**
  Middle next to pump controller
  Record voltage/current values:

Voltage	
Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **Benchtop power 2chn for 1.5 coil [39]**
  Above oscilloscope
  Record voltage/current values:

Left Voltage	
Left Current	
Right Voltage	
Right Current	

  Turn off check list
  - Unplug loads
  - Label and zip tie loads to the power supply
  - Turn off the power supply
  - Unplug from wall

  Turn on check list
  - Plug into the wall
  - Turn on the power supply **Do NOT do this with loads pluged in**
  - Plug the load back in

- Off On **Benchtop power x3 [42]**

Near outer edge
Record voltage/current values:

No. 1 Voltage	
No. 1 Current	
No. 2 Voltage	
No. 2 Current	
No. 3 Voltage	
No. 3 Current	

May need to be adjusted for the uWave Amp.
Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **Benchtop power [46]**

Lv1
Record voltage/current values:

Voltage	
Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **Benchtop power [47]**

Lv2

Record voltage/current values:

Voltage	
Current	

Turn off check list

- Unplug loads
- Label and zip tie loads to the power supply
- Turn off the power supply
- Unplug from wall

Turn on check list

- Plug into the wall
- Turn on the power supply **Do NOT do this with loads pluged in**
- Plug the load back in

- Off On **FPGA box for 1.5 [13]**

Lv2

Turn off check list

- (Do following three steps quickly)
- Turn off the box by flipping the switch on the front side of the box
- Unplug the high voltage (48V) power supply (circular plug) on the left side of the box. Then unplug the power supply itself fromm the outlet.
- Unplug the 12V board power supply. (L.T.E. one with a rectangular connector in the front)
- Unplug USB power on the front side near the fan.
- Zip tie the three unpluged powers to the computer control box.

Turn on check list

- Connect to 3.5G Windfrek clock generator from Tweezer1. Set frequency to 3.5G and amplitude to max.
- (Remove power connection zip ties and) Plug in USB power supply.
- (Do following three steps quickly)
- Plug in the 12V board power supply.
- Plug in high voltage power supply. The fans should start spinning.
- Turn on the power switch of the box.

3 Computers

- Off On **Control computers**

Turn off check list

- Check update.
- Turn off.
- Unplug from UPS.

Turn on check list

- Get UPS back
- Turn on.

- Off On **AWG computer [45]**

Floor

Ask Yichao

- Off On **Radio computer [48]**

Lv2

Ask Yichao