

High Power XRD (HPXRD)

2018 year ver.

CONTACT

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Information







HPXRD is high power X-ray Diffraction machine.

After turning on X-ray in low power,

It measures sample by raising machine to a stable high power.

You can check equipment condition on Control Board which located at bottom of HPXRD.

1) Vacuum: always 'ON'

2) Power: POWER ON → X-ray 'ON'

3) X-ray: located next to X-ray button,

- Voltage= 0, Current= 0, X-ray Off

- Voltage = 20, Current=10 : X-ray On

- Voltage = 40, Current=200 : High power X-ray On

HPXRD PC Access: True Cafe



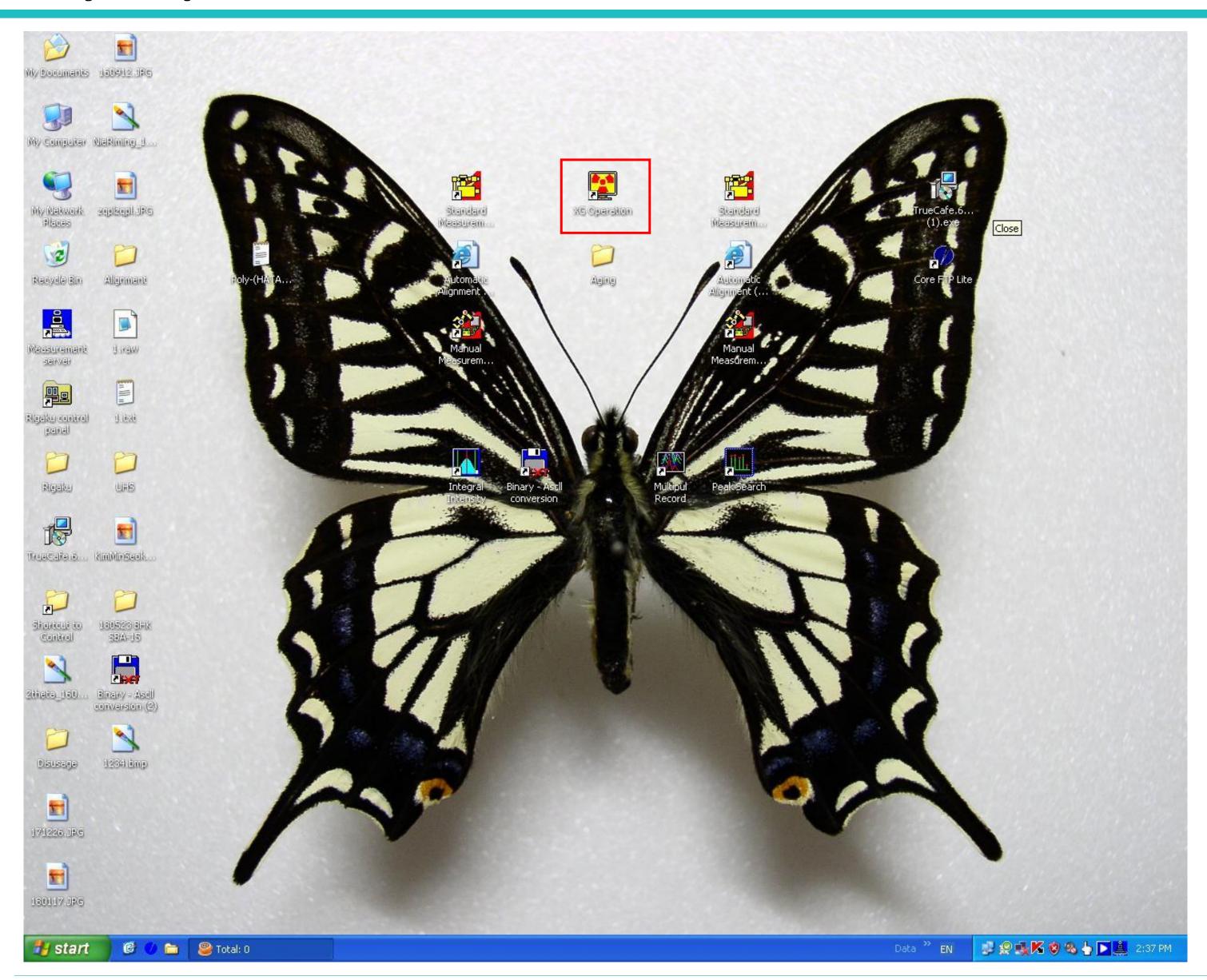


- Enter individual ID & Password in True Café.
 (One ID per person!)
- 2. Do not share individual ID & Password.
- Sharing has penalty or stop use for 90 days!
- 3. In case of machine manager,
 - request writing ID produce manual.
 - request writing corresponding manual when having problem.



X-ray Operation





XG Operation is,

X-ray Automatic On program.

Once you do X-ray on HPXRD from 9:00~18:00, It can be used continuously.

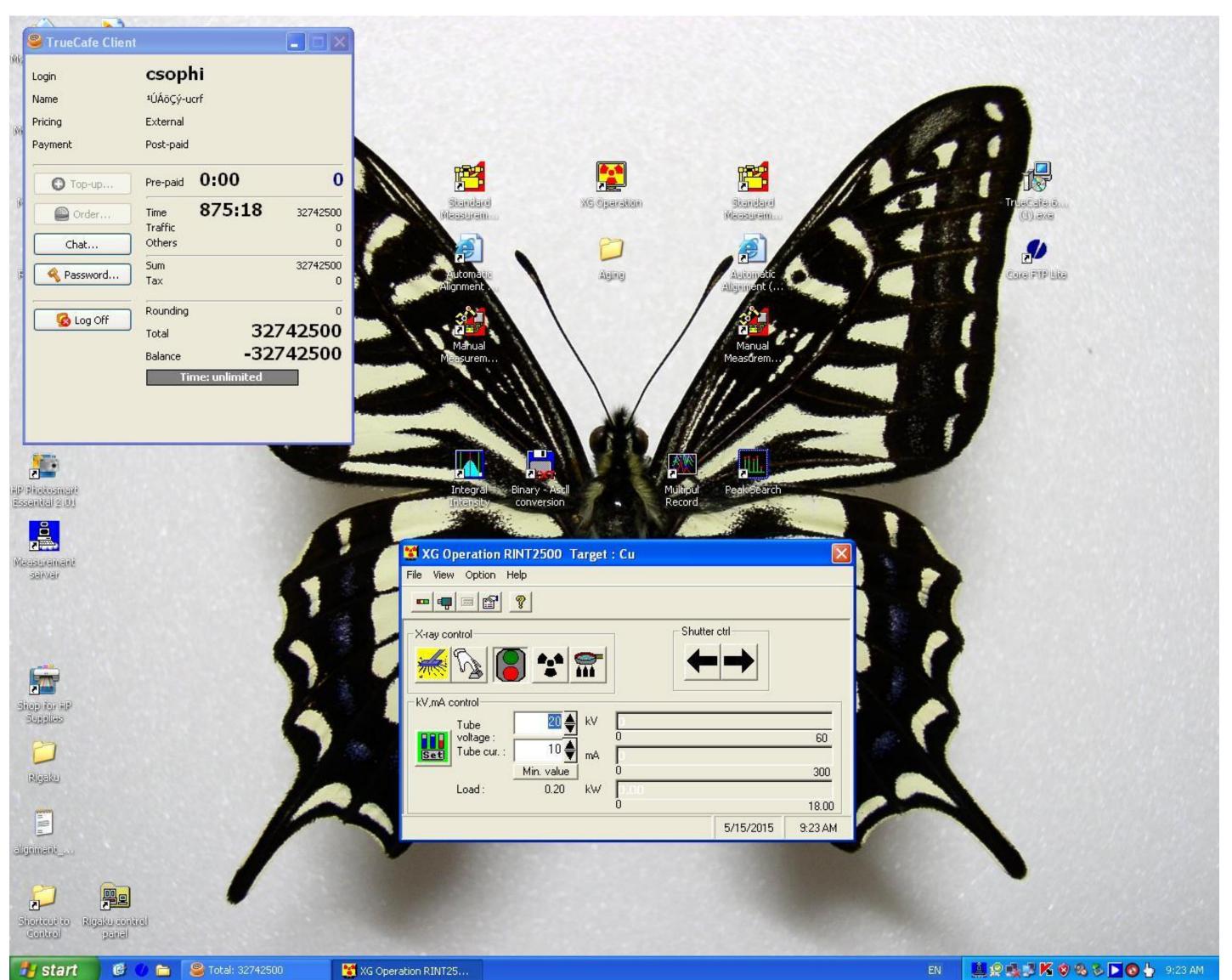
However,

In case of [NIGHT use after 18:00] or [HOLYDAY use], You should do 'Aging Process'.

> Double click XG Operation.

X-ray Operation

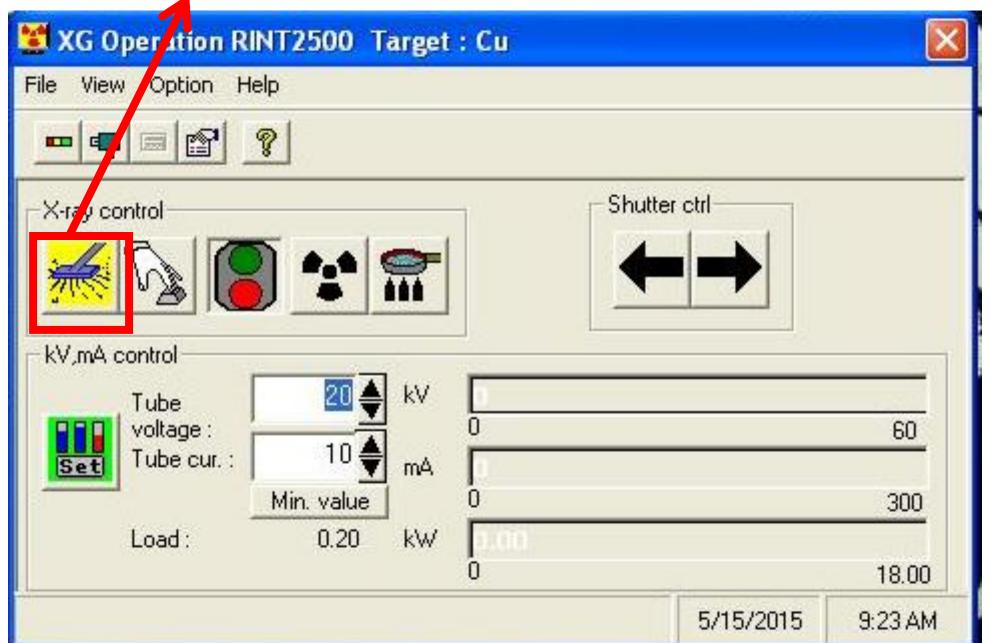




Open XG Operation Program.

In case of first user, vacuum has only ON condition as shown below.

Vacuum 'On' is colorful, and 'Off' condition is black and white.

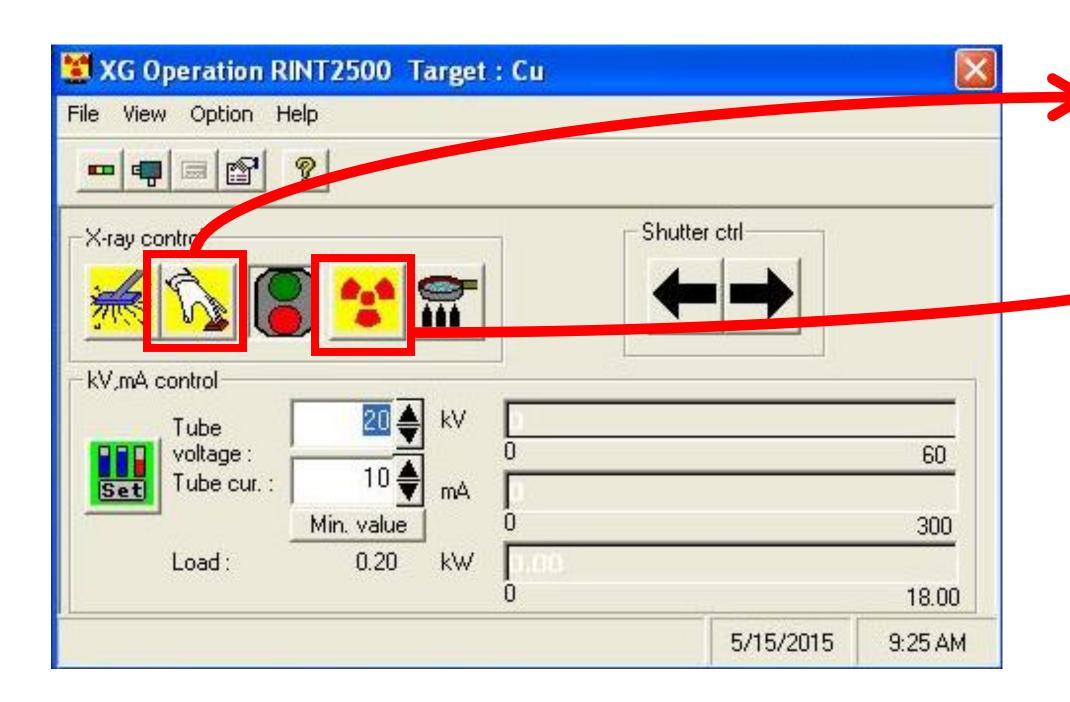


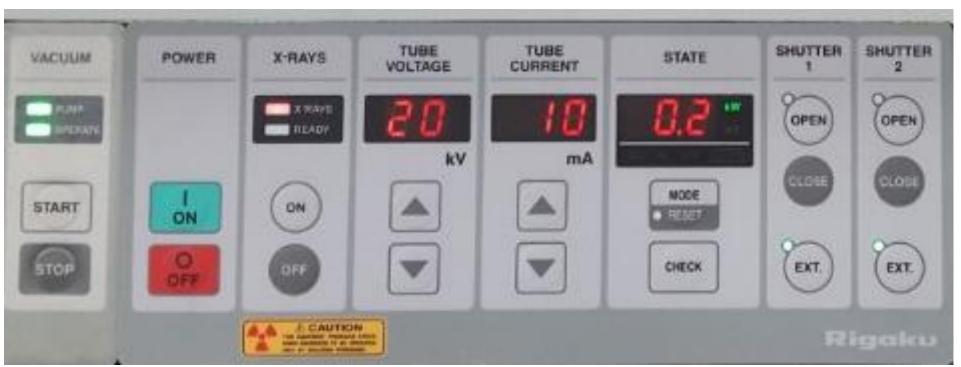


X-ray tube vacuum should be 'On' (colorful)

X-ray Operation







- 1) Push the 'Power' button next to 'Vacuum' button.
 - 2) After turn on green light of traffic light, push the 'X-ray' button.
 - 3) All users must not enter any other number to KV, mA Control because it has fixed value '20 KV, 10mA'.

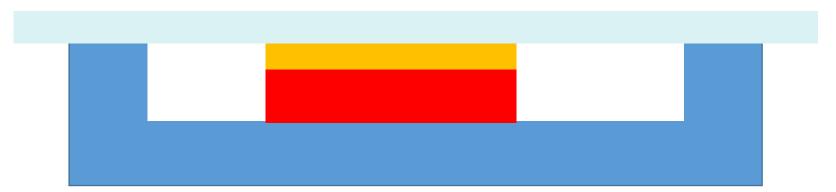


Sampling (while the instrument is turned on)



<Thin film Sample>

- 1) Cut rubber clay with scissors as size of sample.
 - When rubber clay is smaller than sample, thin film can be leaned.
- 2) Do not mass rubber clay, and stacks in the middle of the holder.
 - When you transform rubber clay, thin film can be leaned because of each different density and thickness of clay.
- 3) Put a thin film on rubber clay, and then press down with slide glass slowly.
 - * Before that, wash the slide glass clearly.
- 4) Do not reuse rubber clay because it has getting lower stickiness as you use.

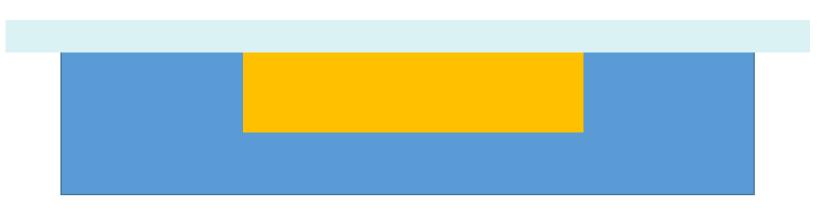


Sampling



<Powder Sample>

- 1) Place the heritage on the contamination pad and select the appropriate Sample Holder for the sample volume.
 - (Holder diameter 18mm or 5mm)
- 2) Clean the selected Sample Holder, Spatula, Slide Glass with Kimtech soaked in ethanol.
- 3) If powder is not uniform, grind with mortar.
- 4) Using Spatula, take proper amount of powder to Sample Holder Cavity and planarize it with Slide Glass.
- 5) Repeat above process until Cavity is full flat.



Door open & sample loading



- 1) To open the door, push the 'Door open' button.
 - (* Opening XRD door without pushing 'open' button, XRD Tube would be damaged with force quit.)
- 2) When you push the 'Door Open' button, The alarm blinks and makes a sound.
- 3) Grab the door handle and open the door smoothly.
- 4) When you close the door, grab the both handles and close smoothly.



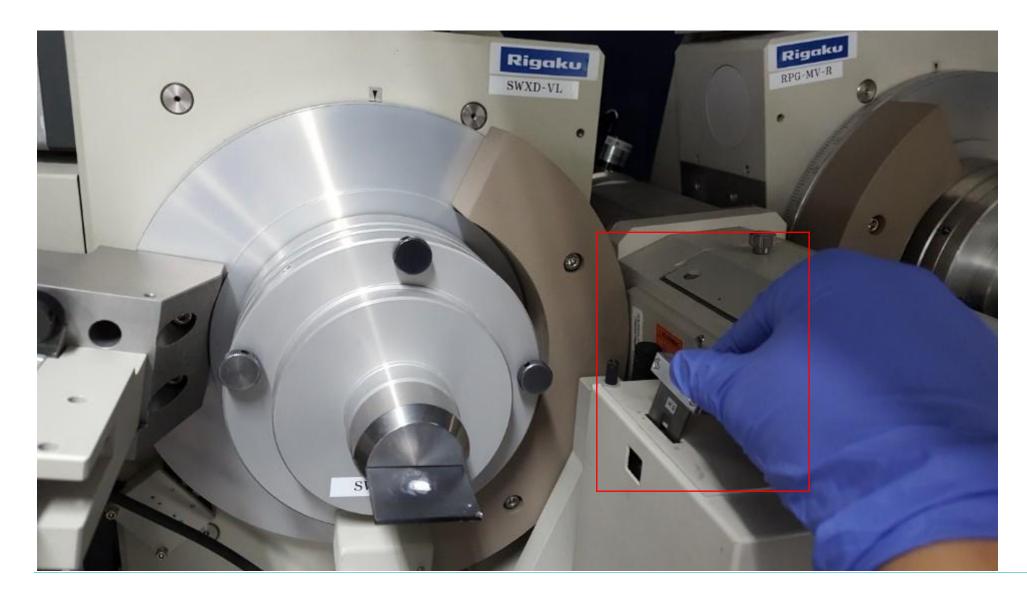


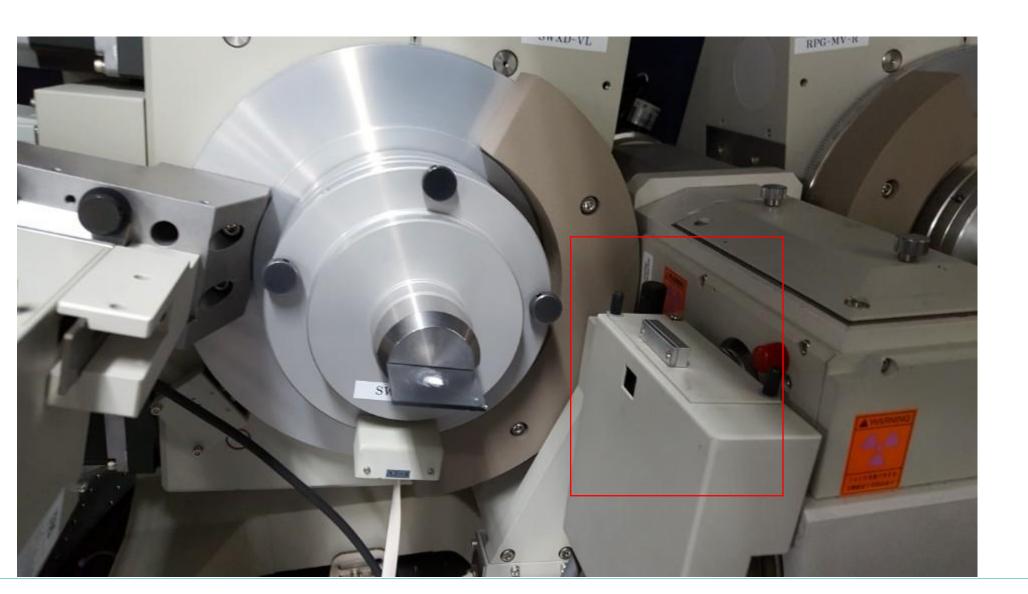


Door open & sample loading



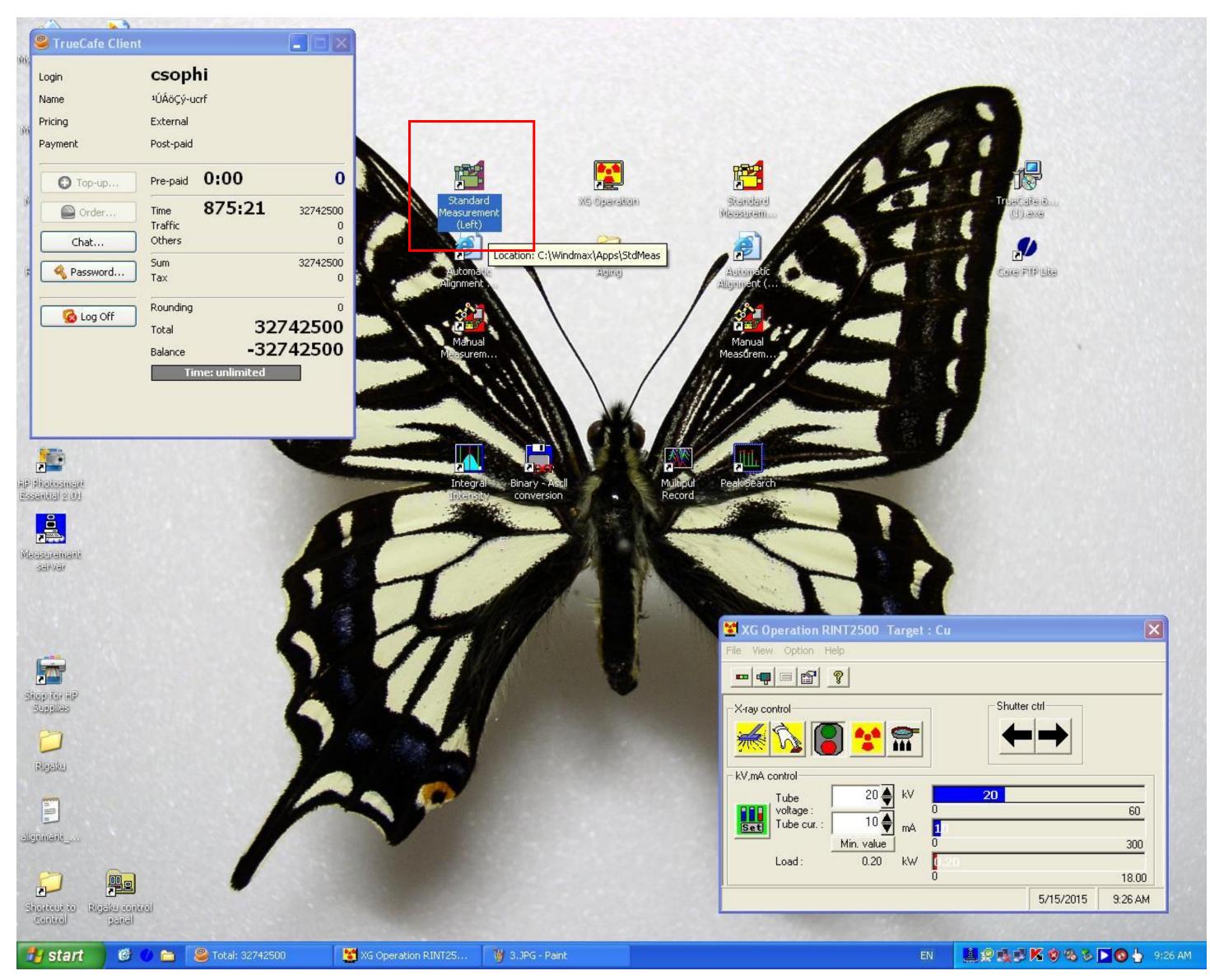
- 1) In case of Auto Sampler, straight attach the magnetic sample holder and check.
- 2) Insert holder straight in Manual Attachment and check.
- 3) After sticking holder to Manual Attachment, match the direction of insertion and center of sample.
- 4) According to cavity diameter of Sample Holder, select proper DHS(Divergence Height Slit) and insert direction of letters to direction of the sample.
- 5) If DHS doesn't insert straight, do not force it and repeat until it is inserted smoothly.
 - ※ Be careful that internal PCB board could be broken by force insertion.
- If you can not find any way, call the manager and ask for help.





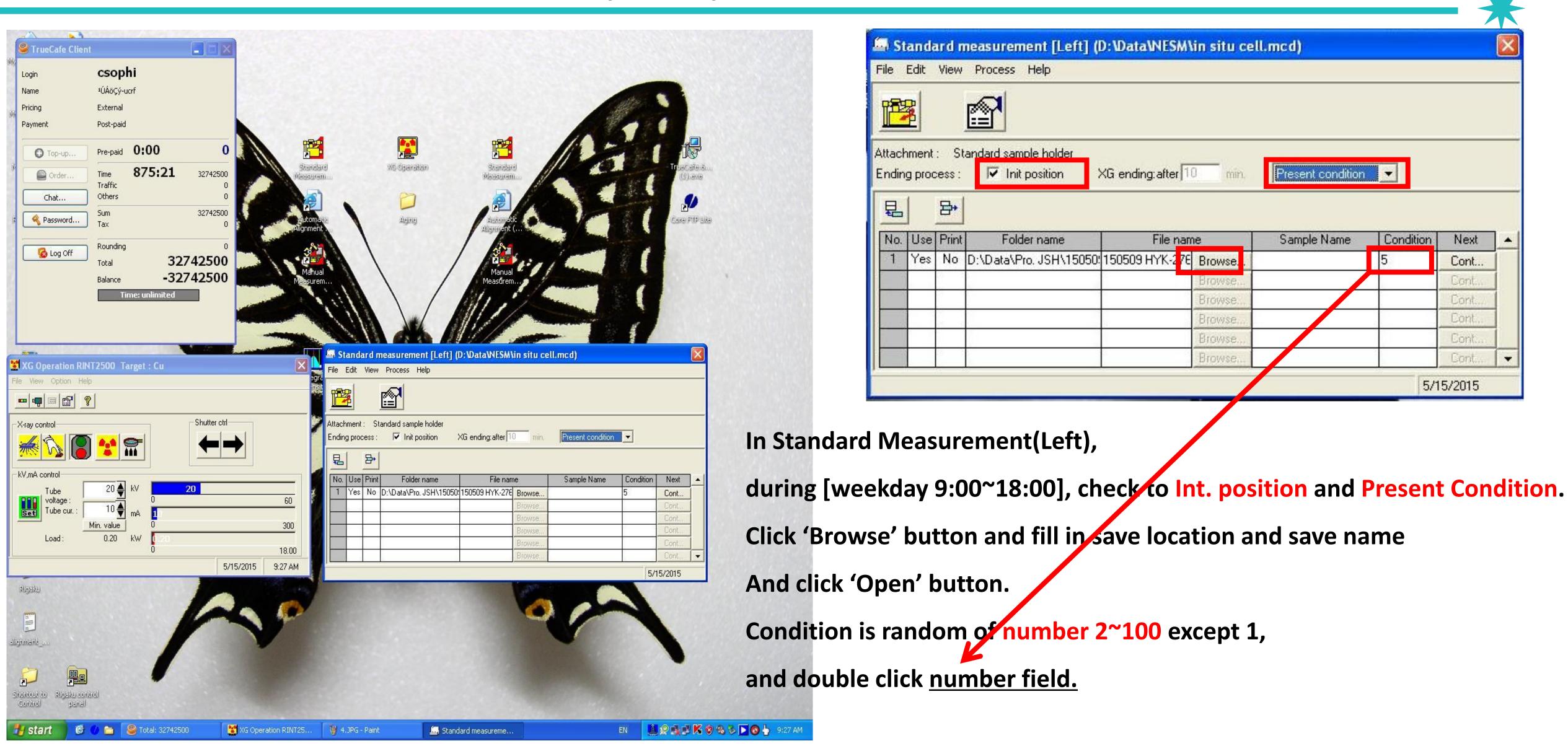




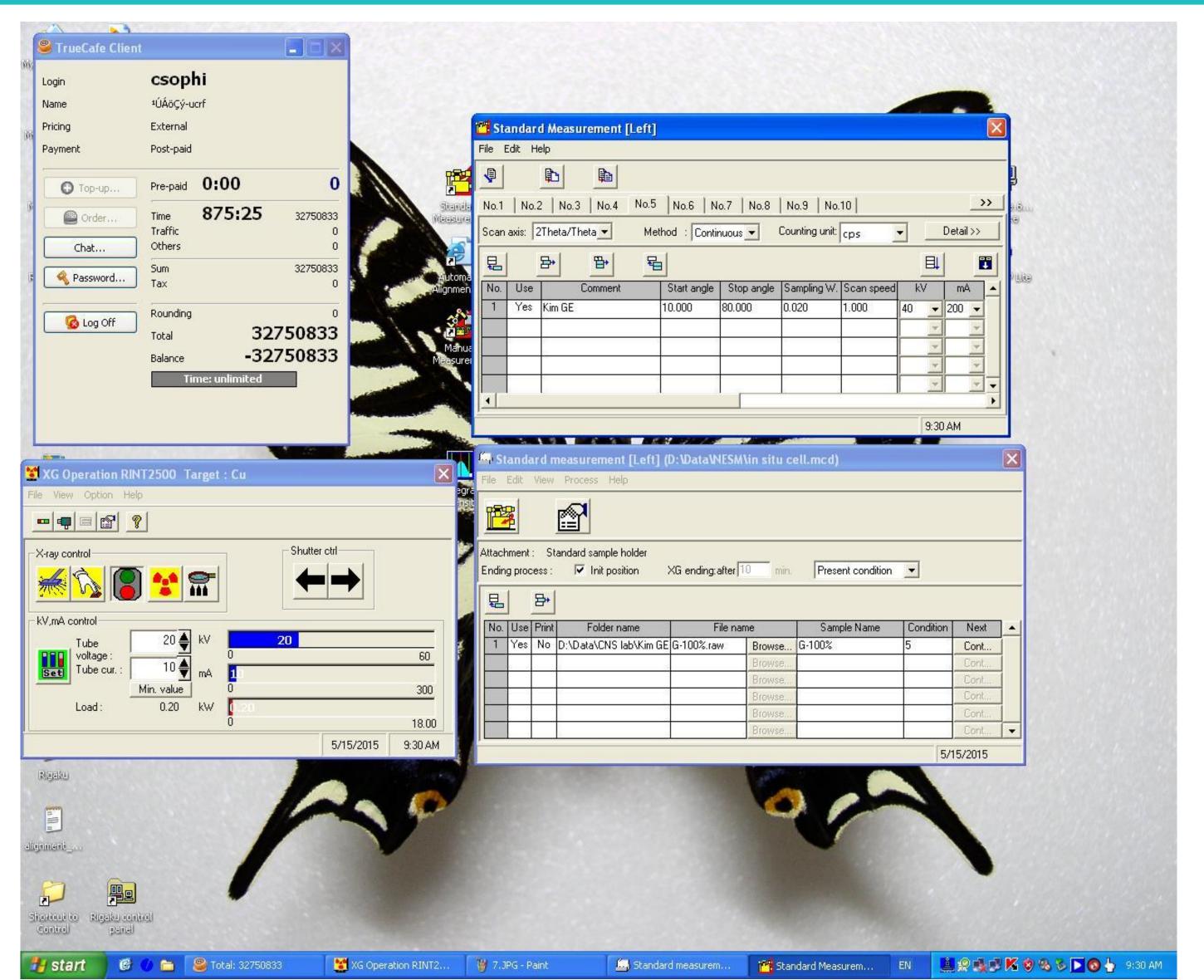


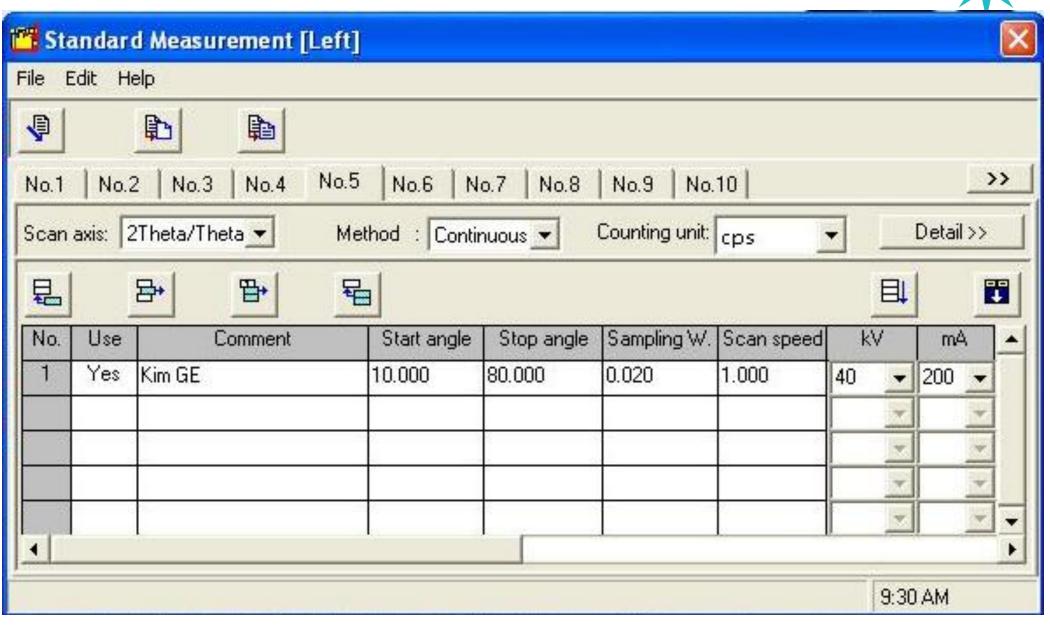
Click Standard Measurement(Left) icon which is located to left side of XG Operation.

Standard Measurement (Left) measures One by one using the same sample Holder.









In condition pop-up,

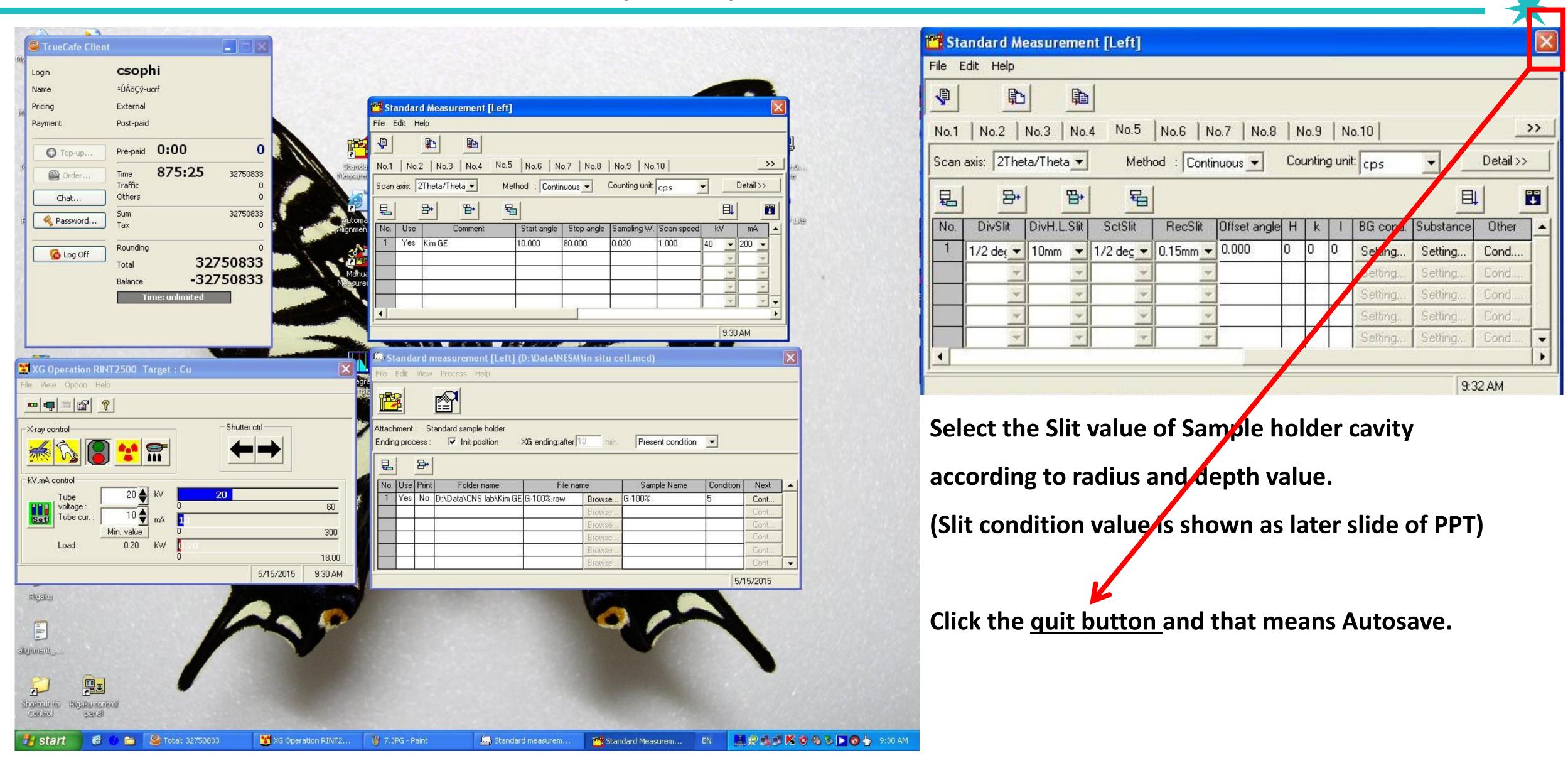
Use→Yes, Comment→your choice (ex> user name..),

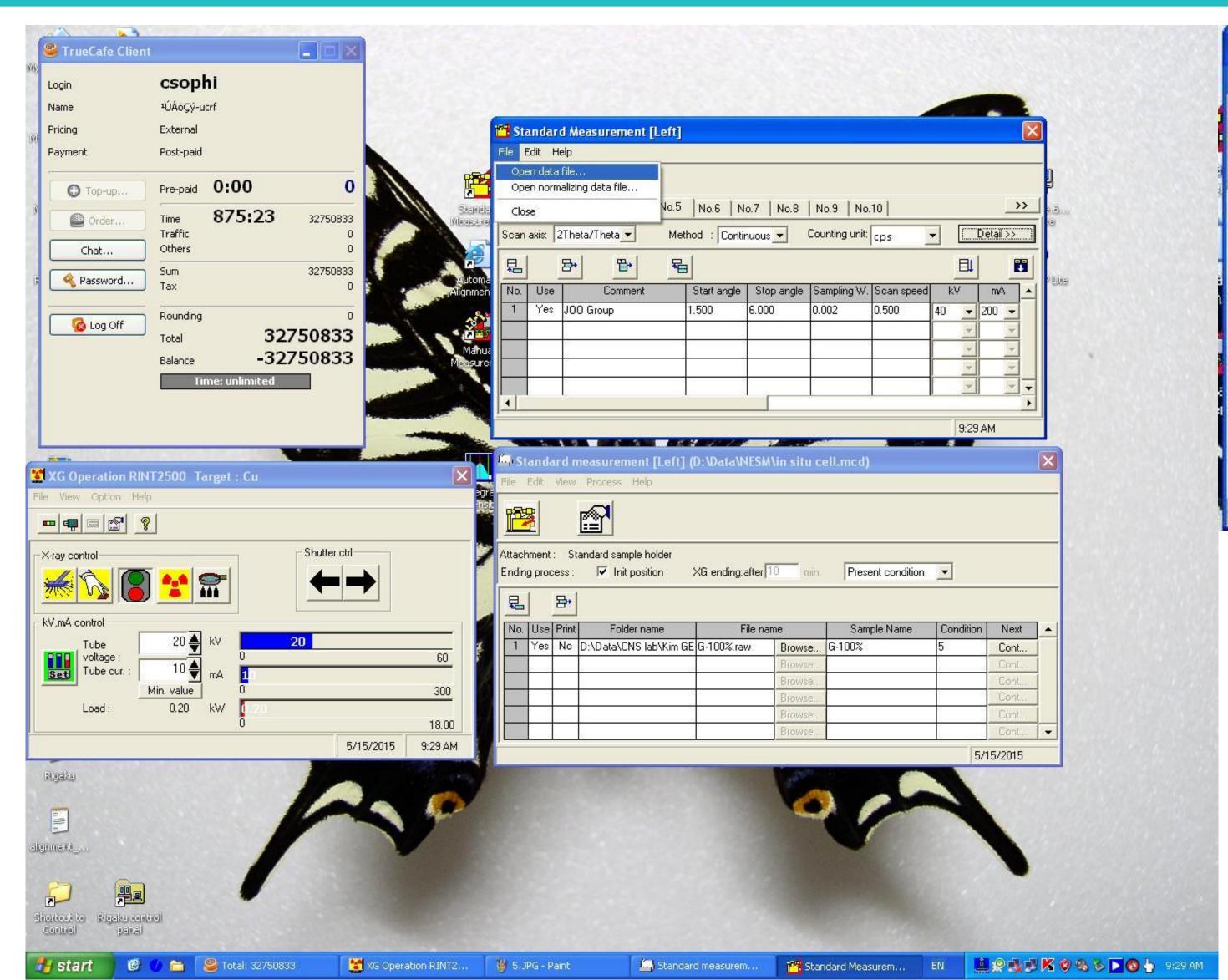
Fill in Start angle, Stop angle, Sampling W(=0.02), Scan Speed of measurement condition.

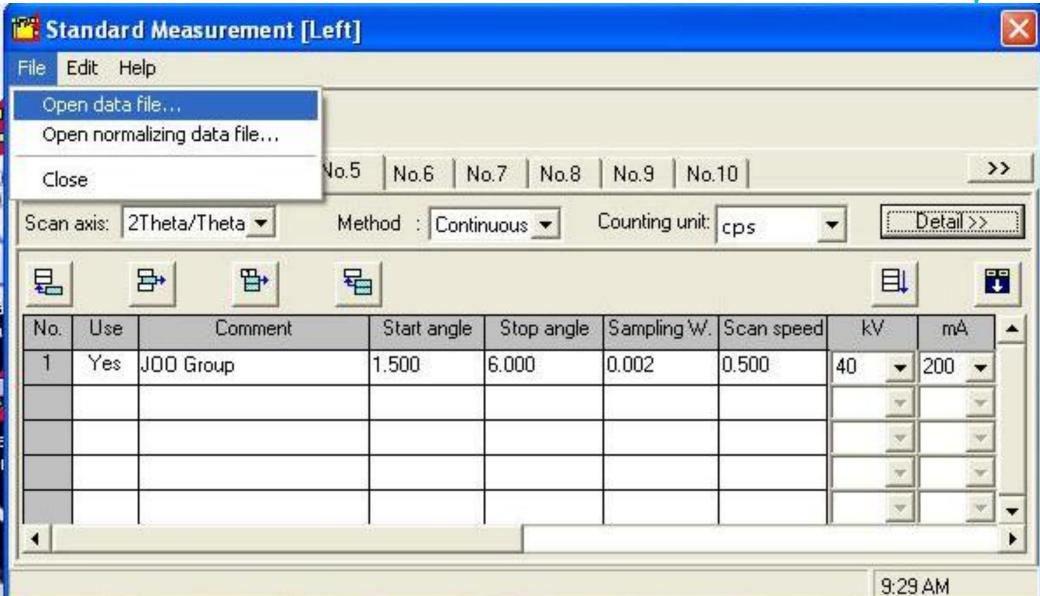
Power maximum 40KV, 200mA, possible to be lower value.

And then, drag scroll bar from left to right side.





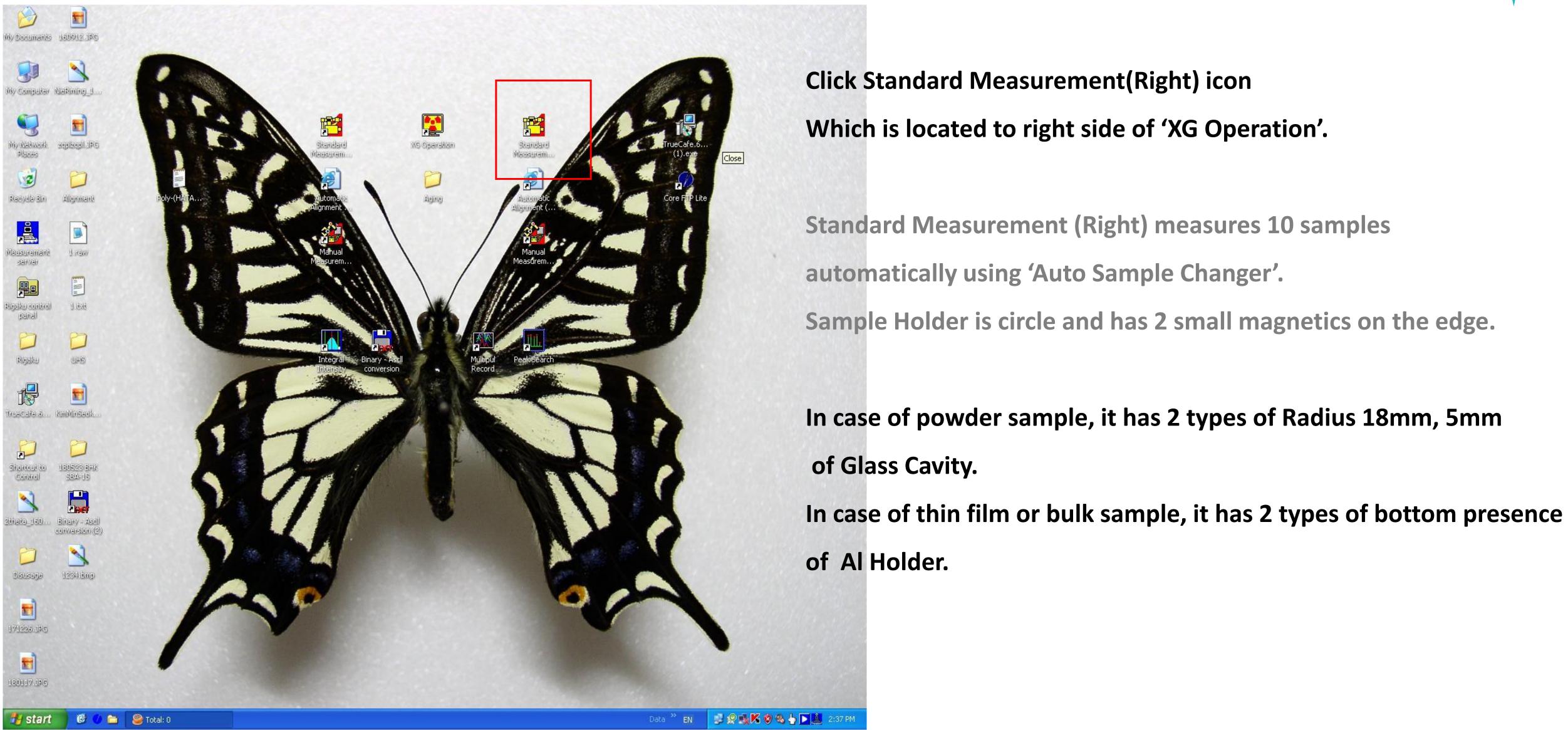




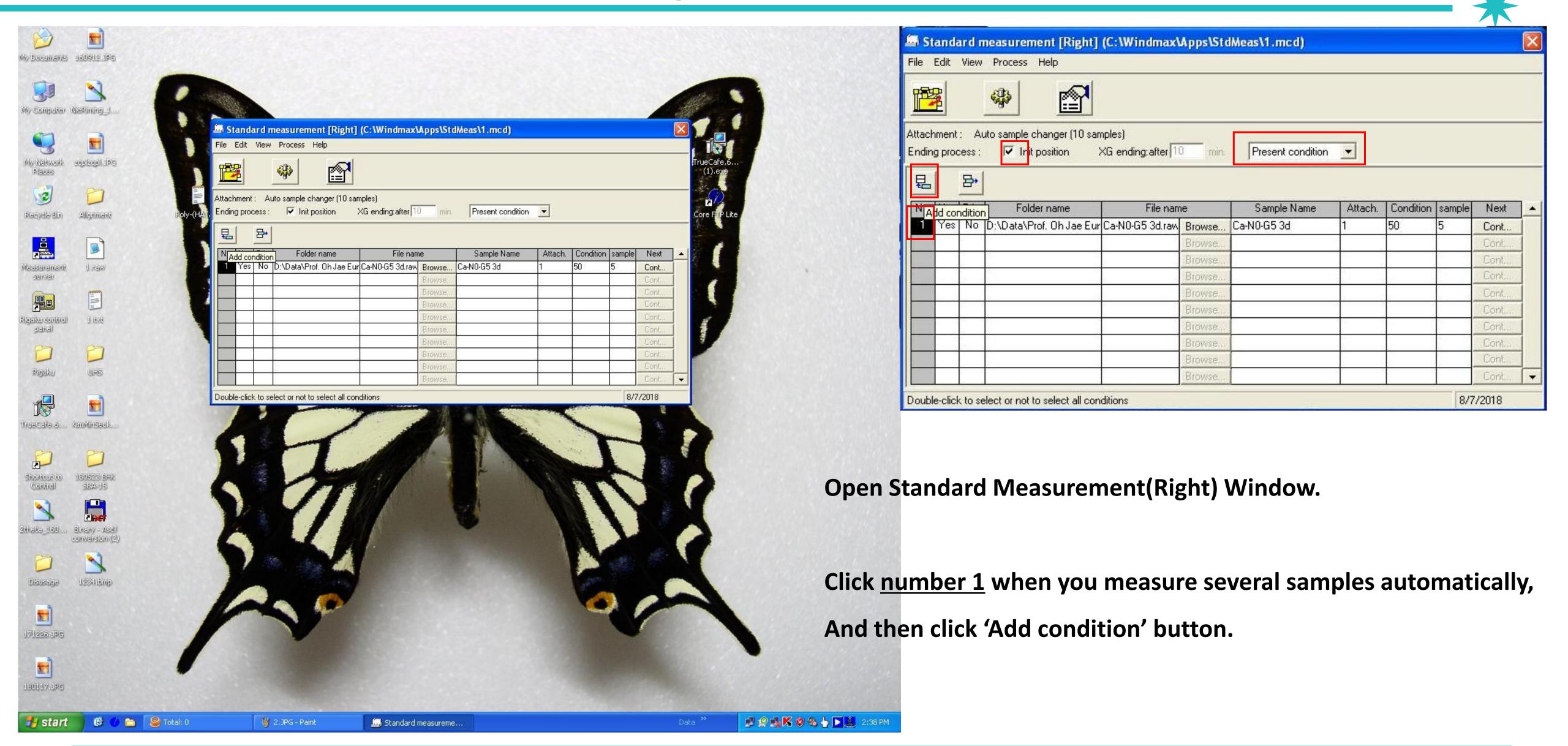
<Tip! For using the same measurement condition>
After clicking the number of 'Condition', it shows
new window of Standard Measurement and then,
Click 'Open Data File' in 'File'.

In new window, click the most recent measurement file.



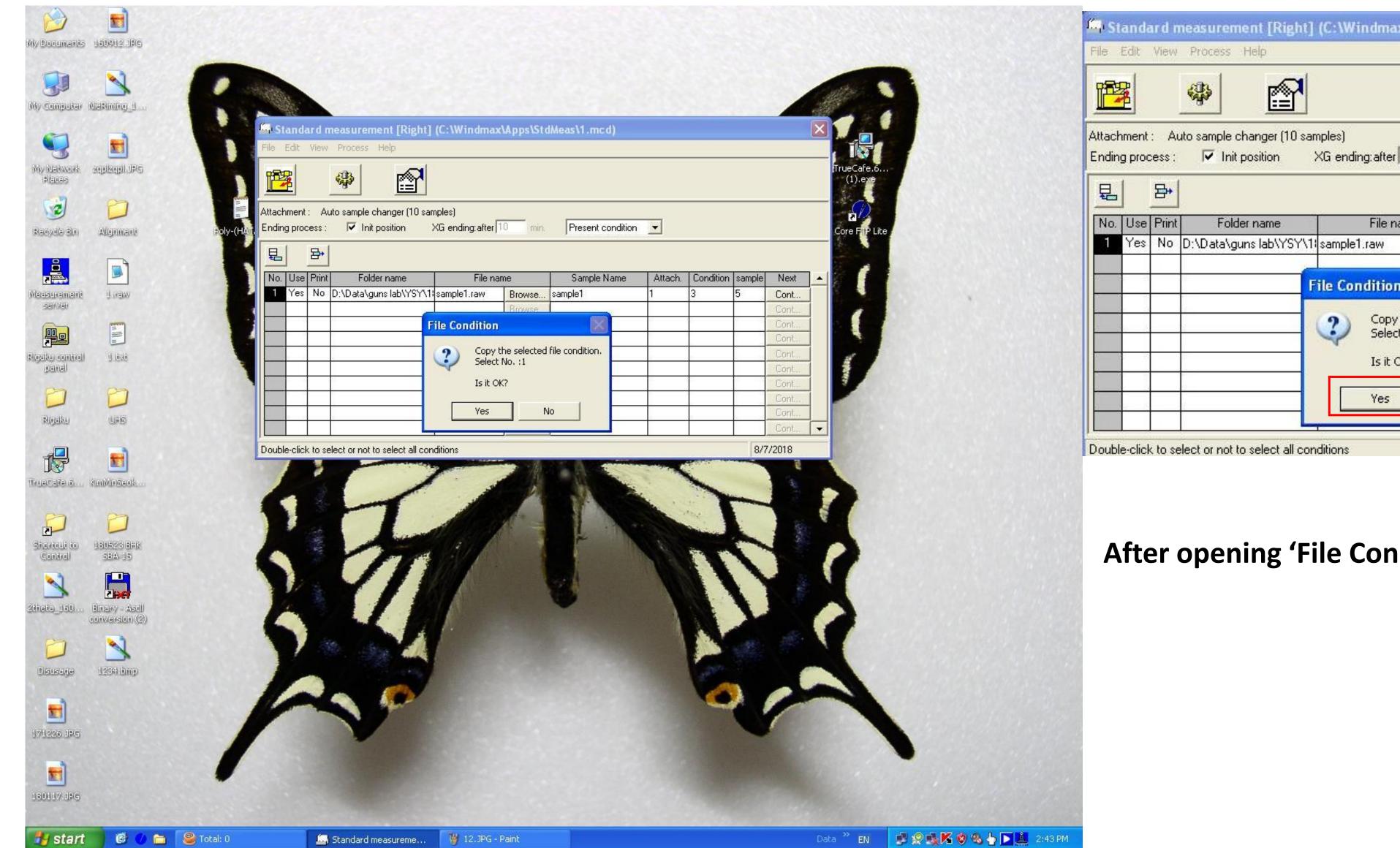


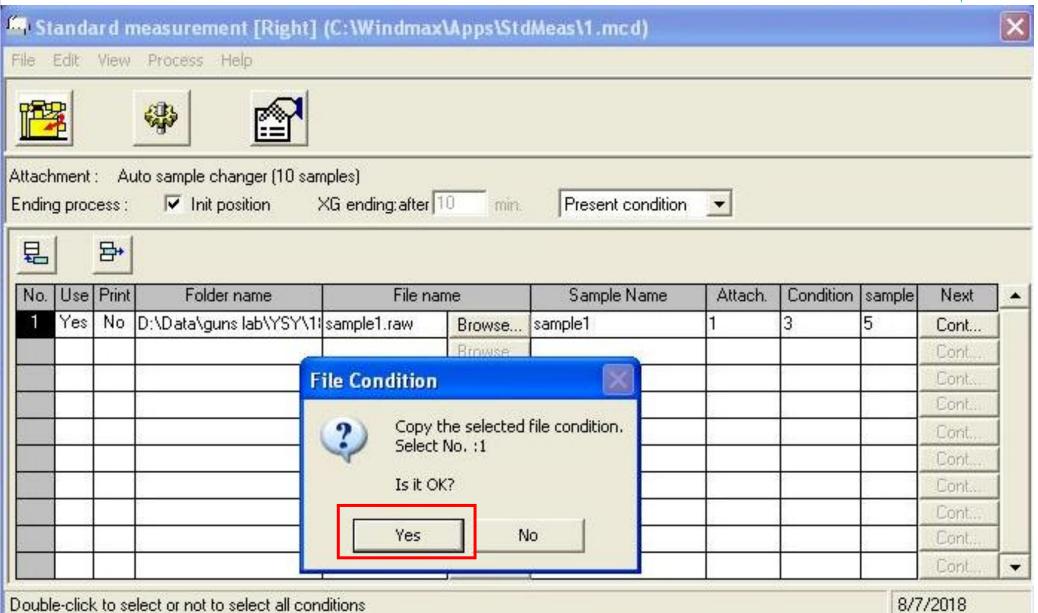




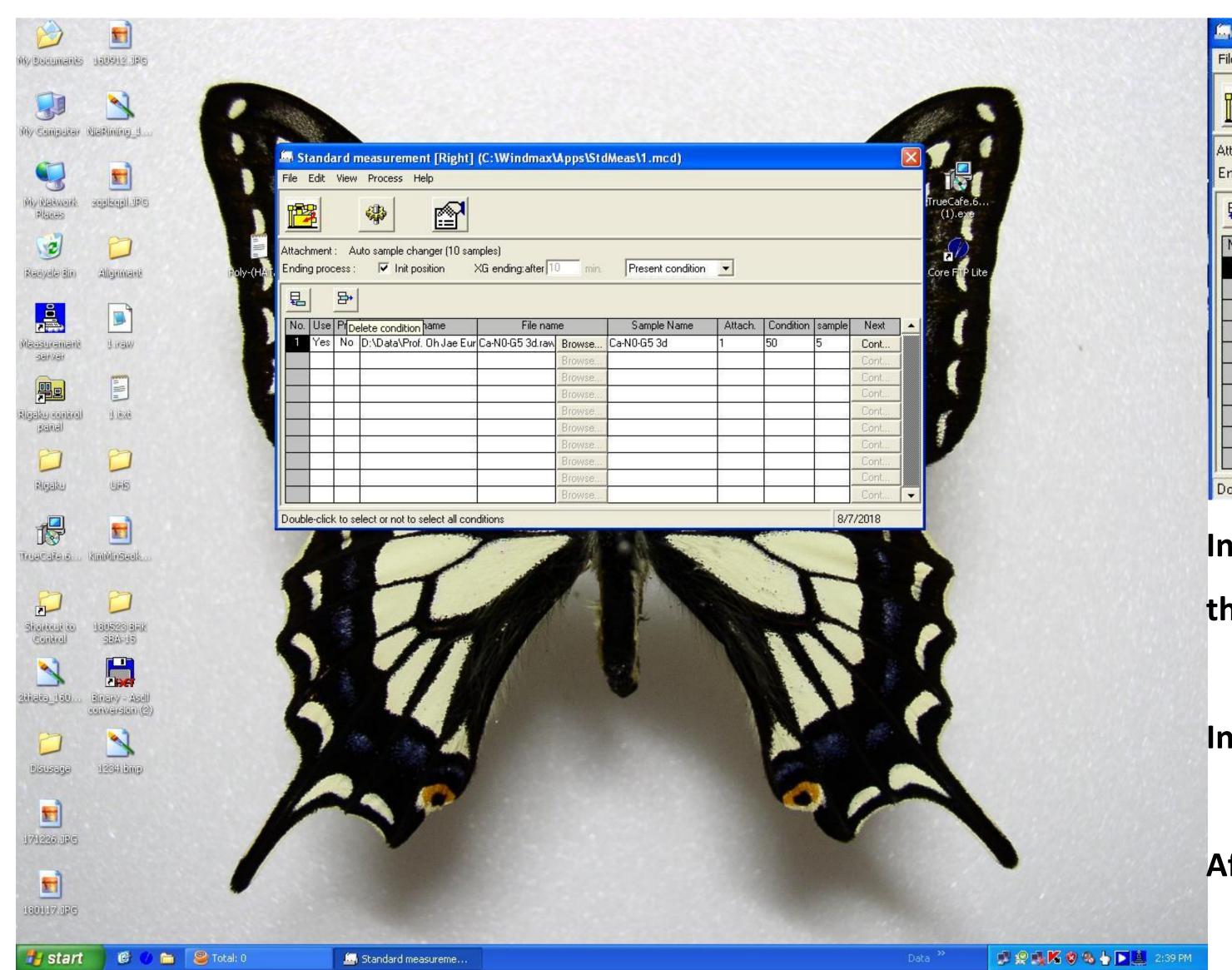


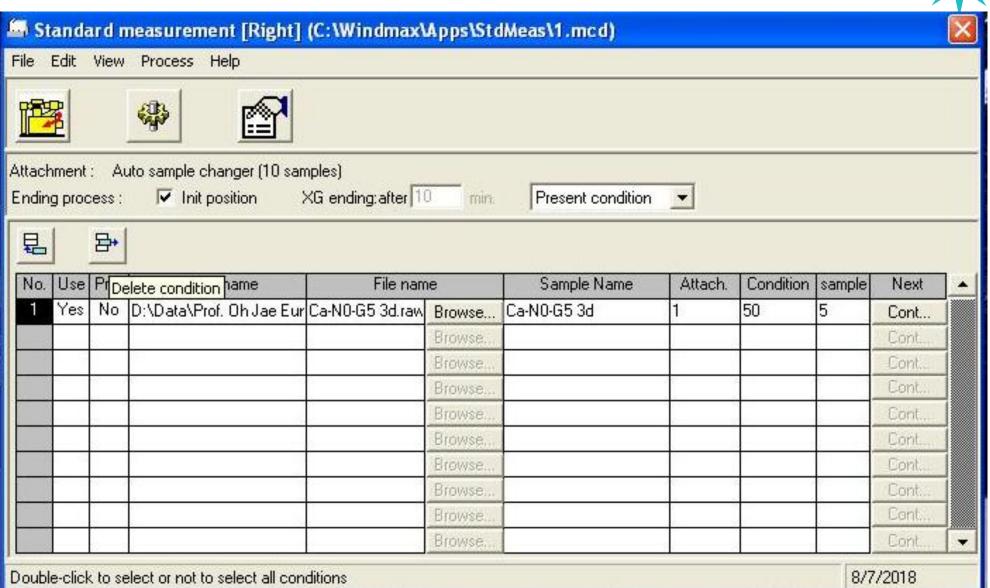






After opening 'File Condition Window', click 'yes'.

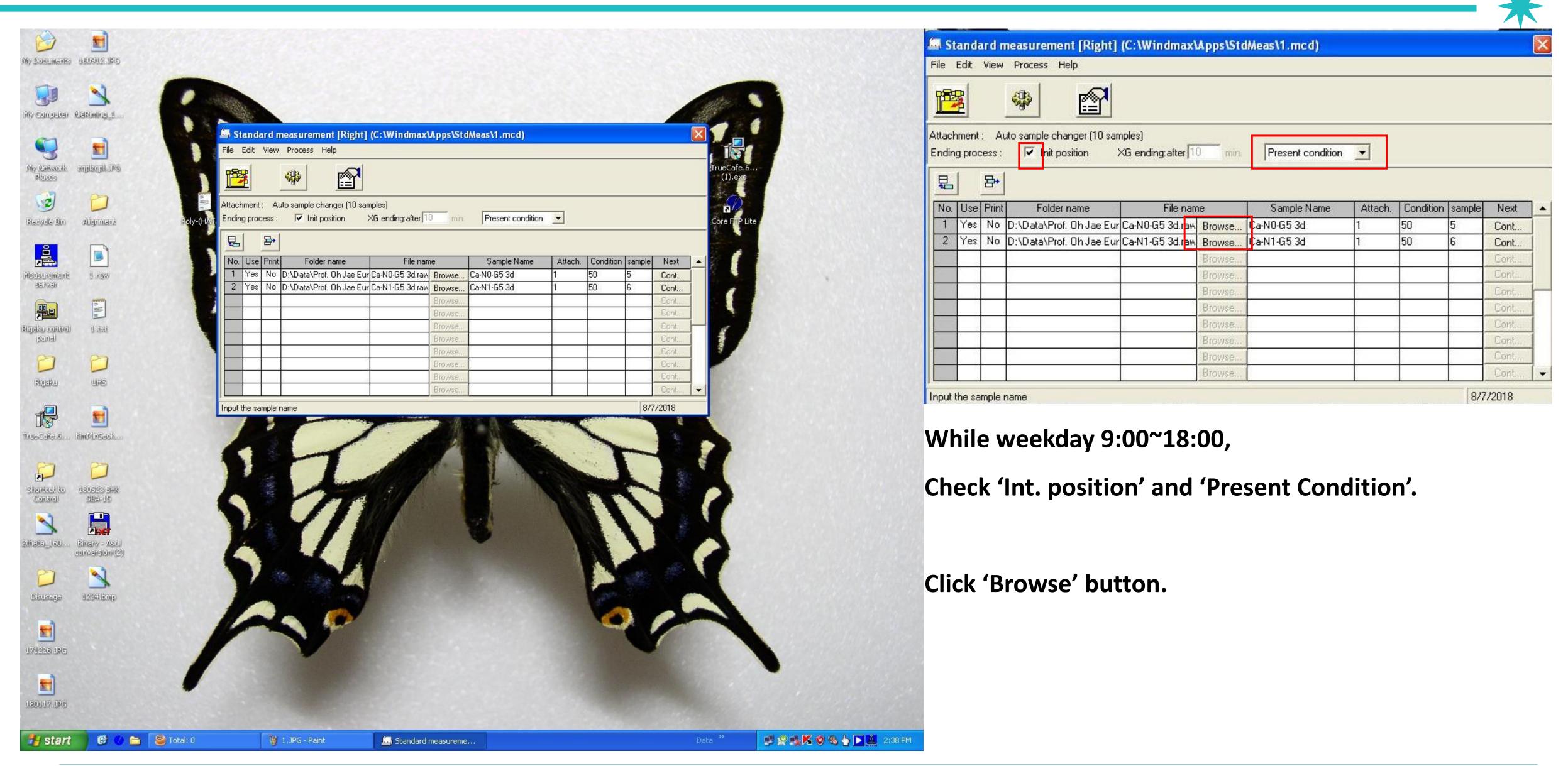




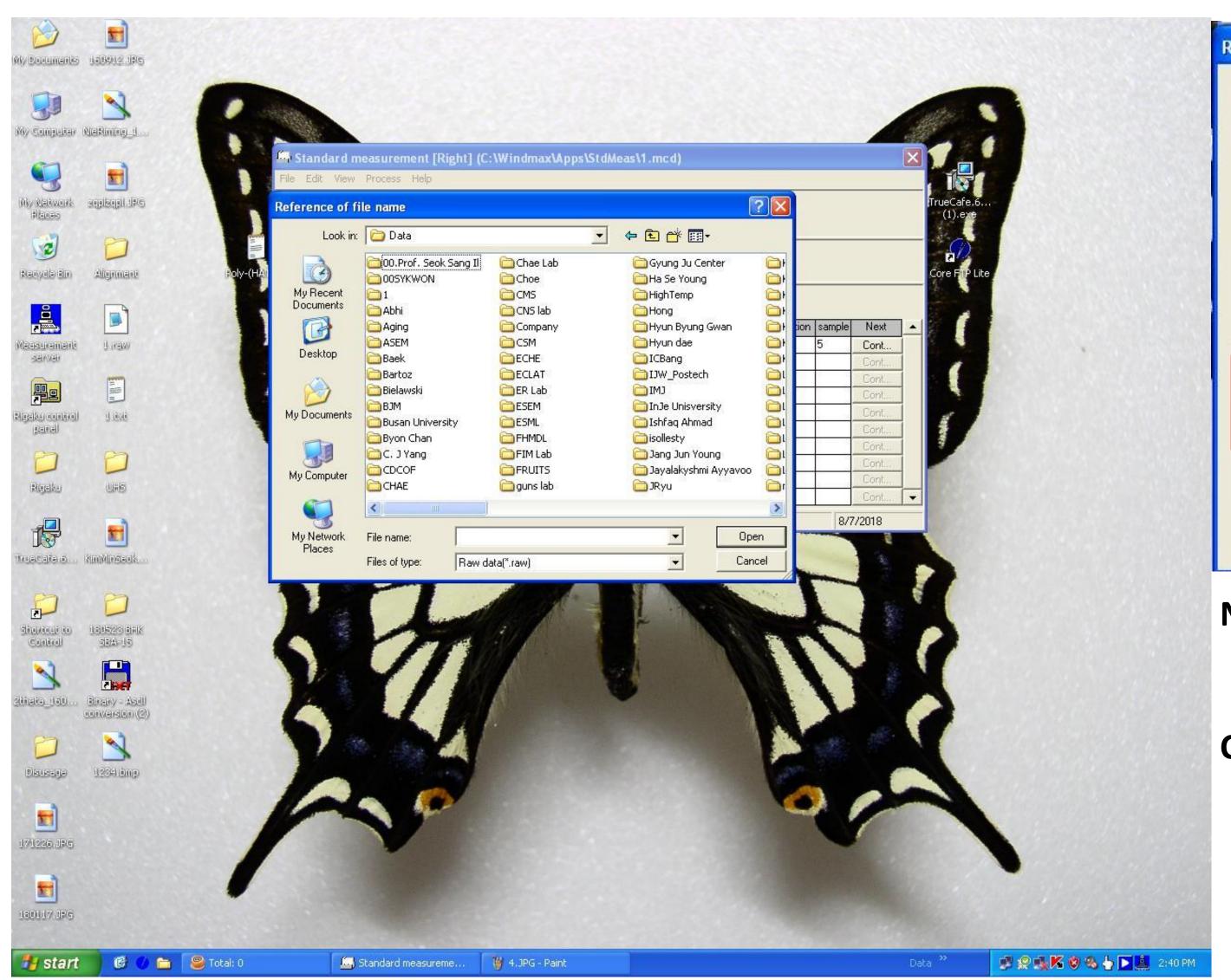
In case of deleting 'Condition', click condition number that you want to delete.

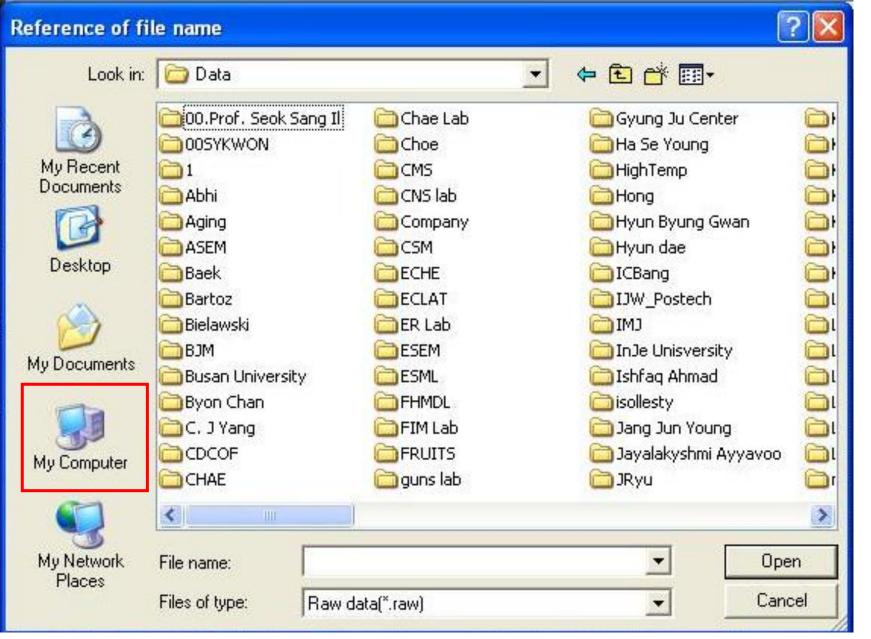
In black status of number field, click 'Delete Condition' buttor

After opening new window, click 'yes'.



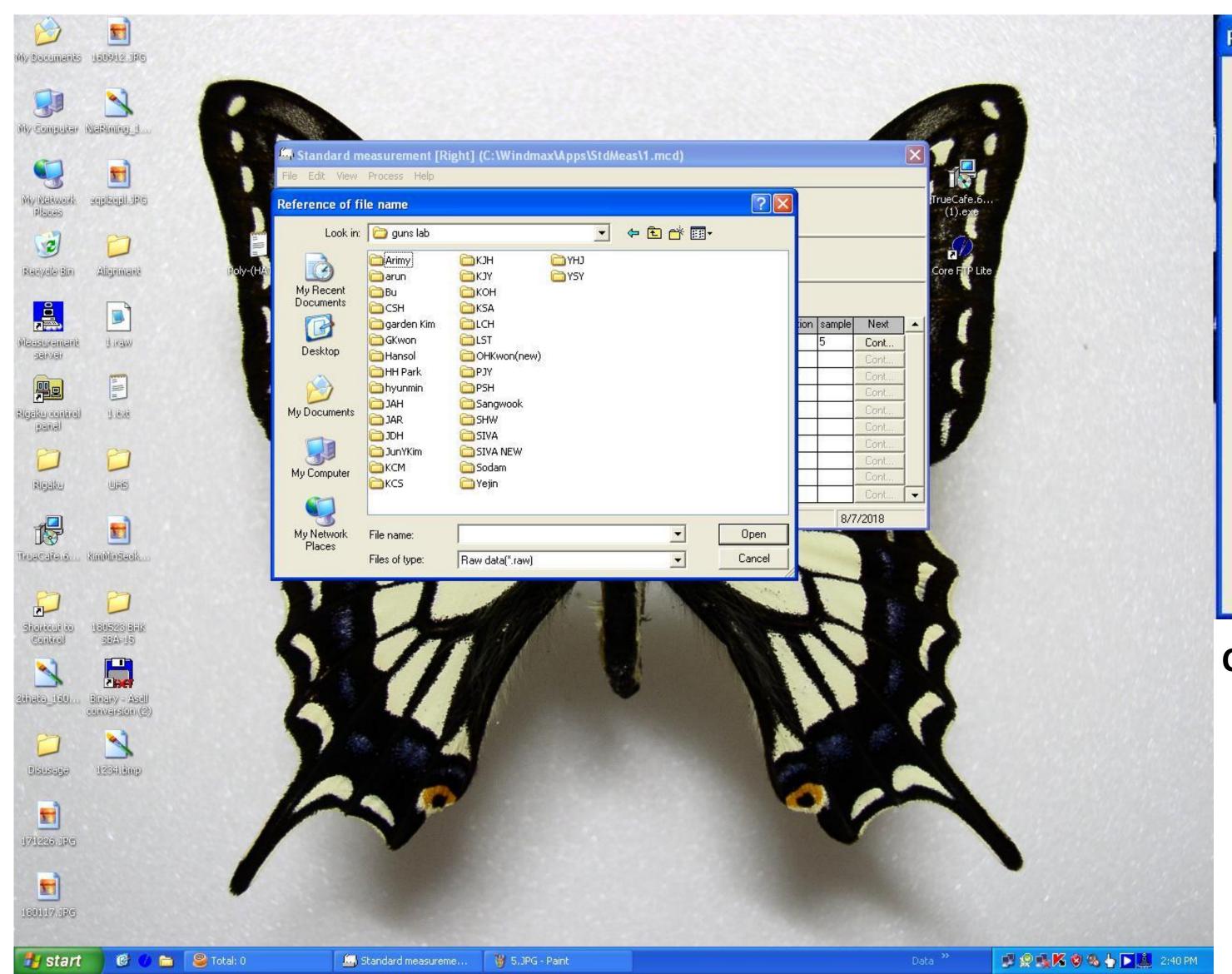


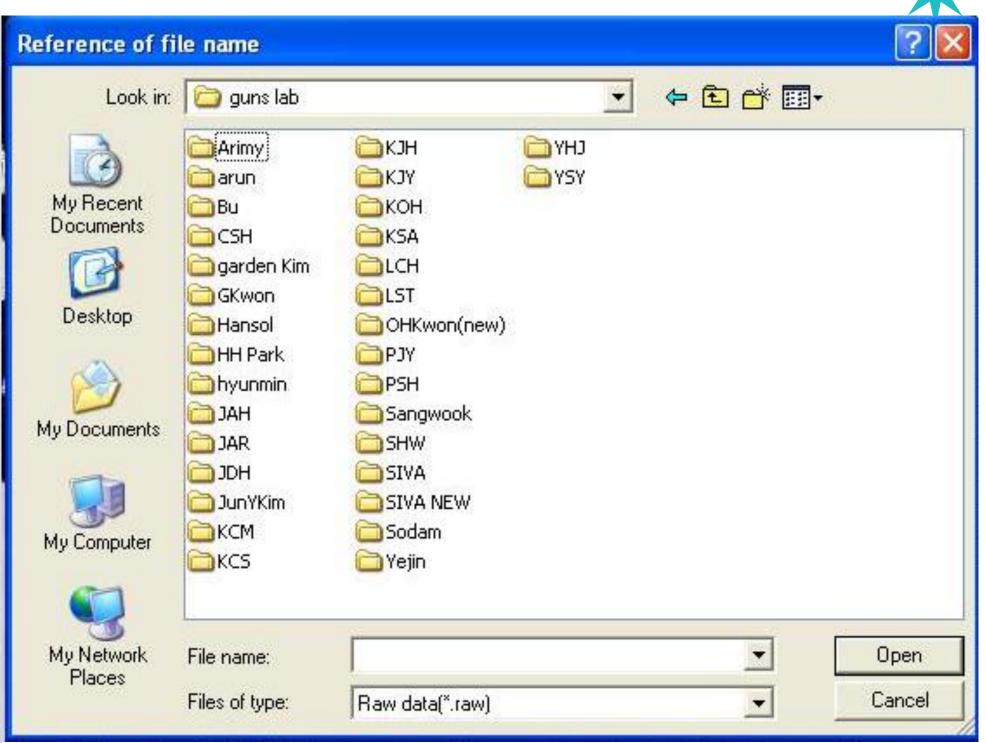




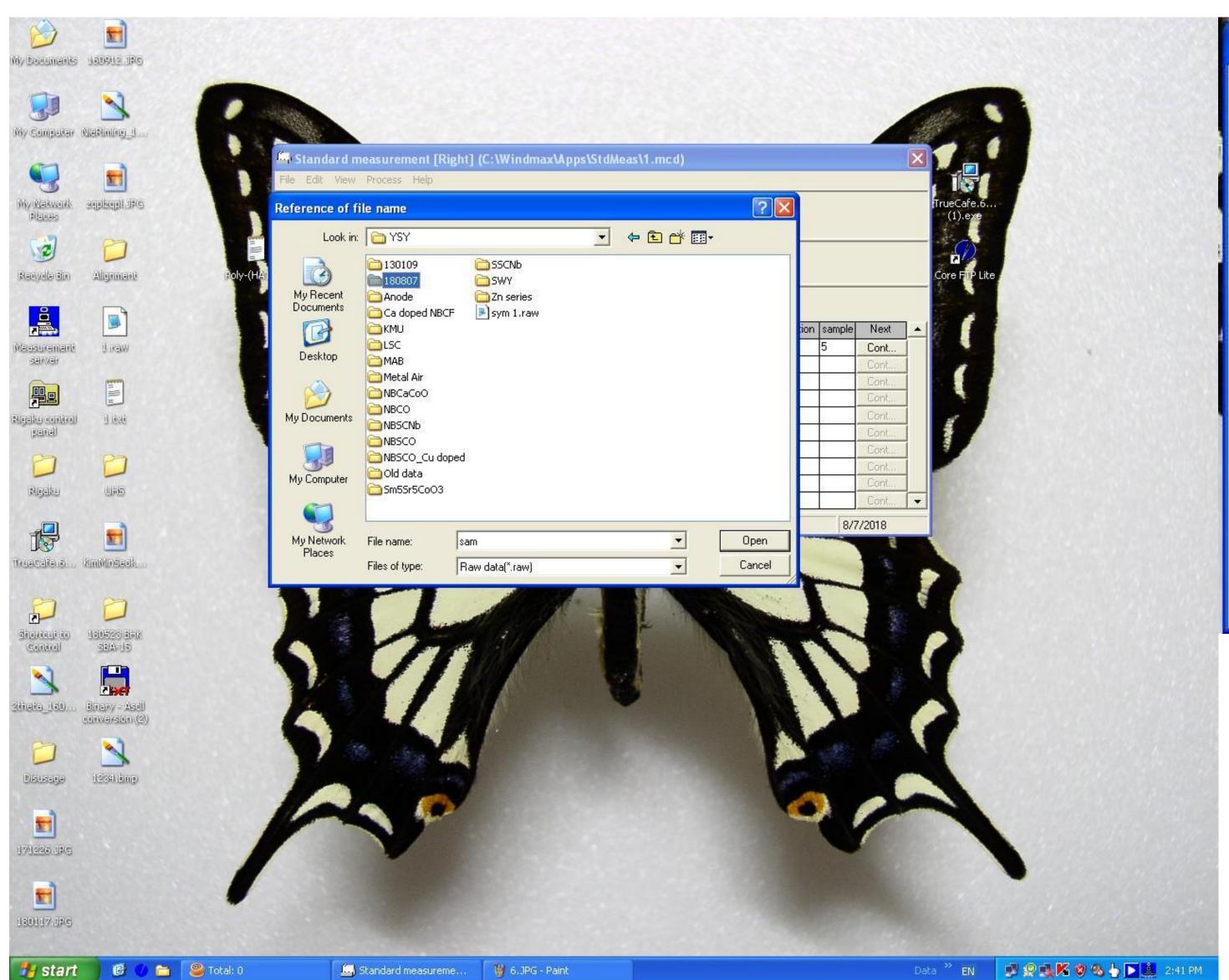
New window opens.

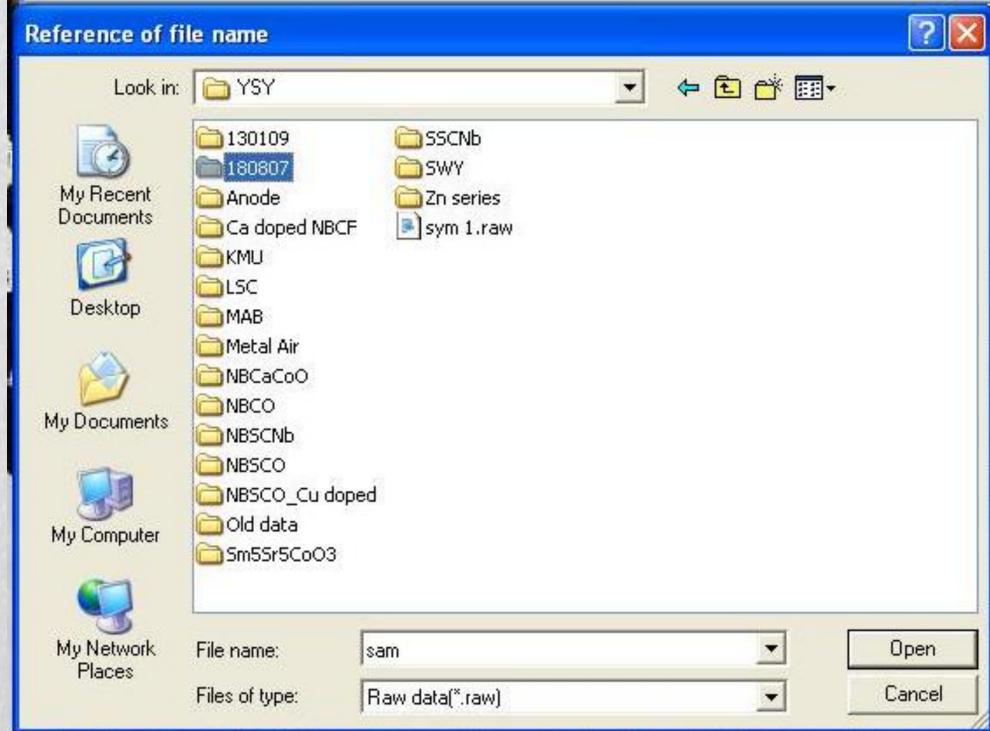
Click 'My Computer' and then click [D Drive > Data].



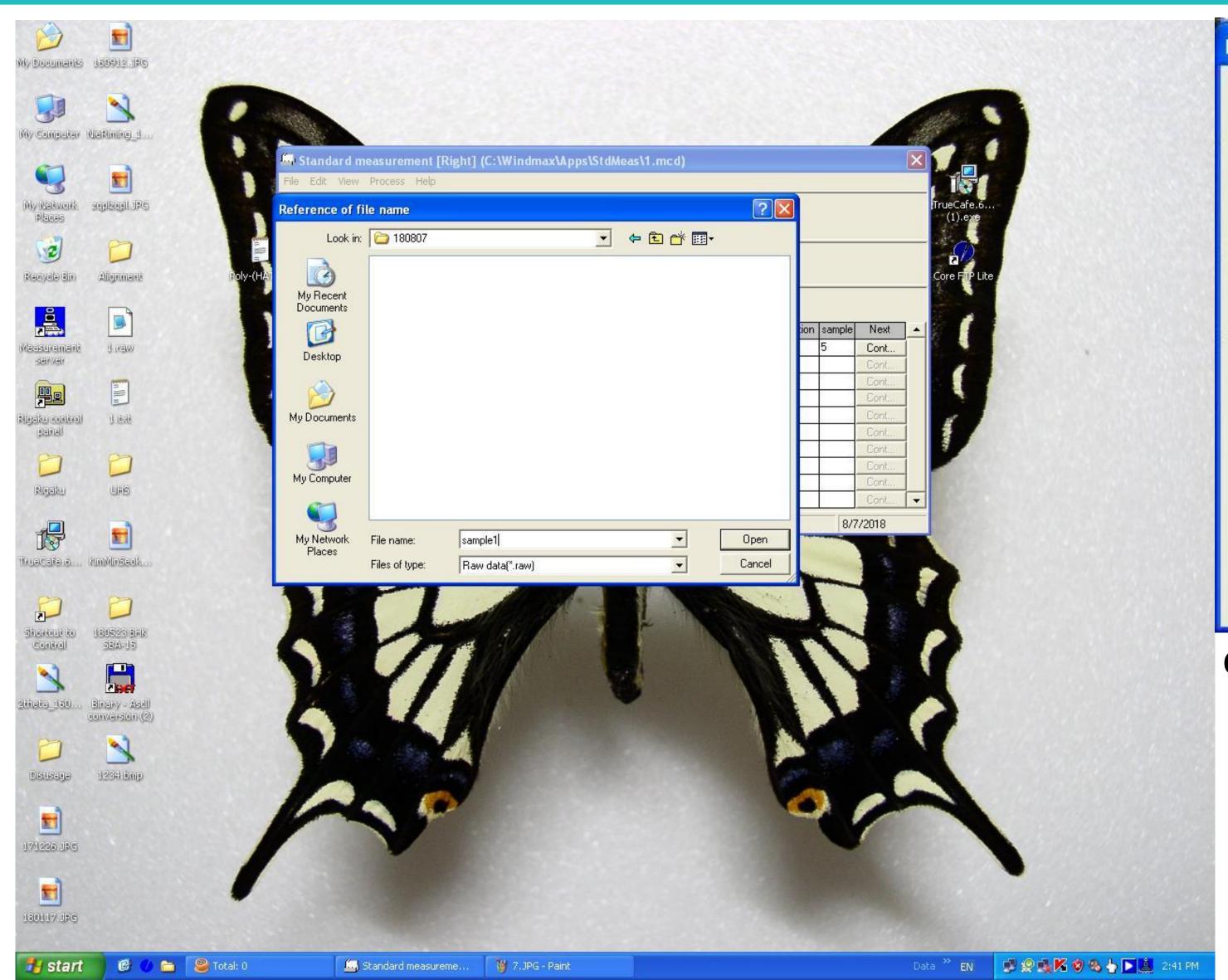


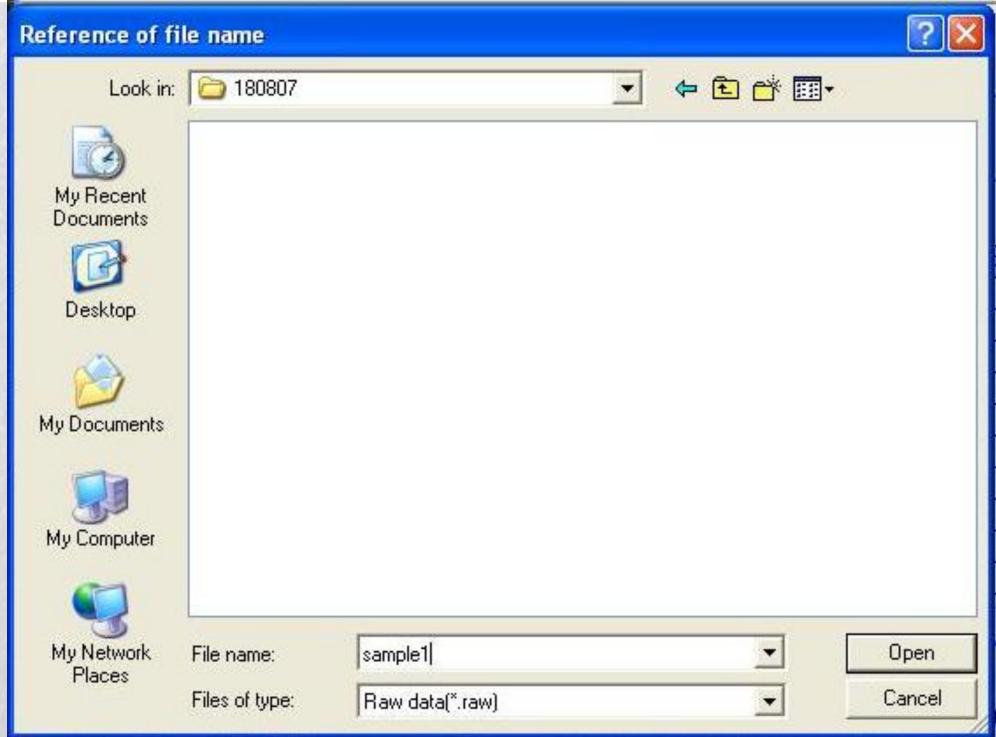
Click [D Drive > Data > Lab folder].



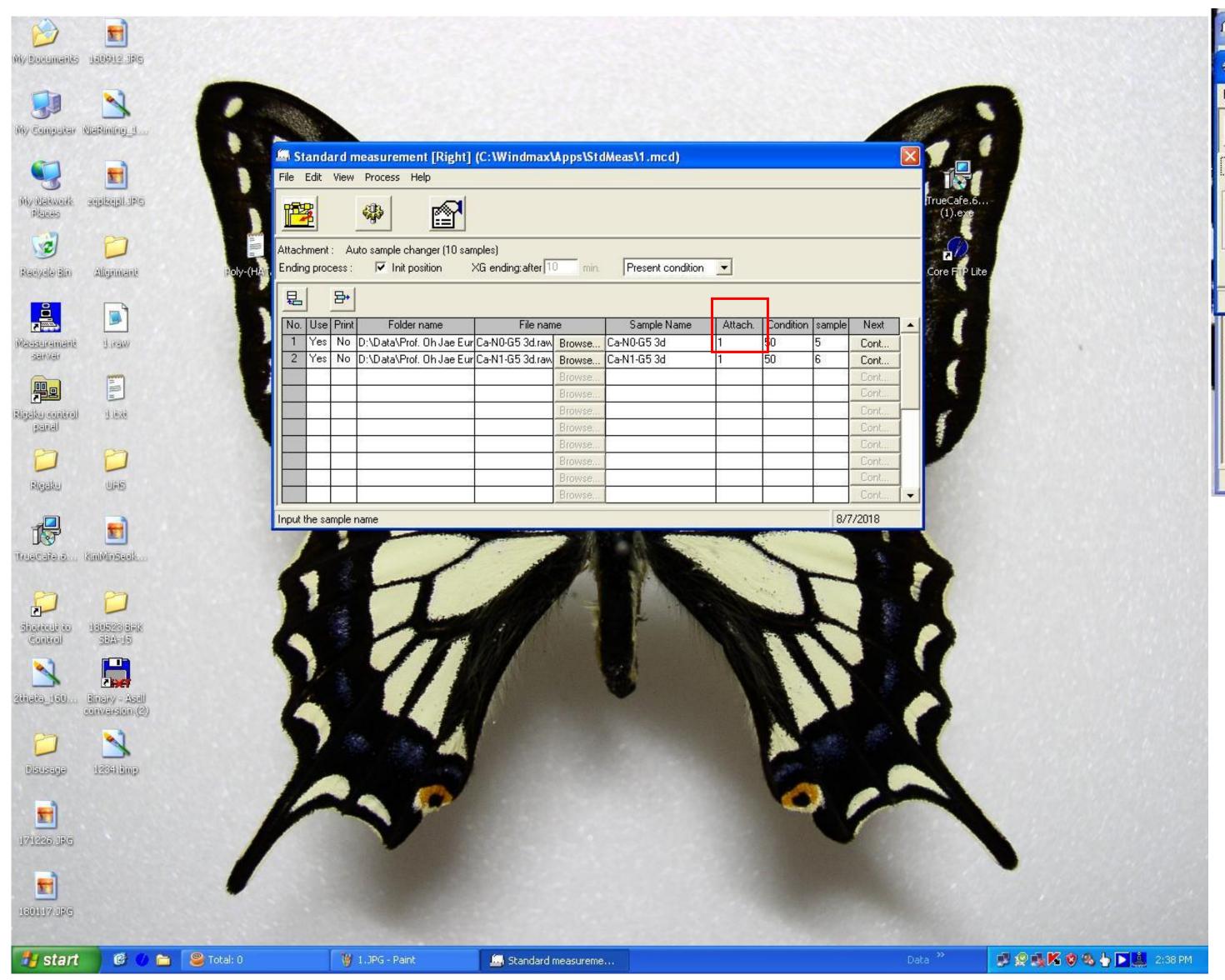


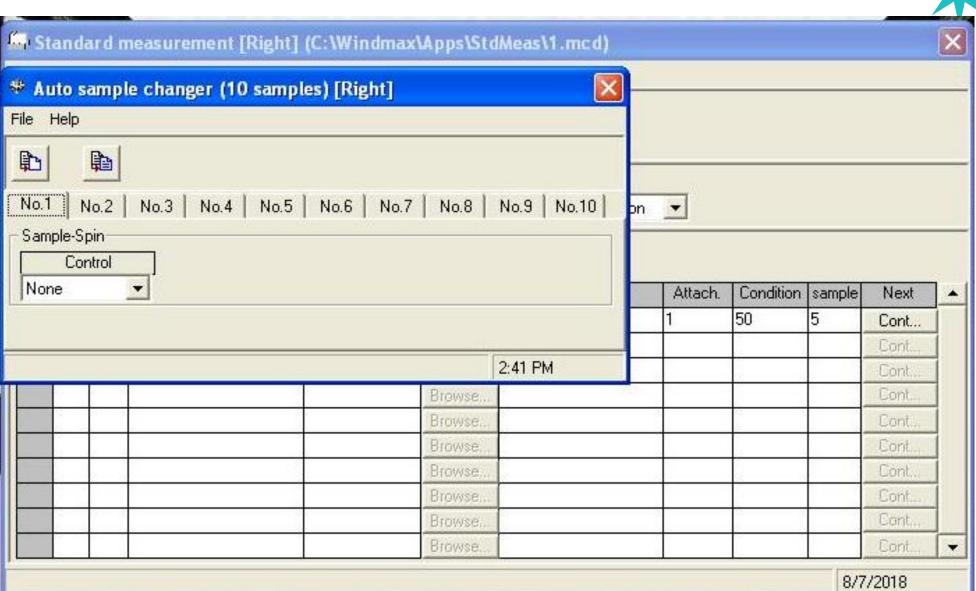
Click [D Drive > Data > Lab folder > User folder].





Click [D Drive > Data > Lab folder > User folder > date].



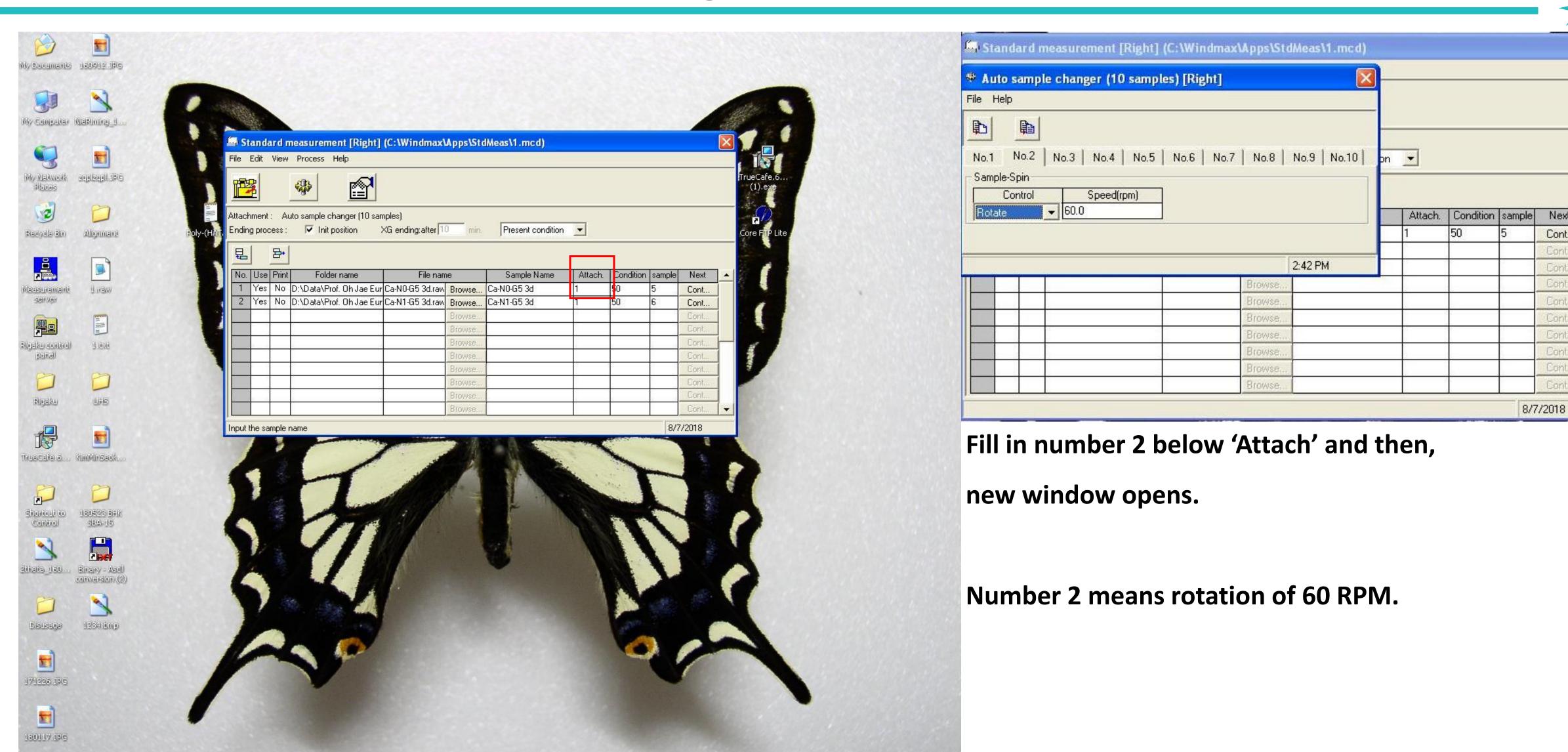


Fill in 'number 1' below Attach and new window opens.

Attach is operation of rotation or non-rotation.

In case of a sample having an orientation property, It should rotate.

Number 1 is non-rotation.





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Standard measureme.

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Next

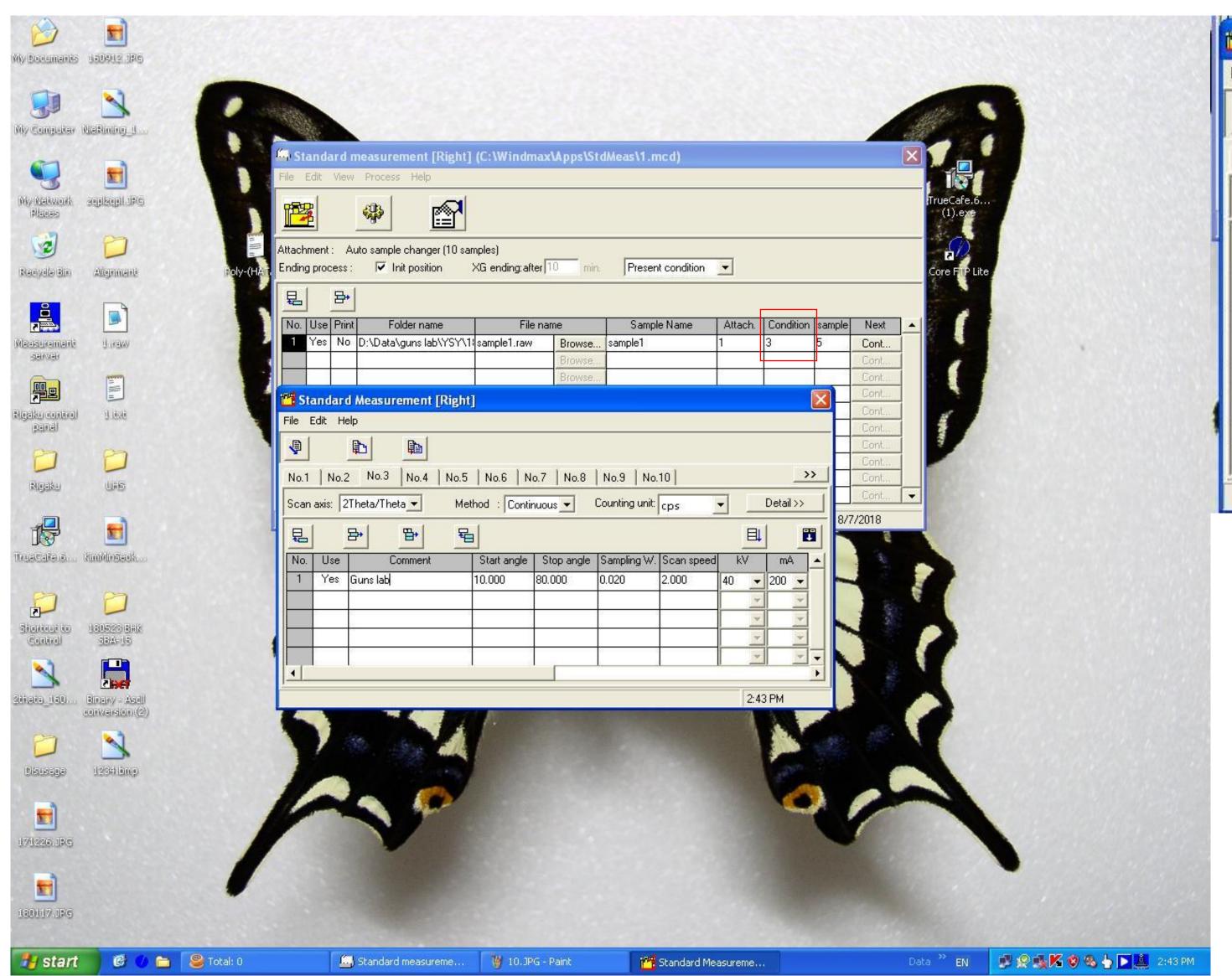
Cont...

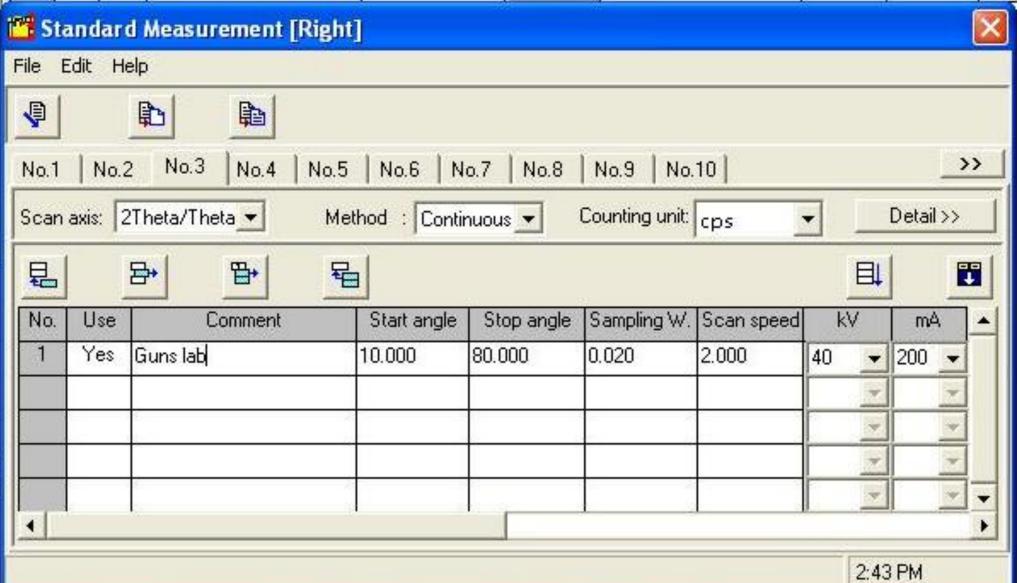
Cont.

Cont.

Cont. Cont... Cont. Cont.

Cont...

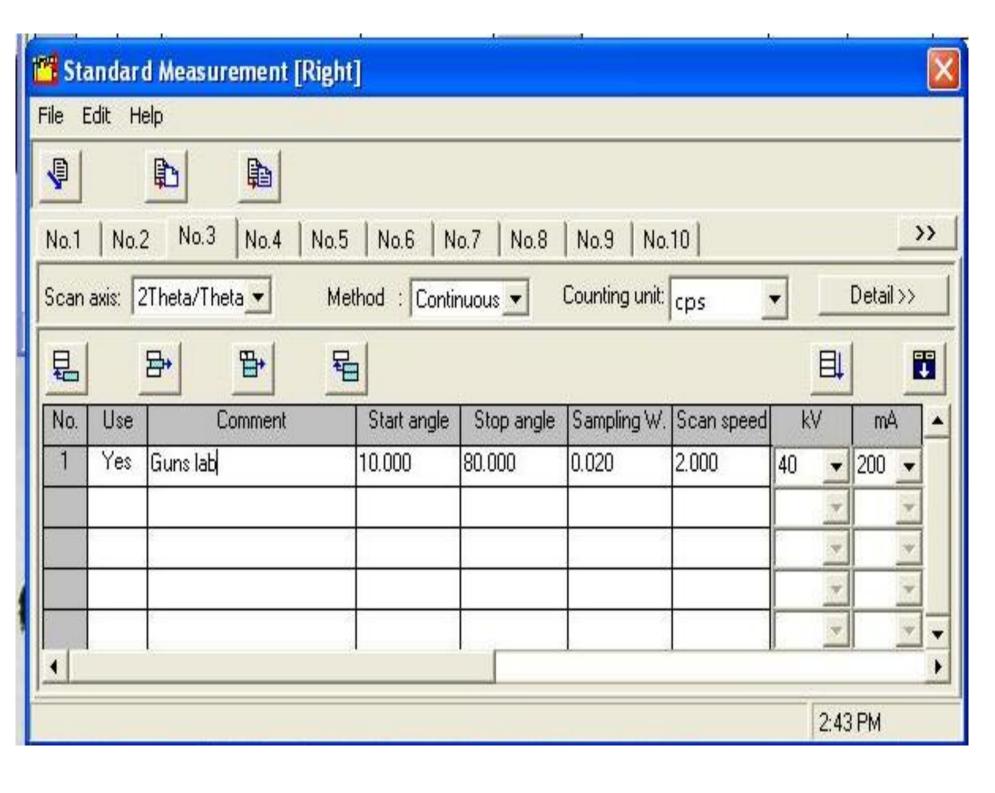




Next, set the measurement Condition.

Fill in random number of 2~100 except number 1, and then new window opens.





In measurement condition window,

'Use' should be 'Yes'.

Fill in the 'Comment' as easy name to remember.

Fill in Start Angle, Stop Angle, Sampling W(=usually 0.02), Scan Speed(° per minute).

For example, we measure range of 20~80° as 2°/min of 0.02° interval, and then

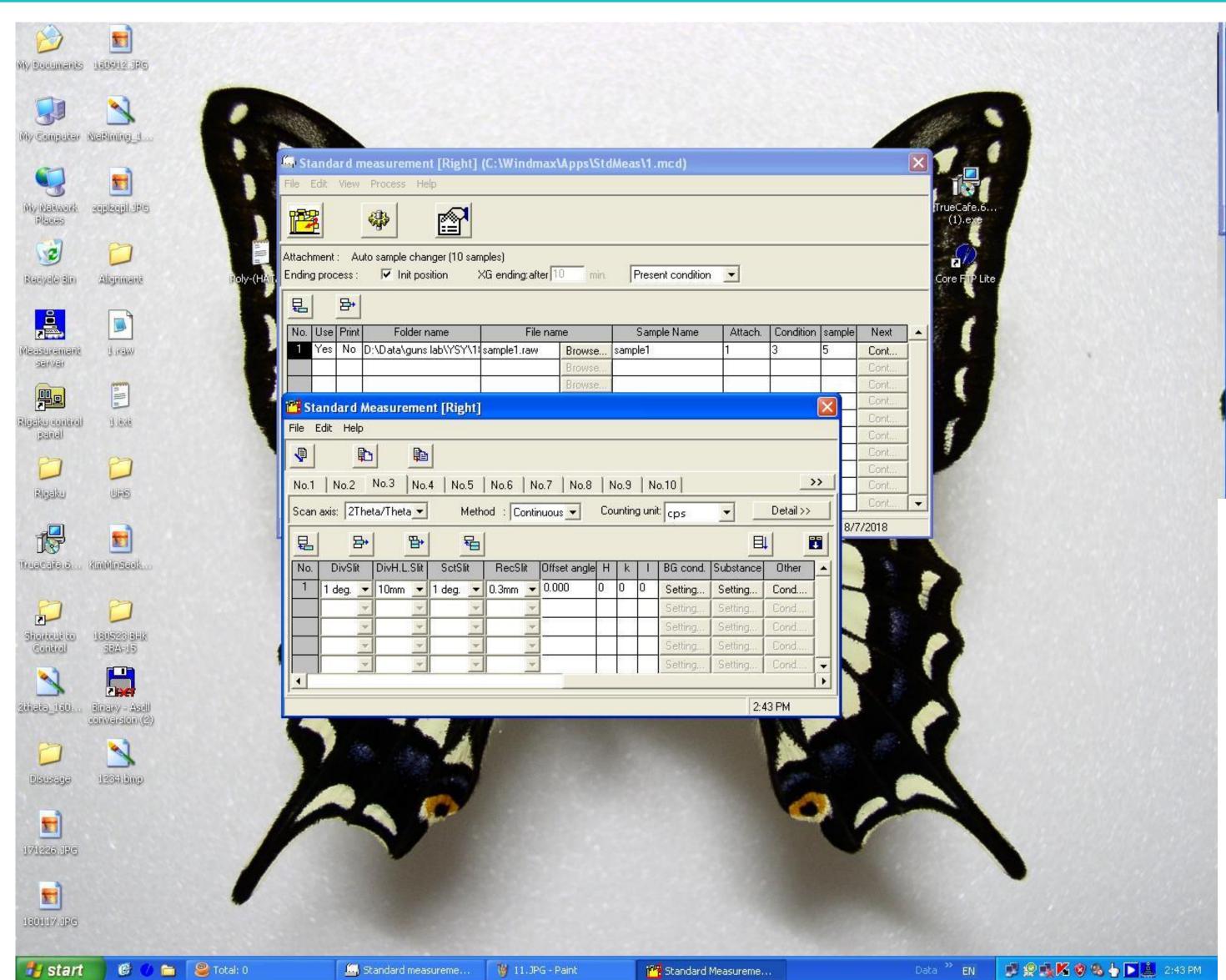
Total measurement time = $80-20 = 60^{\circ} / 2^{\circ} / min = 30min$.

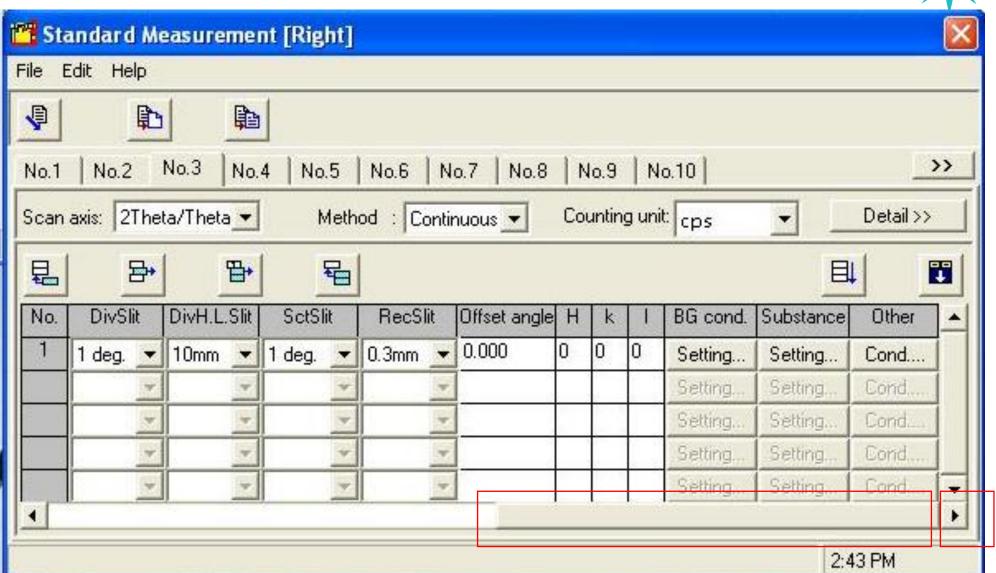
Therefore, self-user can reserve time by calculating measurement time per sample.

Power is regulated by Voltage and Current, and can not be accepted over 40KV, 200mA

In case of exceeding, be careful to occur Filament Short!

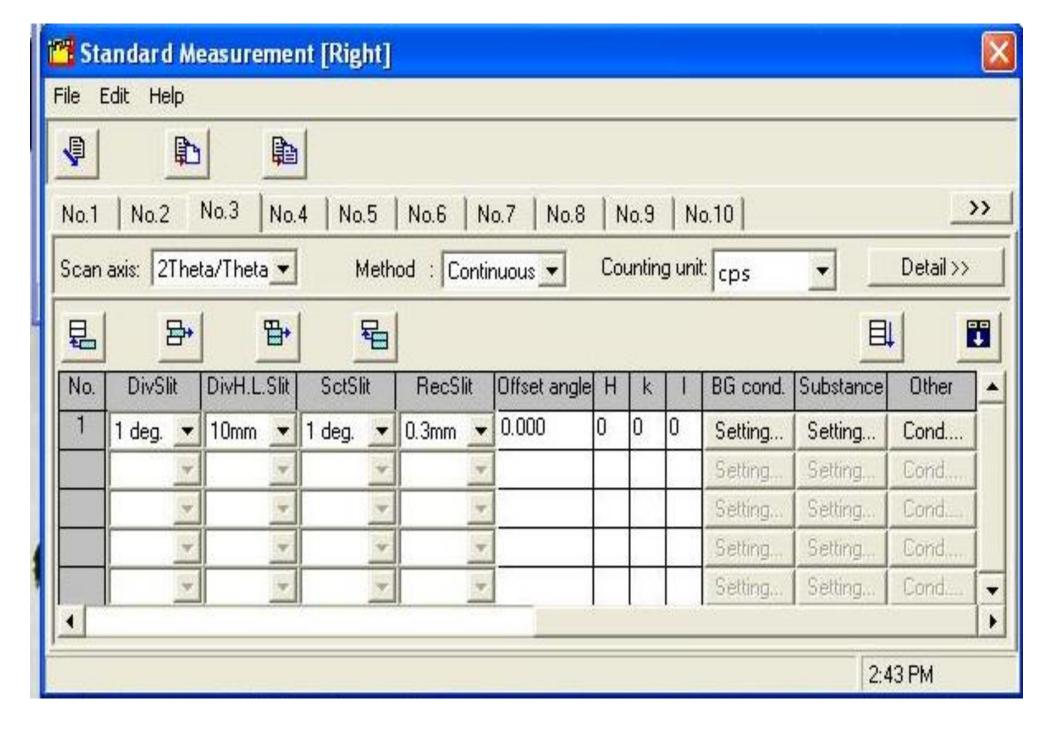
As an exception, organic sample can be measured in 40 KV, 30 mA.





Drag below scroll from left to right.





DivSlit (Divergence Slit) and ScaSlit(Scattering Slit) mean X-ray Beam Depth.

Both Slit have same value.

DivHLSlit(Divergence Height Lenth Slit)means X-ray Beam Height.

Therefore, it could change slit condition by sample holder.

X-ray Beam Width changes widely in small angle and narrowly in high angle according to sinθ and control is not possible as Slit.

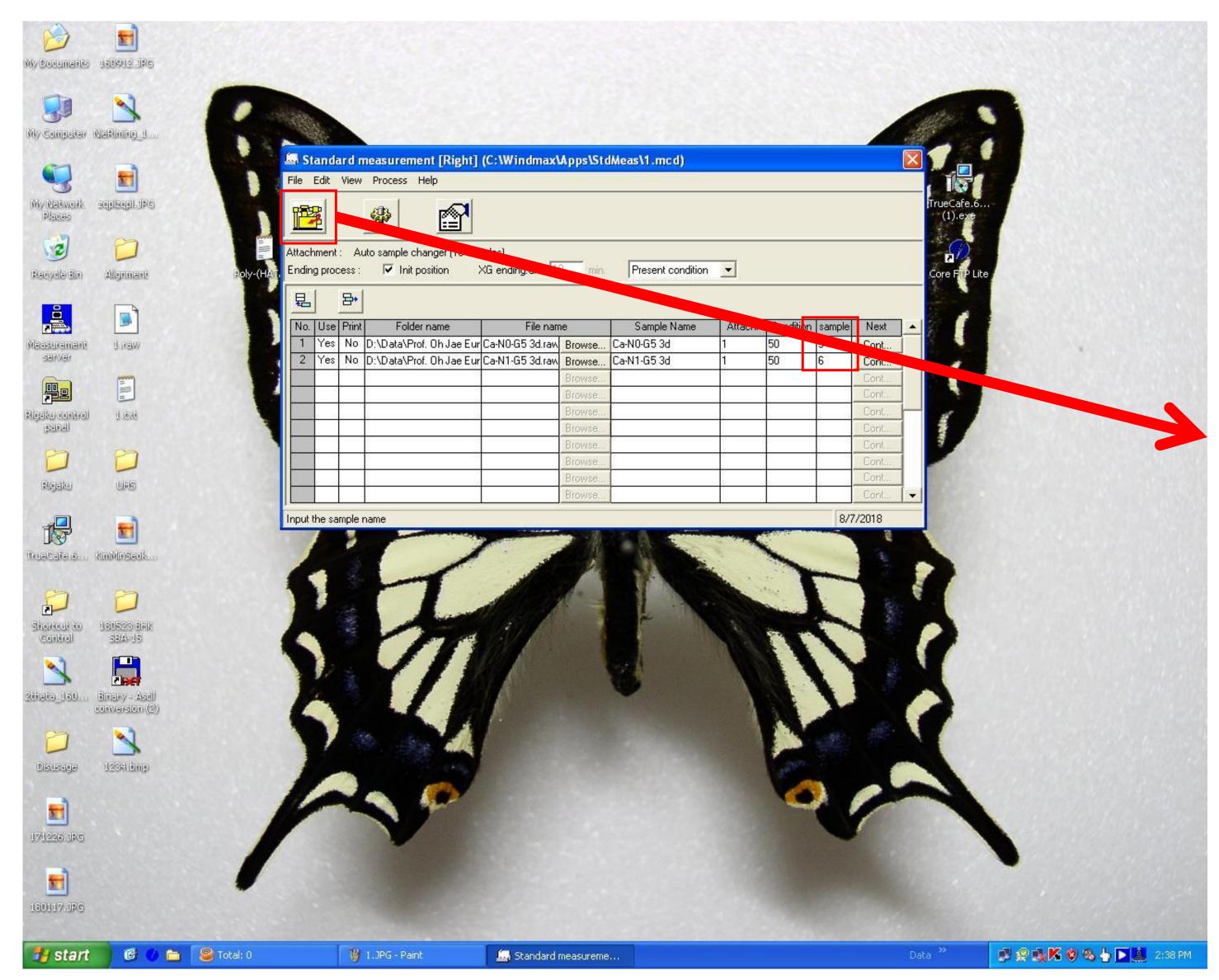
RecSlit(Receiving Slit) set usually 0.3 mm.

If the peak overlap is severe, it changes smaller value and measure.

Sample Holder	Div Slit	DivHLSlit	Sca Slit	RecSlit
18 mm	1 deg	10 mm	1 deg	0.3 mm
5 mm	½ deg	5 mm	½ deg	0.3 mm







Pos means Sample Position in ASC.

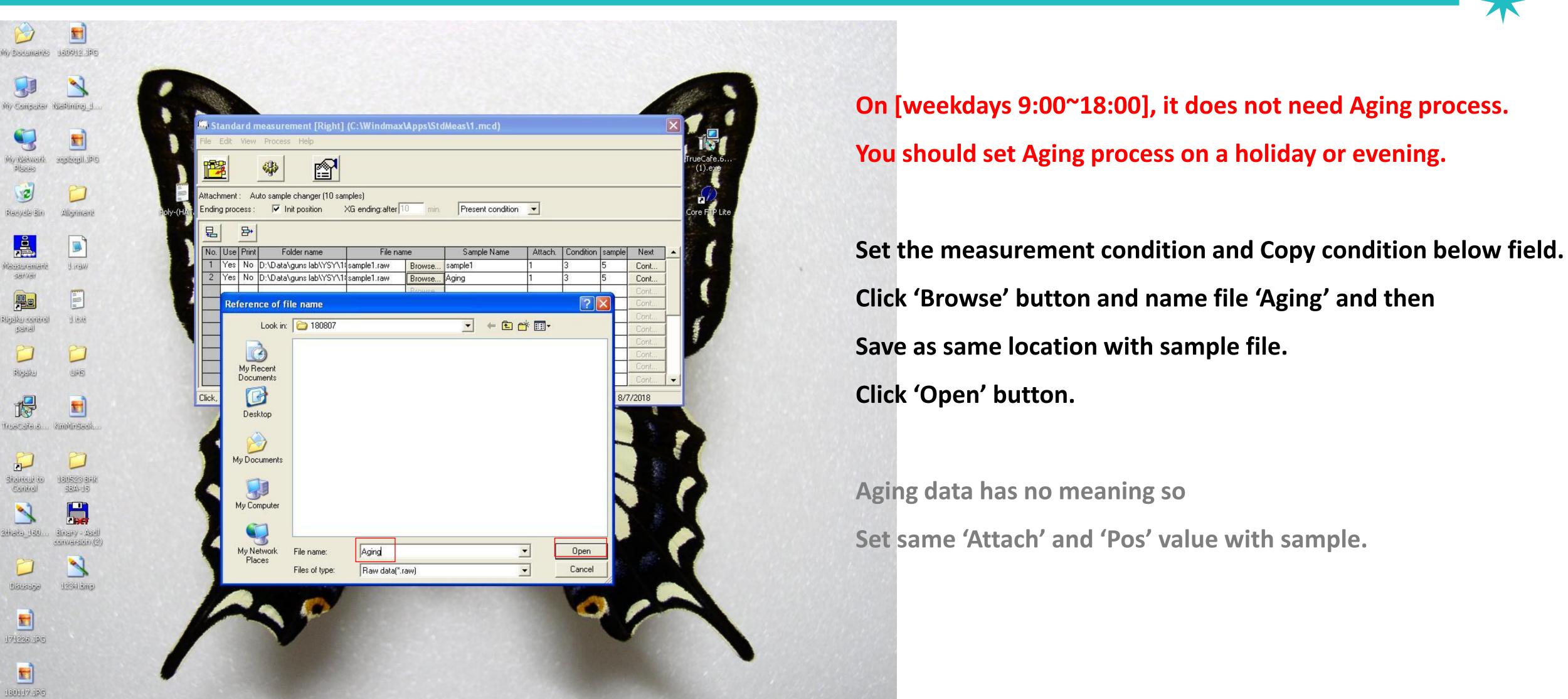
ASC has total 10 Sample Positions.

While Day Time (weekday 9:00~18:00),

It does not need 'Aging Process' so click 'Execute' button.







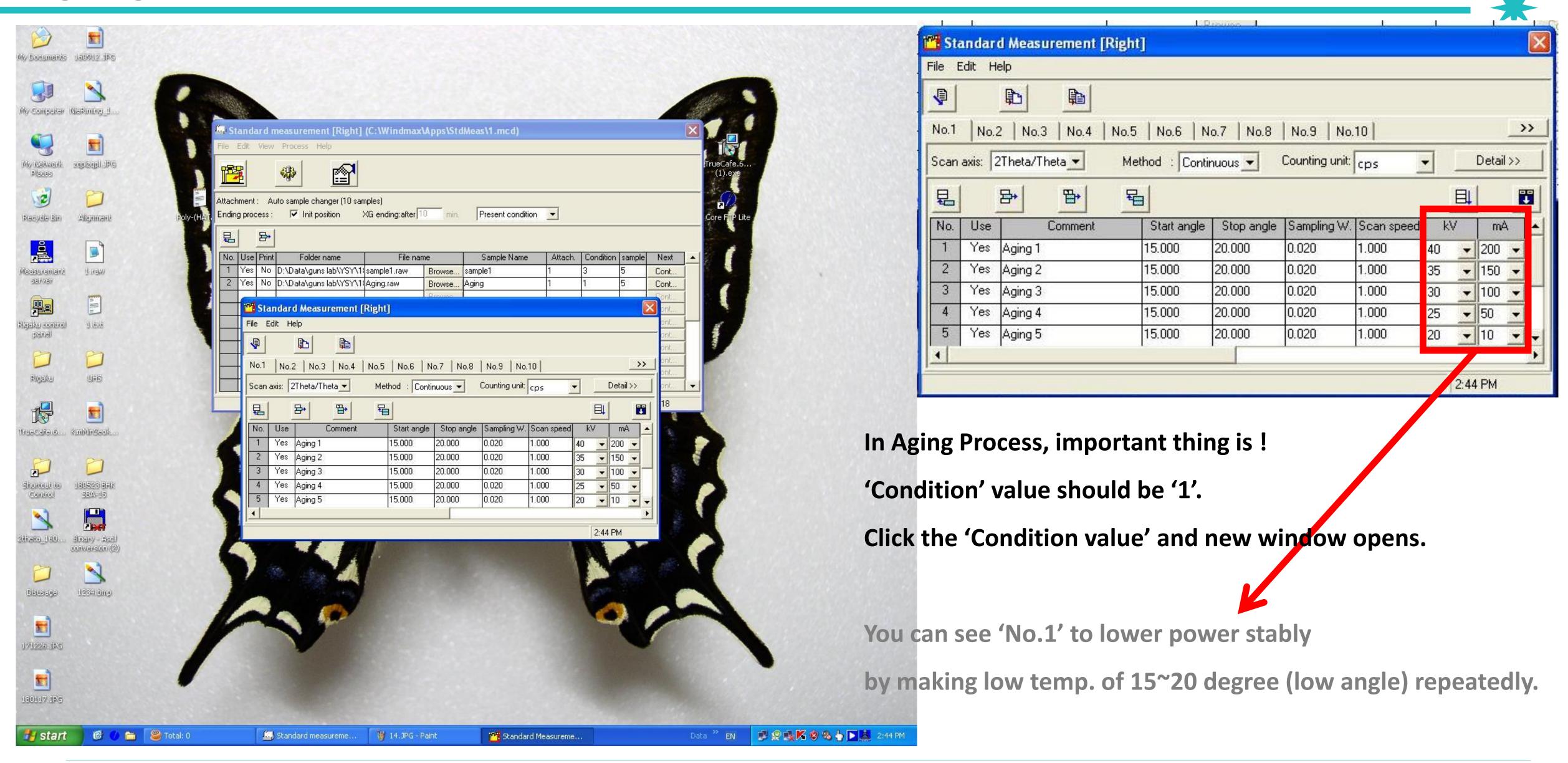


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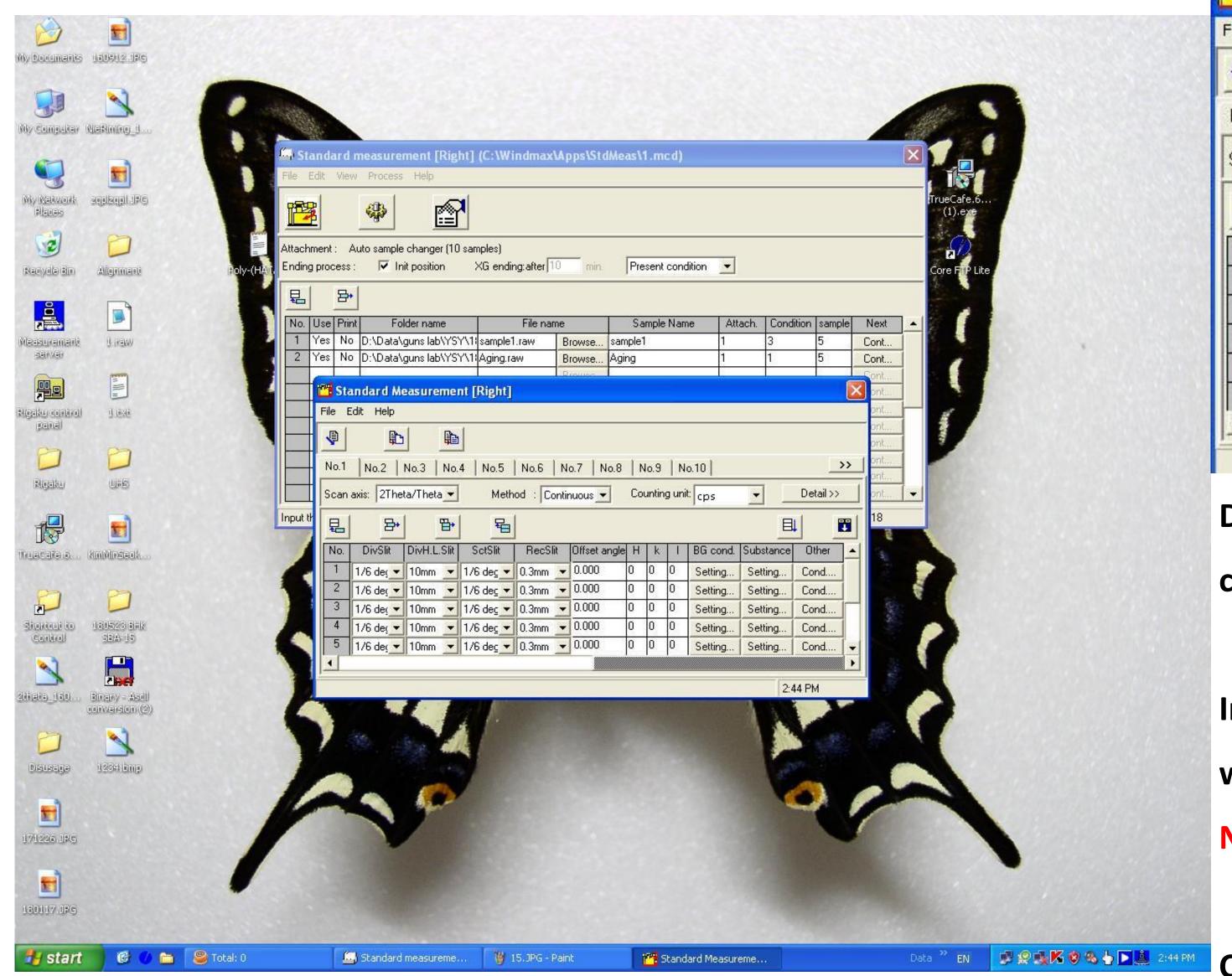
🍟 13.JPG - Paint

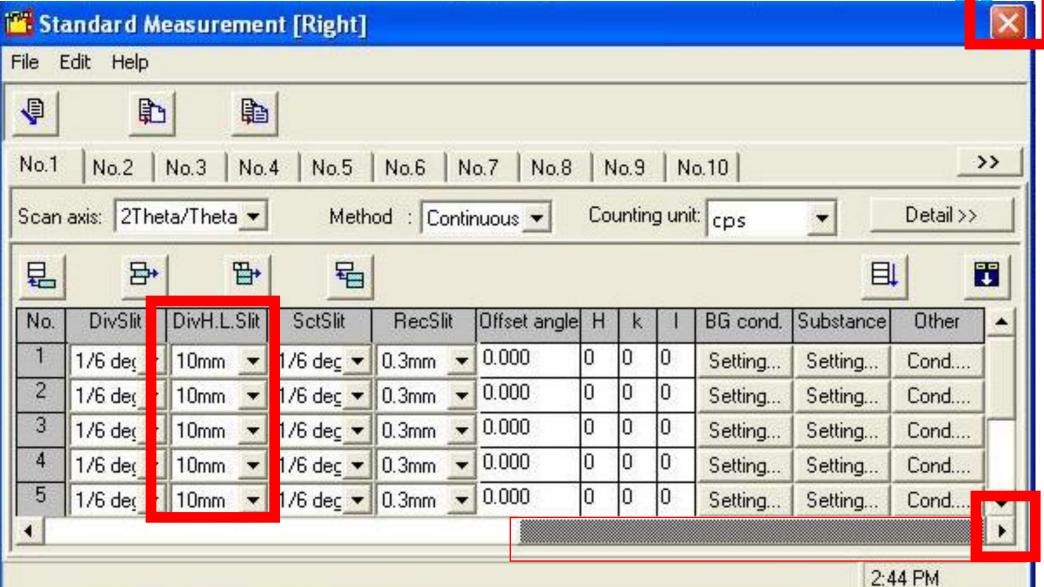
Standard measureme...

Data ** EN 📝 😭 🌠 🔇 🧐 👆 🚨 2:44 PM









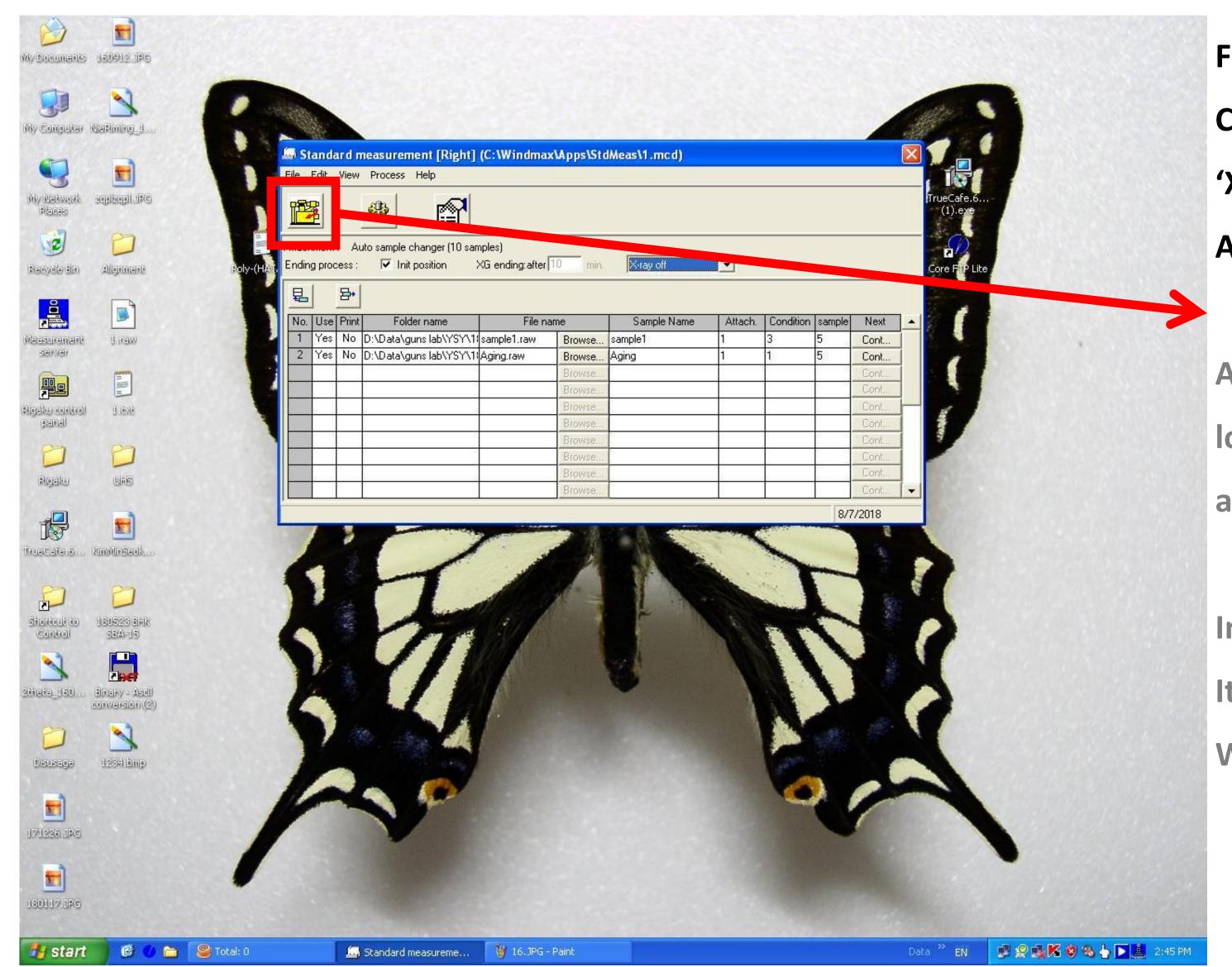
Drag below scroll from left to right or click scroll arrow button.

In Aging Slit condition, set 'DivHLSlit' to same condition with measurement condition and

Never change any other condition.

Click 'finish button' after checking conditions.





For Aging process condition,

Change 'Present Condition' to 'X-ray off' located next to 'XG ending after'.

And then, click 'Execution measurement' button.

After measuring 'No.1 condition',
lower power for 10min and then do X-ray off
as No.2 condition.

In case of measuring at night or holiday,

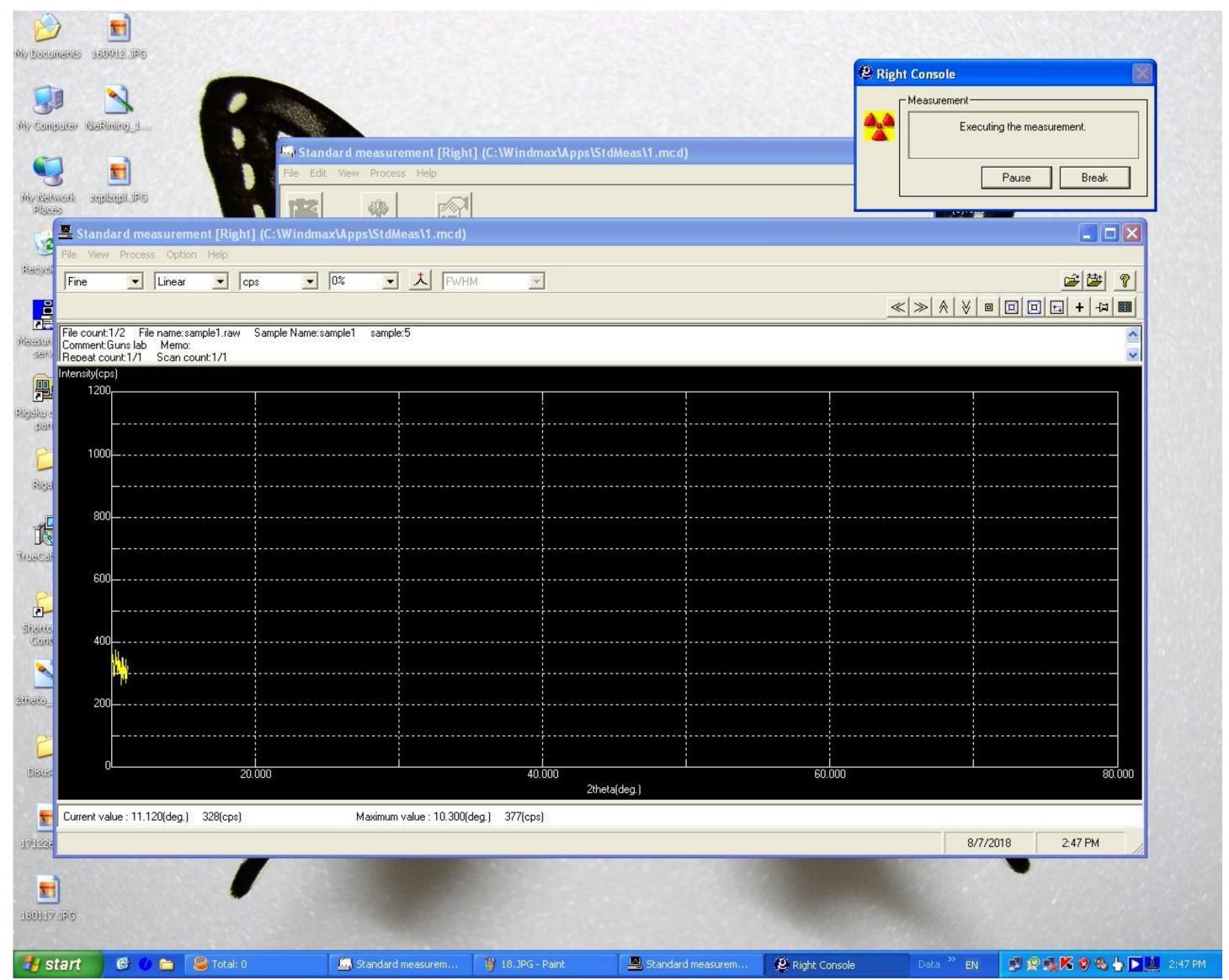
It can measure and do X-ray off automatically

Without setting Aging process.



Measurement



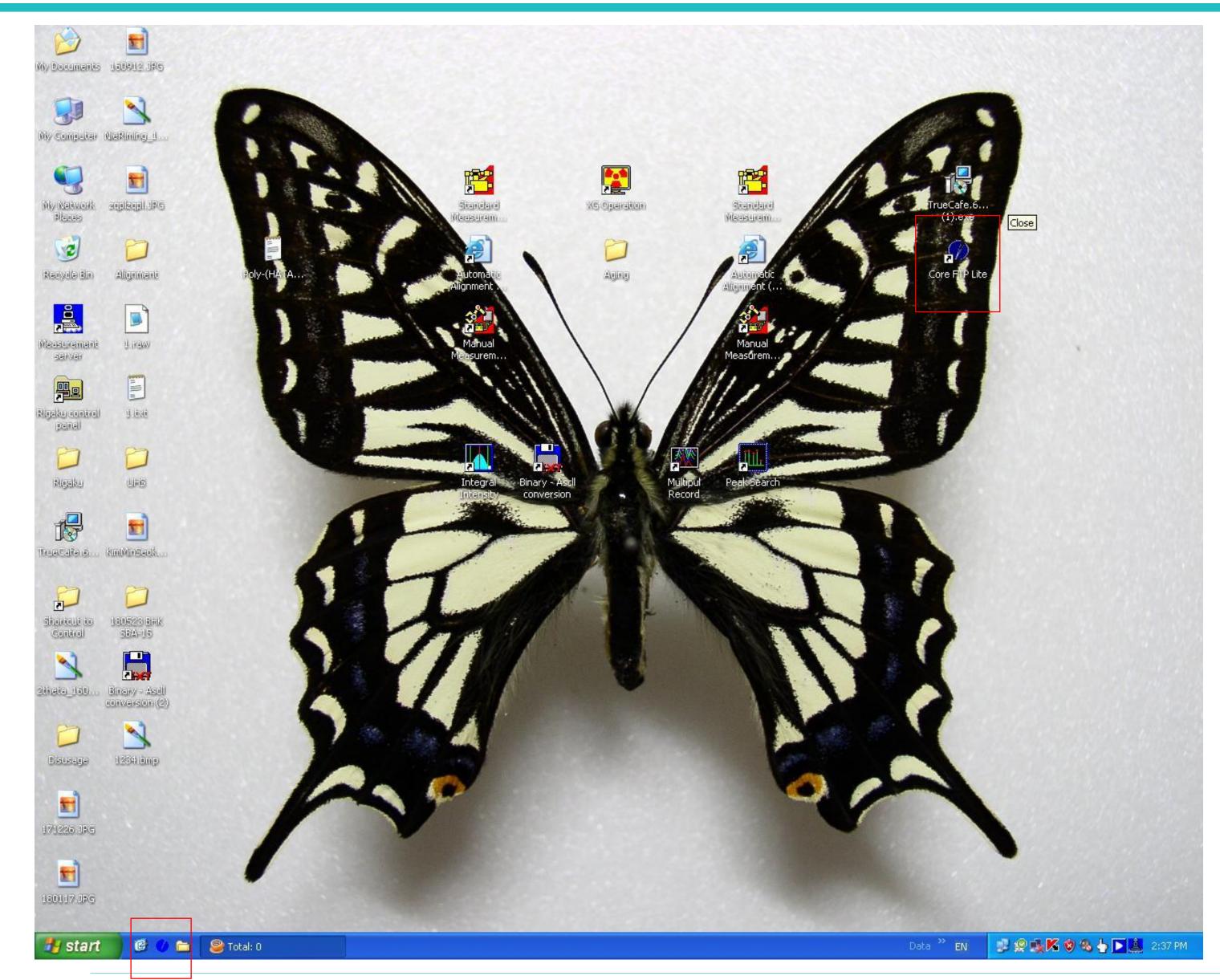


After starting measurement,

It does not matter you to leave XRD room

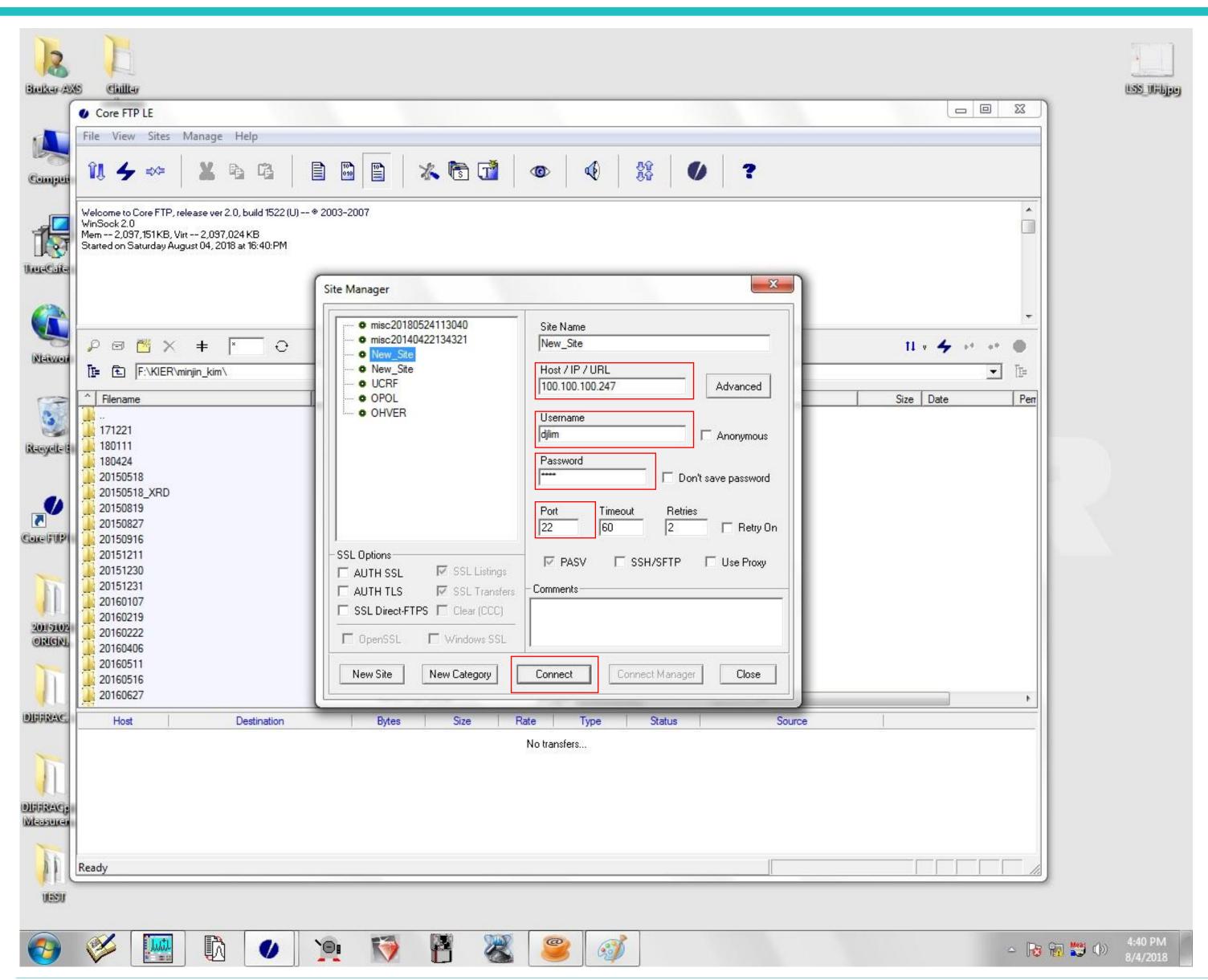
If data shows good.





Core FTP is downloadable program without using USB. Double click one of both.





IP: 100.100.100.247,

Username: djlim,

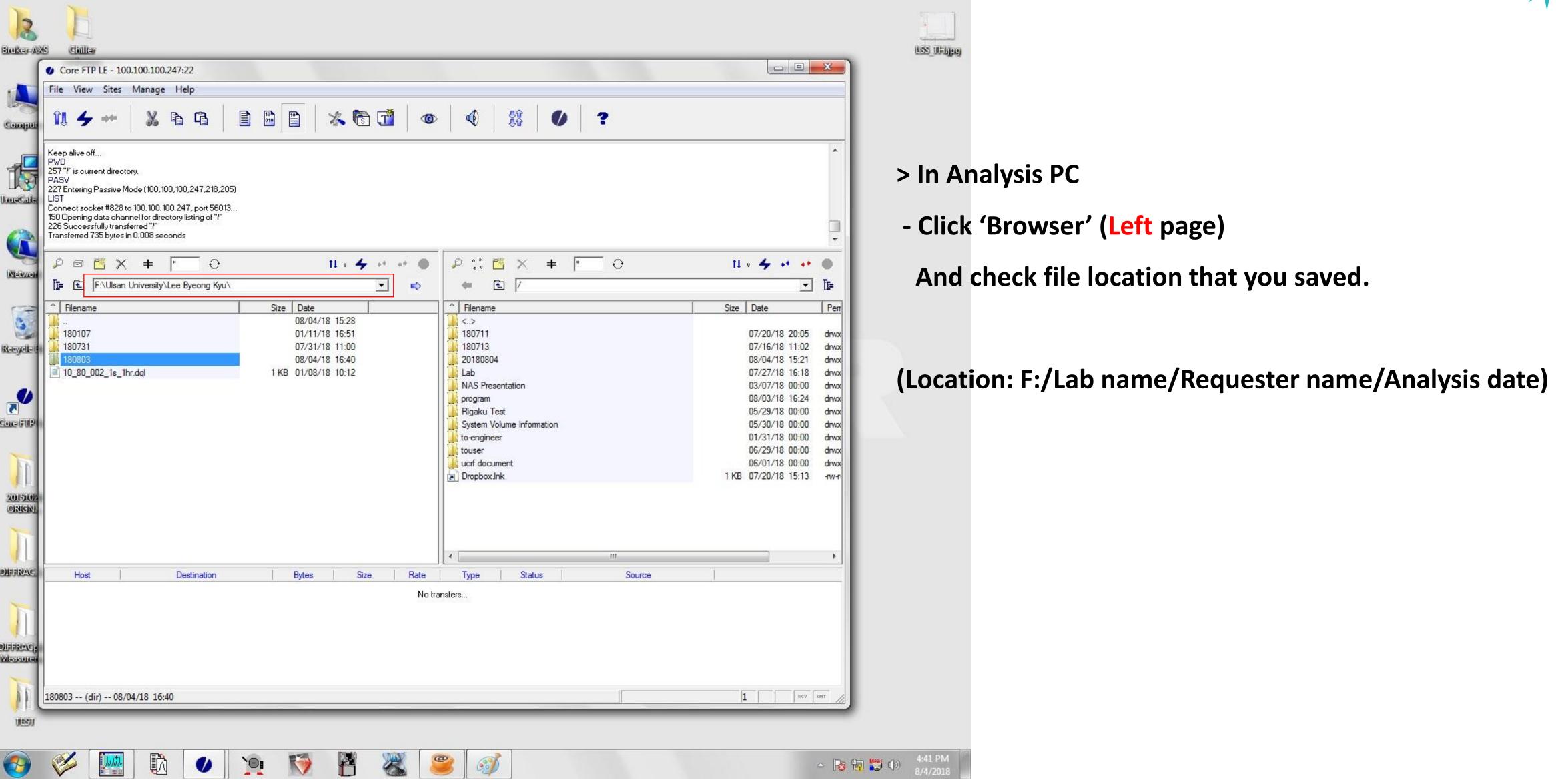
Password: 0254,

Port: 22

And then, Click 'Connect'

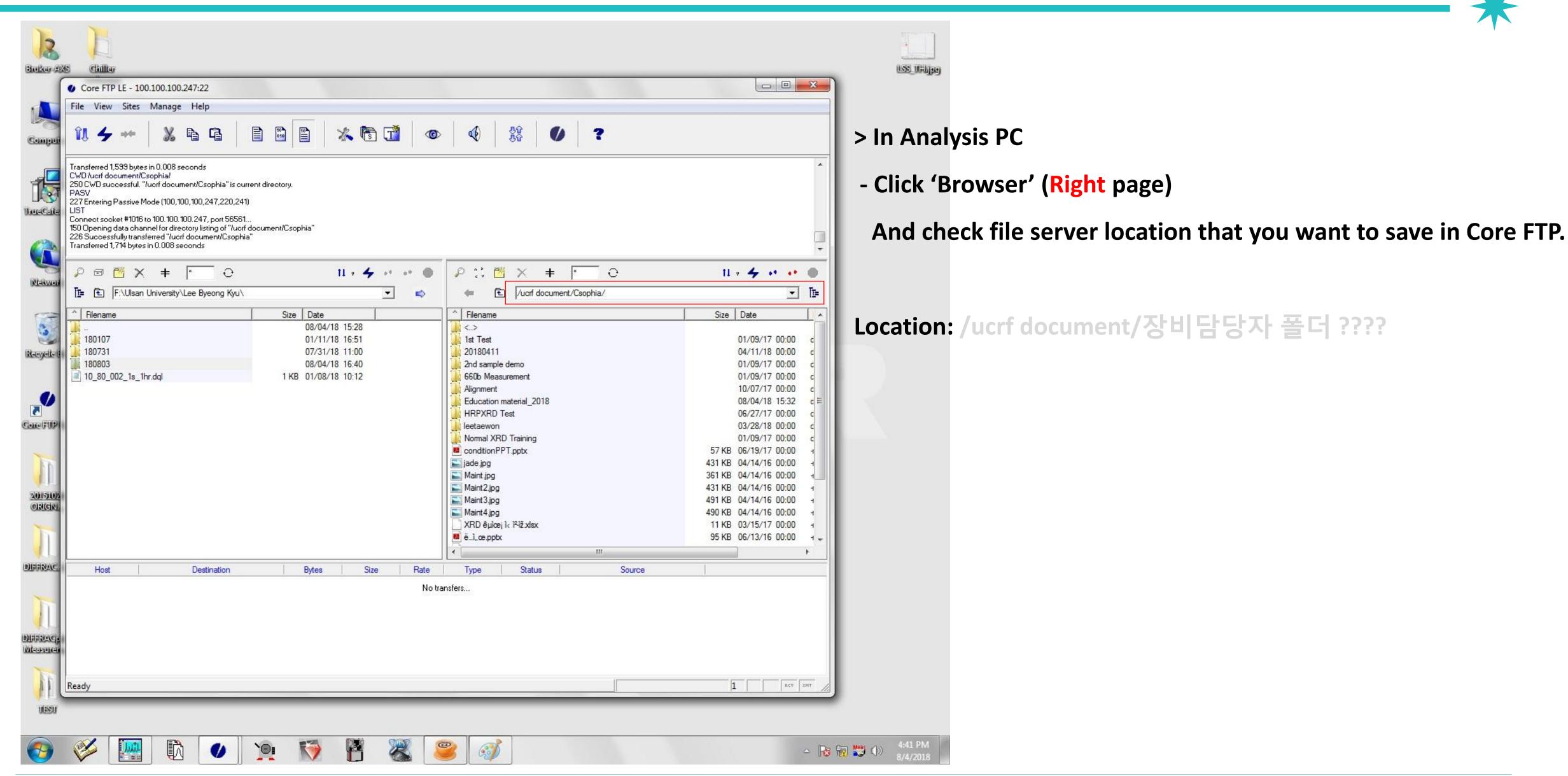






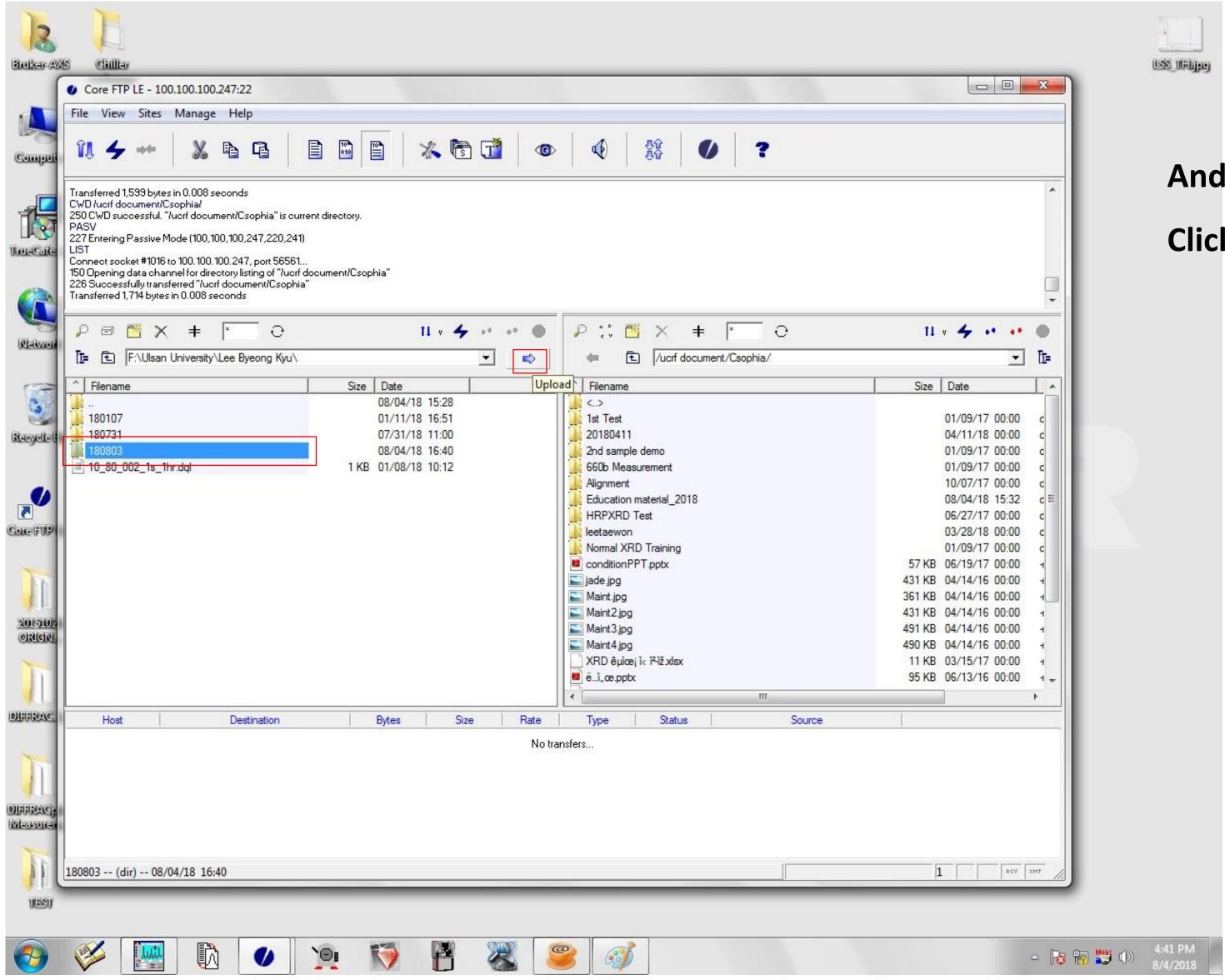








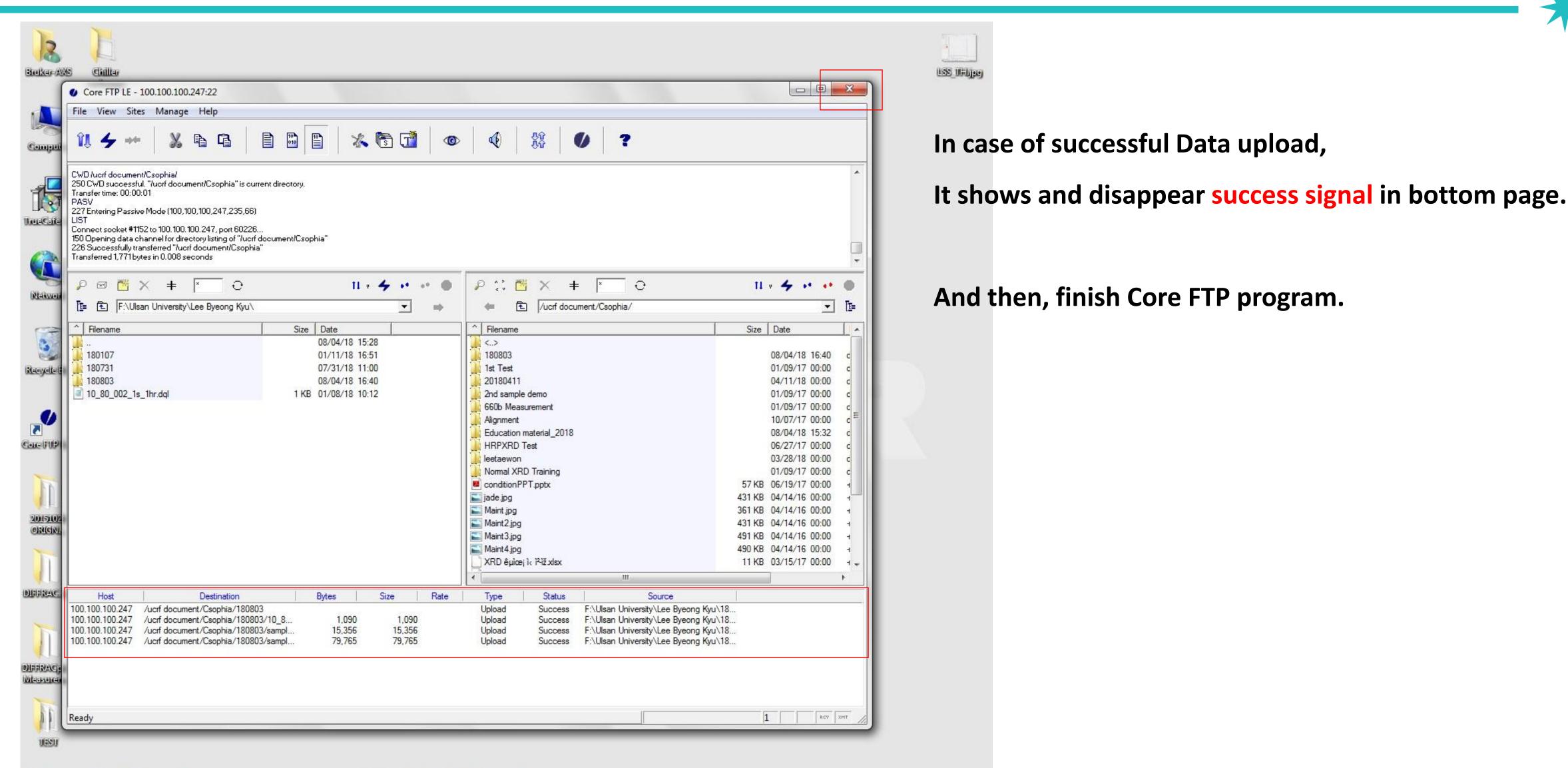




And then, Click file you want to upload in Analysis PC, Click the 'Upload' button.



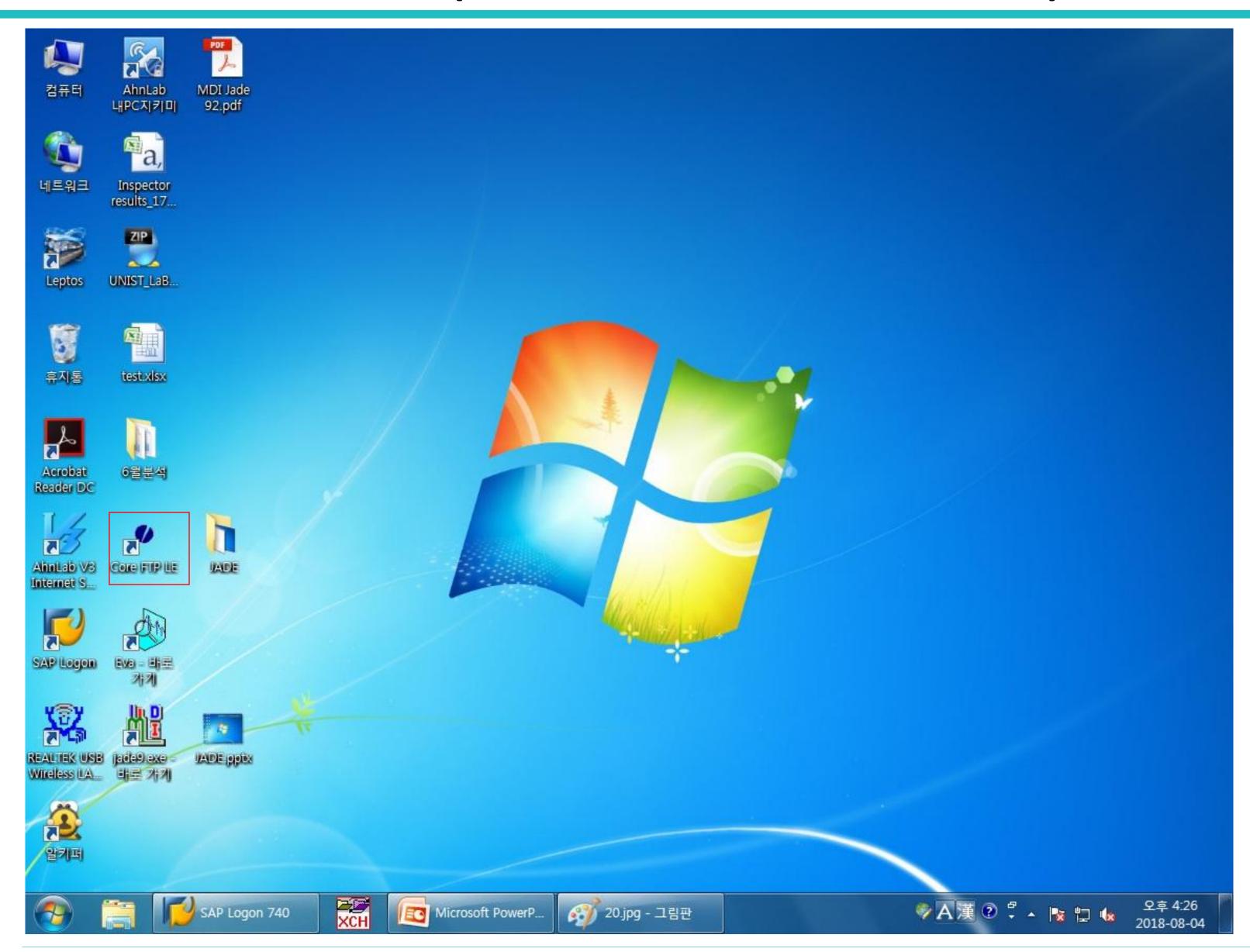




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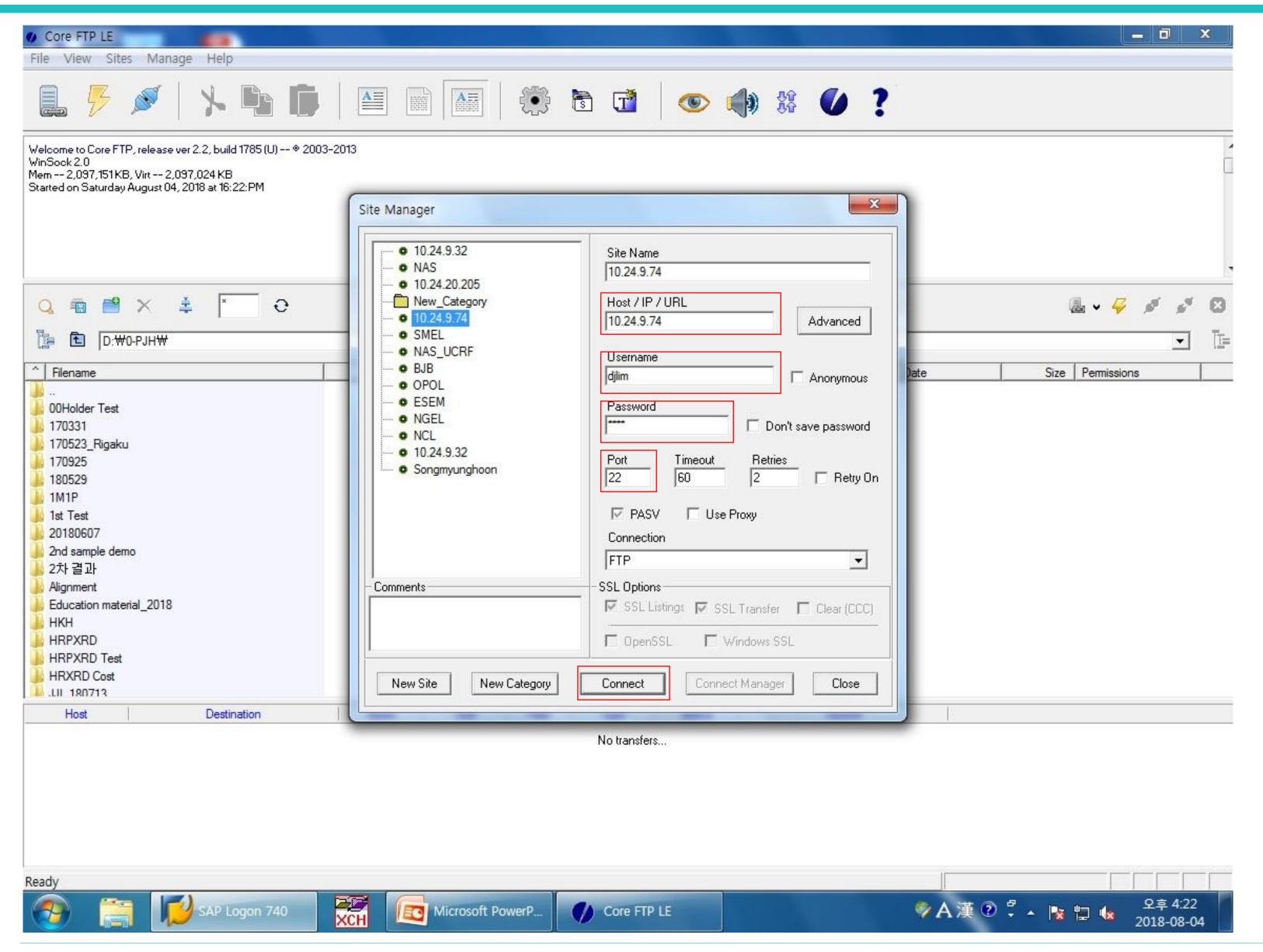


> In PC for INPUT RESULT, (center table)

Double click 'Core FTP LE' in desktop

For Data Download.





IP: 10.24.9.74,

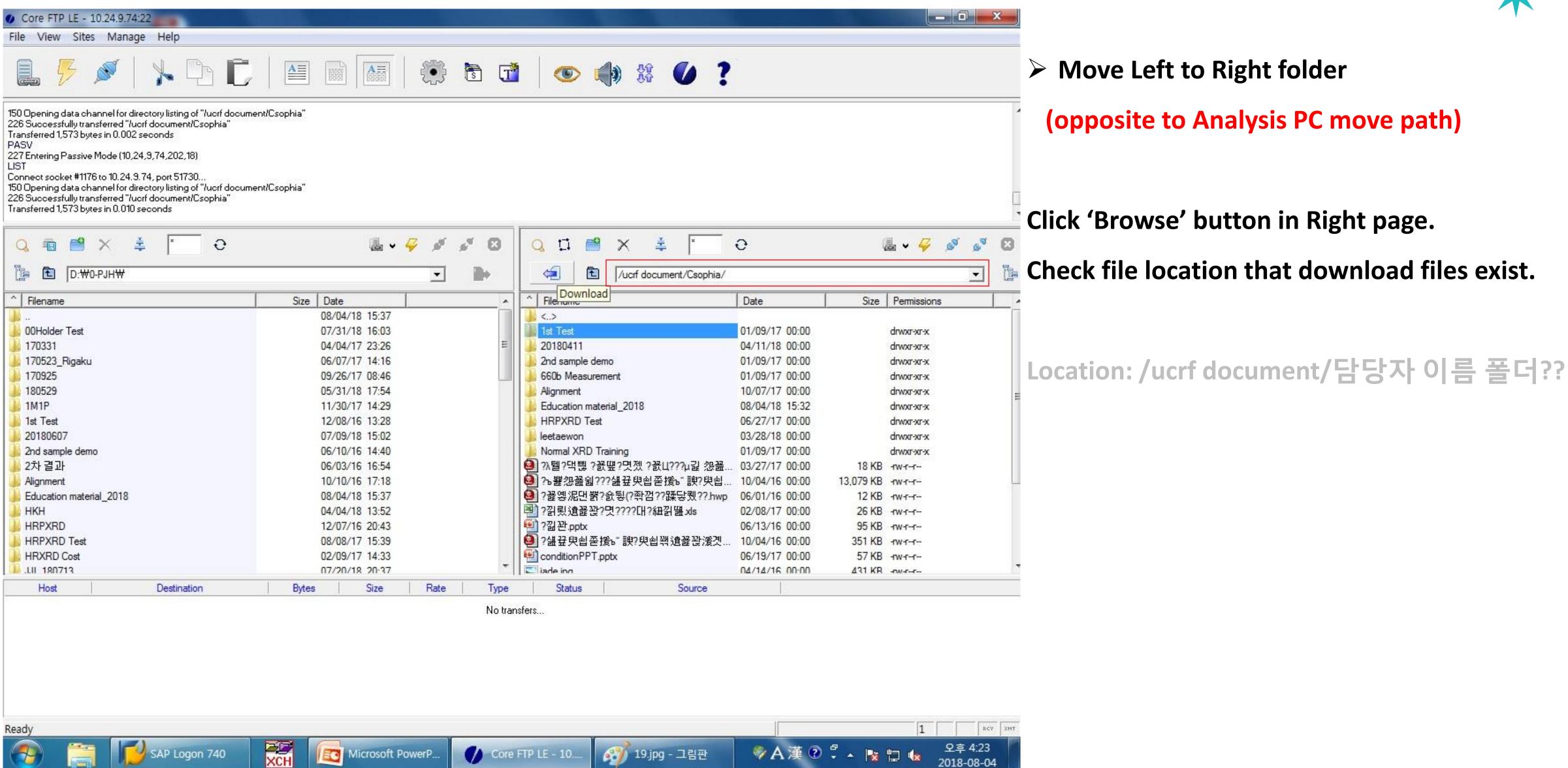
Username: djlim,

Password: 0254,

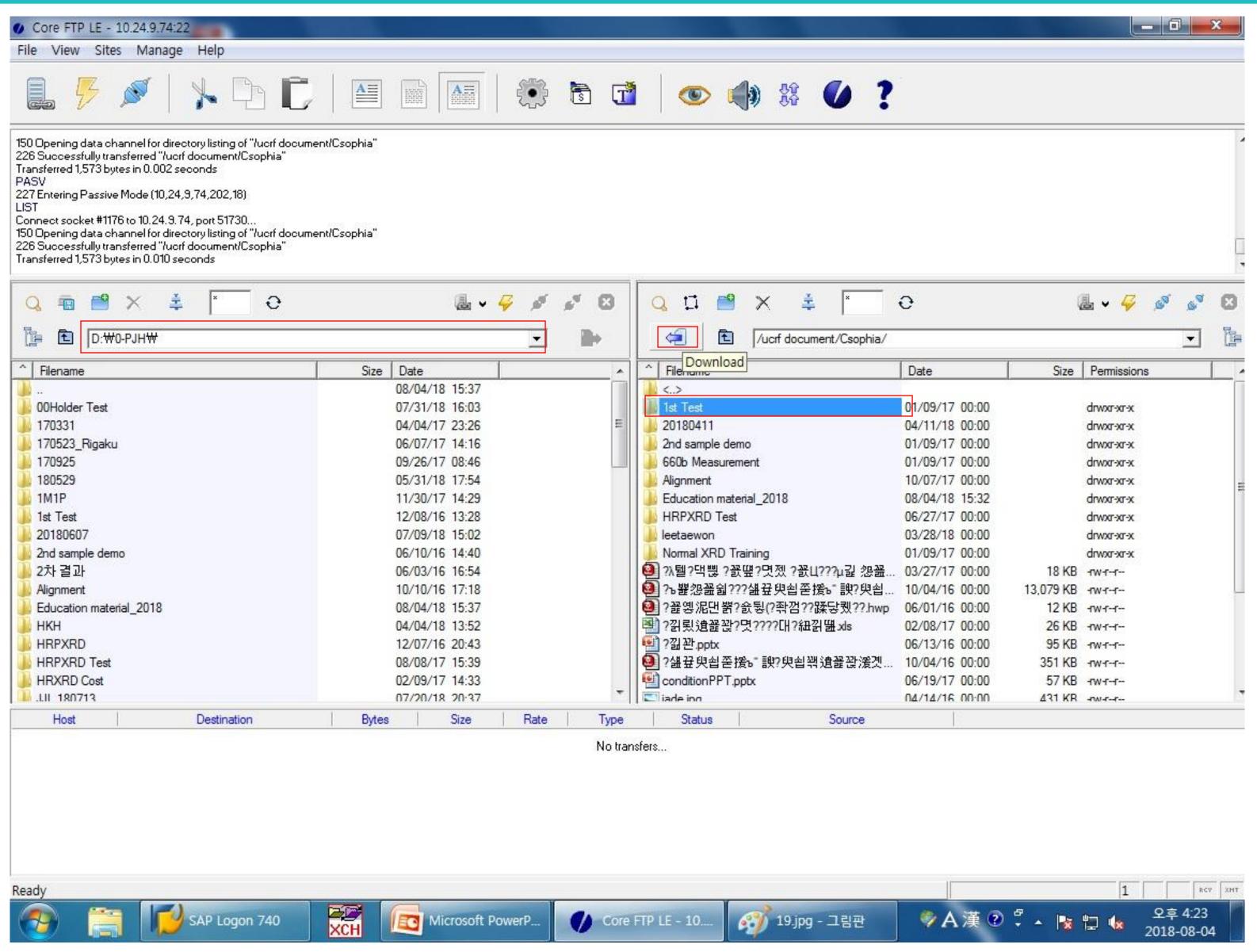
Port: 22

Click 'Connect'.









Click 'Browse' button in Left page.

Check file location that you want to save.

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Click 'Download' button after clicking folder.