

## **Maintenance Package Measurement**



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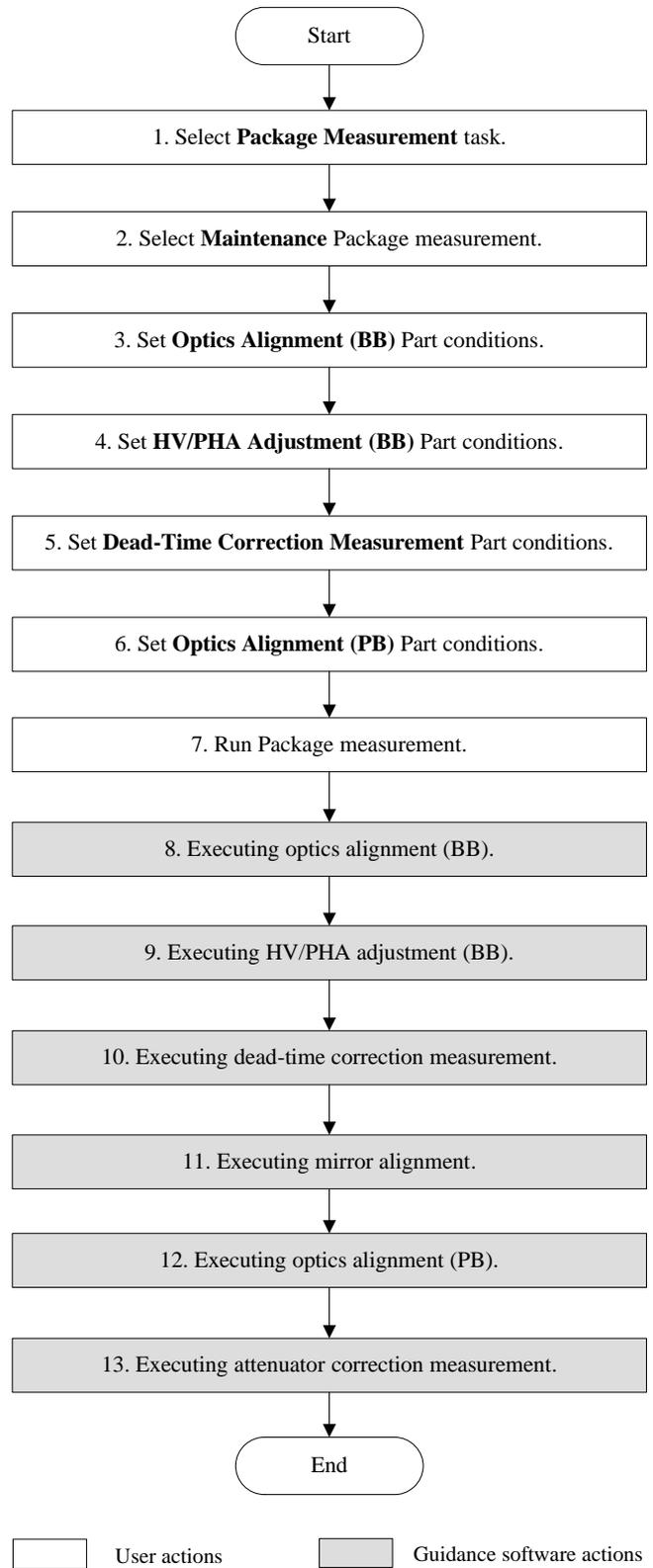
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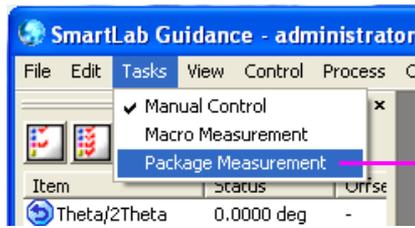
# 1. Package measurement flow

Figure 1.1 shows the procedural flow for a **Maintenance** Package measurement.



**Fig. 1.1 Maintenance Package measurement procedural flow**

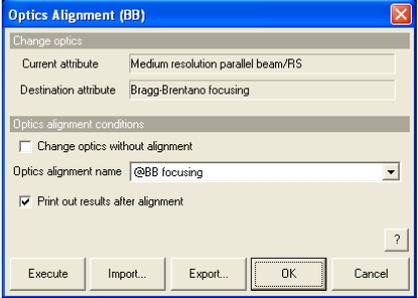
# 1. Package measurement flow



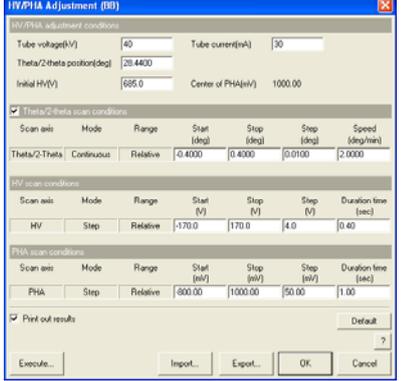
1. Click **Package Measurement** in the **Tasks** menu.

2. Click **Maintenance**.

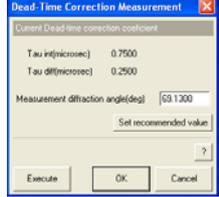
3. Set the **Optics Alignment (BB)** Part conditions.



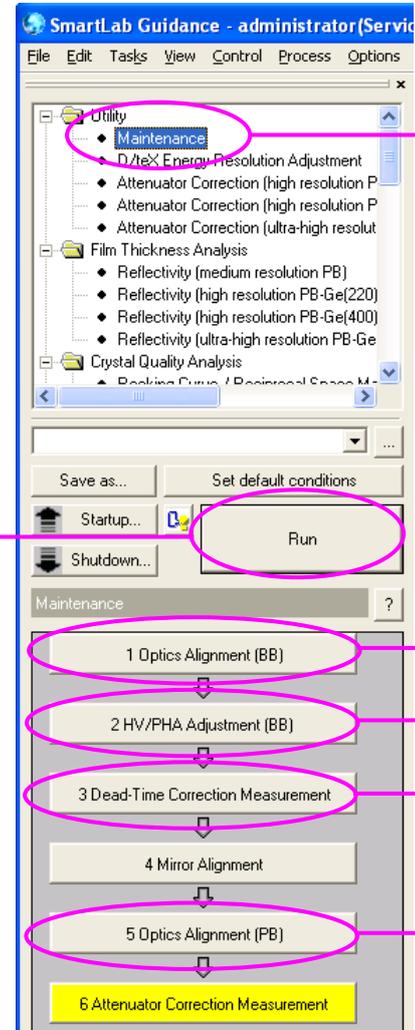
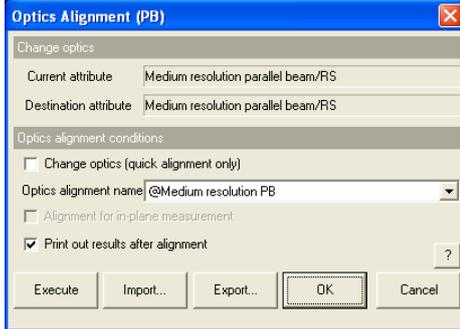
4. Set the **HV/PHA Adjustment (BB)** Part conditions.



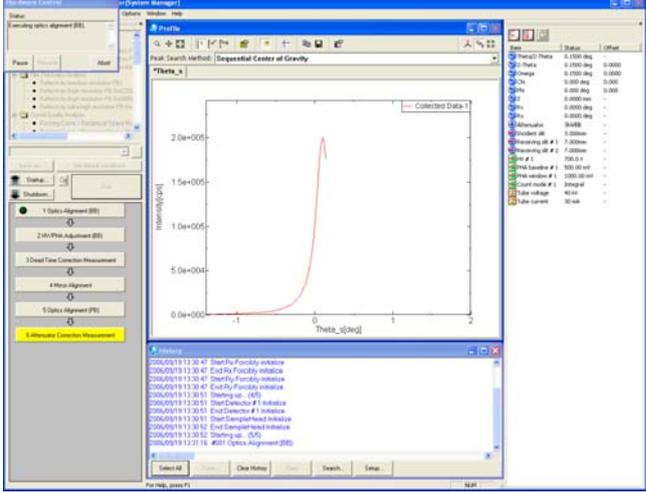
5. Set the **Dead-Time Correction Measurement** Part conditions.



6. Set the **Optics Alignment (PB)** Part conditions.



7. When the **Run** button is clicked, the optics alignment is started.



## 2. Measurement procedures

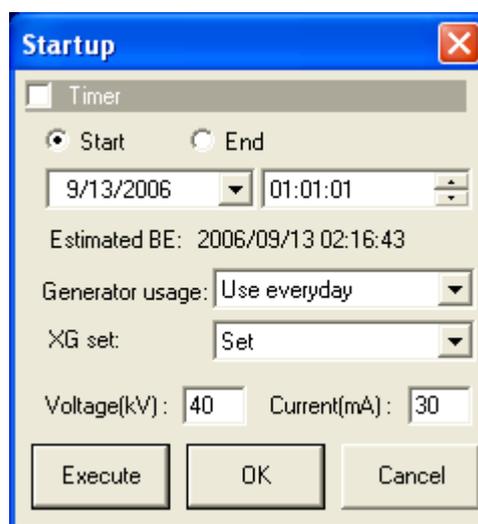
### 2.1 Startup

Before measurement, set the output of the x-ray generator (XG) as described below.

- (1) Click the **Startup** button on the flow bar to open the **Startup** dialog box.



- (2) Uncheck the **Timer** box.



**Fig. 2.1.1 Startup dialog box**

- (3) Select an appropriate setting in the **Generator usage** box, based on the frequency of XG usage.  
 (4) Select **Set** in the **XG set** box.  
 (5) Enter the following values in the **Voltage (kV)** and **Current (mA)** boxes.

When using 3-kW sealed tube	40 kV, 30 mA
When using 9-kW rotating anode	45 kV, 200 mA

- (6) Click the **Execute** button.  
 (7) The aging operation begins. The XG output will be set to the values entered in step (5) within 30 to 60 minutes.



**CAUTION:** If **Not used for more than 3 weeks** is selected in the **Generator usage** box, the aging operation will take approximately five hours.



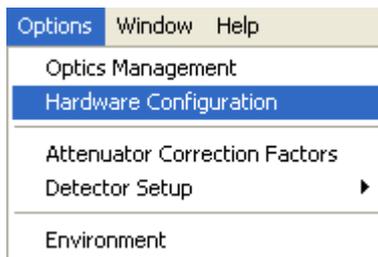
**Tip:** For other functions available from the **Startup** dialog box, refer to Chapter 21 of the *SmartLab Guidance Reference Manual* (ME13365A).

## 2.2 Hardware setup

Before measurement, the equipment configuration must be set up for a **Maintenance Package** measurement.

The hardware setup method is described below.

- (1) Select the **Hardware Configuration** command under the **Options** menu to open the **Hardware Configuration** dialog box.



- (2) The **Hardware Configuration** dialog box shows the current hardware configuration.

The screenshot shows the 'Hardware Configuration' dialog box. At the top is a schematic diagram of an X-ray diffractometer with labels for X-Ray Generator, Incident Optics, Base Attachment Config., Attachment, Goniometer, Receiving Optics, and Detector. Below the diagram is a table with the following configuration details:

X-Ray generator	Incident optics	Goniometer	Receiving optics	Detector
3kW Hermetic Mo 1mm x 10mm Normal 3.000kW(0.002kW Step) 20~60kV(1kV Step) 2~60mA(1mA Step)	CBD unit Standard incident optical unit Standard incident slit box	SmartLab(In-plane)  Base attachment config. Std. chi cradle  Attachment RxRy	Standard receiving slit box # 1 Standard receiving unit # 1 Standard receiving optical unit # 2 Standard receiving slit box # 2 Standard Attenuator	SC-70

At the bottom right of the dialog box are 'Update' and 'Close' buttons.

**Fig. 2.2.1 Hardware Configuration dialog box**

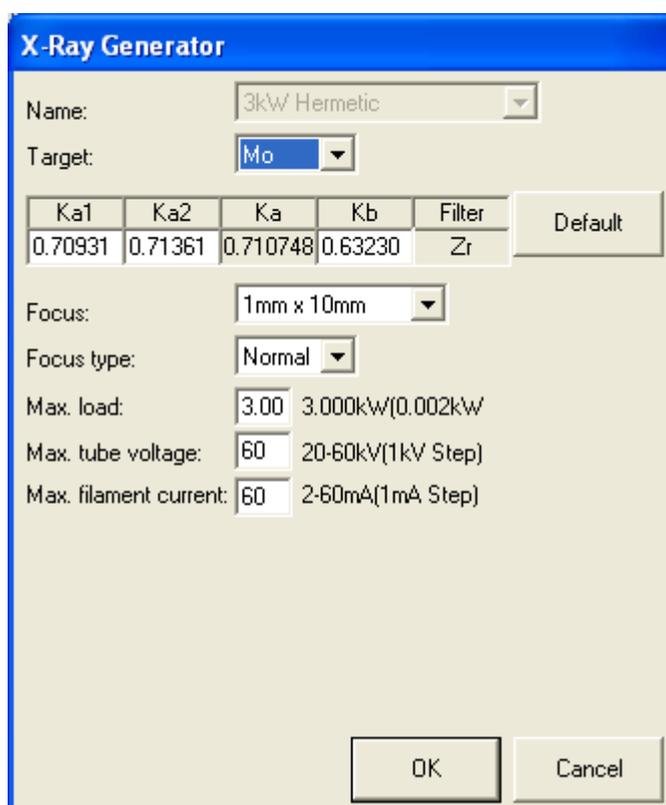
- (3) Table 2.2.1 shows the hardware configuration that enables the **Maintenance Package** measurement. If the configuration units shown in the **Hardware Configuration** dialog box differ from those indicated in Table 2.2.1, install the units specified in Table 2.2.1 at the designated locations, referring to the *Horizontal Sample Mount X-Ray Diffractometer for Thin Film Analysis Instruction Manual (ME11550A)*.

**Table 2.2.1 Hardware configuration for the Maintenance Package measurement**

Hardware configuration	Configuration units
X-ray generator	Cu target
Incident optics	CBO unit Standard incident optical unit Standard incident slit box
Goniometer	SmartLab or SmartLab(in-plane)
Base attachment configuration	Standard chi cradle
Attachment	Any
Receiving optics	Standard receiving slit box # 1 Standard receiving optical unit # 1 Standard receiving optical unit # 2 Standard receiving slit box # 2 Standard attenuator
Detector	Scintillation counter SC-70

For example, if the target is set to **Mo** in the **X-Ray Generator** dialog box, you must change the target setting to **Cu**, since the **Maintenance Package** measurement will not be made unless the Cu target is used. For sealed tubes, you must replace the Mo tube with the Cu tube.

- (4) Click the **X-Ray Generator** button to open the **X-Ray Generator** dialog box.

**Fig. 2.2.2 X-Ray Generator dialog box**

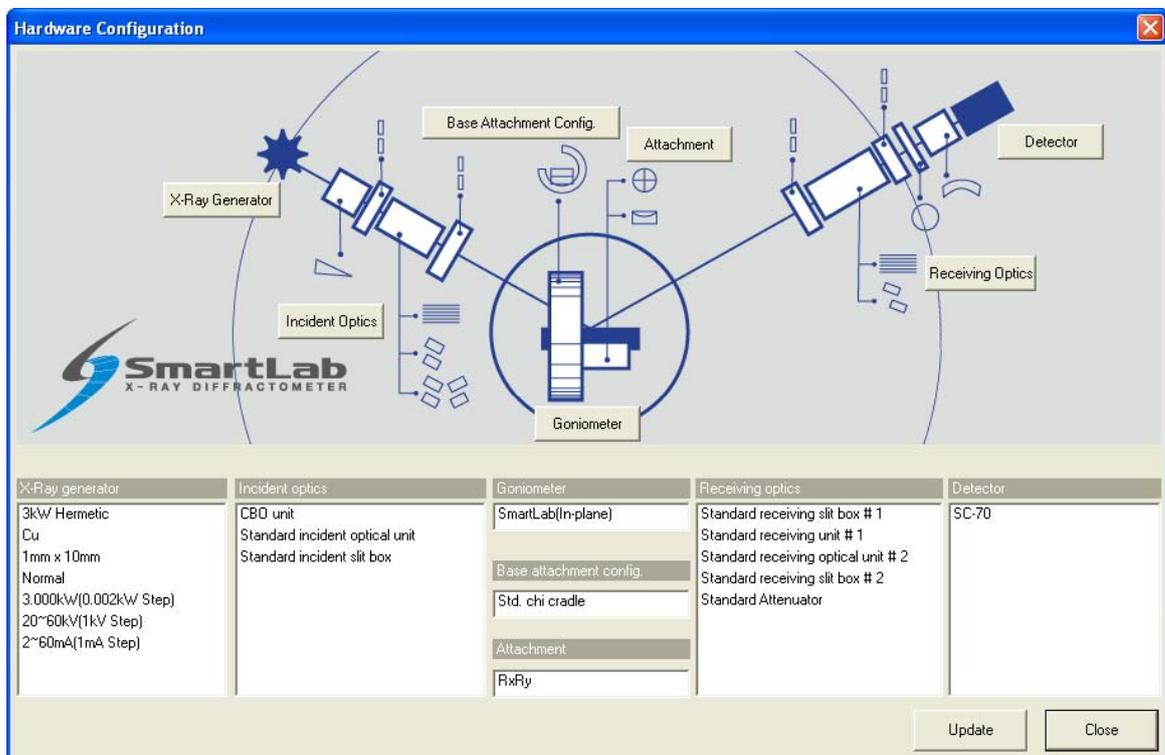
## 2. Measurement procedures

- (5) Select **Cu** in the **Target** box. Change other applicable parameters, such as wavelength.
- (6) Click the **OK** button to close the **X-Ray Generator** dialog box and register the changes made in the **Hardware Configuration** dialog box.
- (7) If necessary, change configuration units using the **Incident Optics**, **Receiving Optics**, and **Detector** buttons. Modify the conditions in the **Hardware Configuration** dialog box in the same way.
- (8) Click the **Update** button in the **Hardware Configuration** dialog box.



Tip: Mounted configuration units are automatically detected for **Base Attachment Configuration** and **Attachment**.

- (9) Confirm that each configuration unit displayed in the **Hardware Configuration** dialog box corresponds to the configuration unit indicated in Table 2.2.1, then click the **Close** button.



**Fig. 2.2.3 Hardware Configuration dialog box**

## 2.3 Setting Package measurement conditions

The Parts included in the **Maintenance** Package measurement are shown below.

Package measurement	Configuration Parts
Maintenance	<ul style="list-style-type: none"> <li>• Optics Alignment (BB)</li> <li>• HV/PHA Adjustment (BB)</li> <li>• Dead-Time Correction Measurement</li> <li>• Mirror Alignment</li> <li>• Optics Alignment (PB)</li> <li>• Attenuator Correction Measurement</li> </ul>

To perform the Package measurement, you must set the conditions of the **Optics Alignment (BB)**, **HV/PHA Adjustment (BB)**, **Dead-Time Correction Measurement**, and **Optics Alignment (PB)** Parts individually. Described below is how to set the conditions of each Part.



**CAUTION:** If another Package measurement is selected or another task such as the **Manual Control** task is chosen, discard the set Part conditions. To save the set conditions to a file, click the **Export** button in each dialog box or save Package measurement conditions as described in the “Tip” section in Subsection 2.3.4 (5).

### 2.3.1 Setting Optics Alignment (BB) Part conditions

- (1) Click the **Optics Alignment (BB)** button on the flow bar to open the **Optics Alignment (BB)** dialog box.

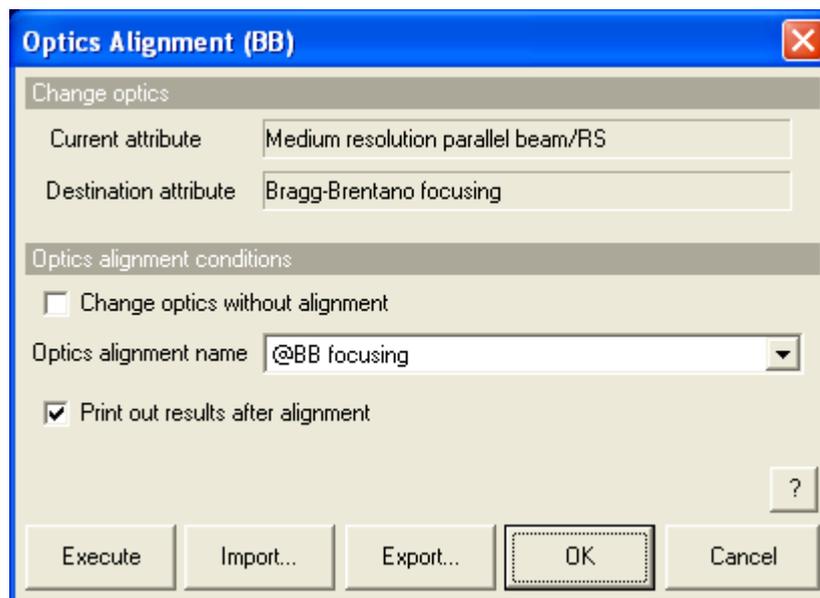


Fig. 2.3.1 Optics Alignment (BB) dialog box

- (2) Uncheck the **Change optics without alignment** box.
- (3) Select **@BB focusing** in the **Optics alignment name** box.
- (4) Check the **Print out results after alignment** box.
- (5) Click the **OK** button to close the dialog box.

### 2.3.2 Setting HV/PHA Adjustment (BB) Part conditions

- (1) Click the **HV/PHA Adjustment (BB)** button on the flow bar to open the **HV/PHA Adjustment (BB)** dialog box.

**HV/PHA Adjustment (BB)**

HV/PHA adjustment conditions

Tube voltage(kV)  Tube current(mA)

Theta/2-theta position(deg)

Initial HV(V)  Center of PHA(mV)

Theta/2-theta scan conditions

Scan axis	Mode	Range	Start (deg)	Stop (deg)	Step (deg)	Speed (deg/min)
Theta/2-Theta	Continuous	Relative	-0.4000	0.4000	0.0100	2.0000

HV scan conditions

Scan axis	Mode	Range	Start (V)	Stop (V)	Step (V)	Duration time (sec)
HV	Step	Relative	-170.0	170.0	4.0	0.40

PHA scan conditions

Scan axis	Mode	Range	Start (mV)	Stop (mV)	Step (mV)	Duration time (sec)
PHA	Step	Relative	-800.00	1000.00	50.00	1.00

Print out results

**Fig. 2.3.2 HV/PHA Adjustment (BB) dialog box**

- (2) Click the **Default** button.
- (3) Click the **OK** button to close the dialog box.

### 2.3.3 Setting Dead-Time Correction Measurement Part conditions

- (1) Click the **Dead-Time Correction Measurement** button on the flow bar to open the **Dead-Time Correction Measurement** dialog box.

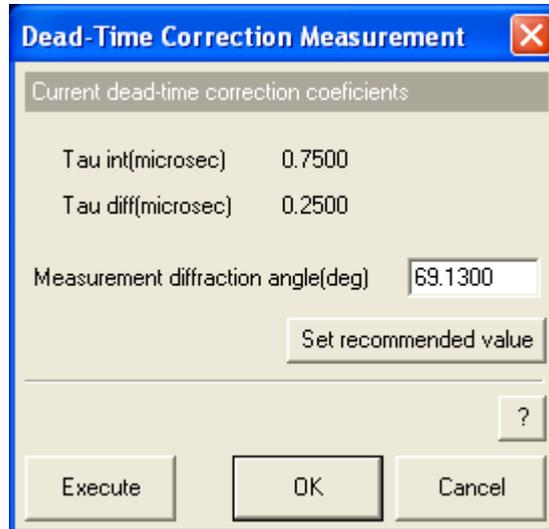


Fig. 2.3.3 Dead-Time Correction Measurement dialog box

- (2) Click the **Set recommended value** button and confirm that the value in the **Measurement diffraction angle (deg)** box becomes “69.1300”.
- (3) Click the **OK** button to close the dialog box.

### 2.3.4 Setting Optics Alignment (PB) Part conditions

- (1) Click the **Optics Alignment (PB)** button on the flow bar to open the **Optics Alignment (PB)** dialog box.

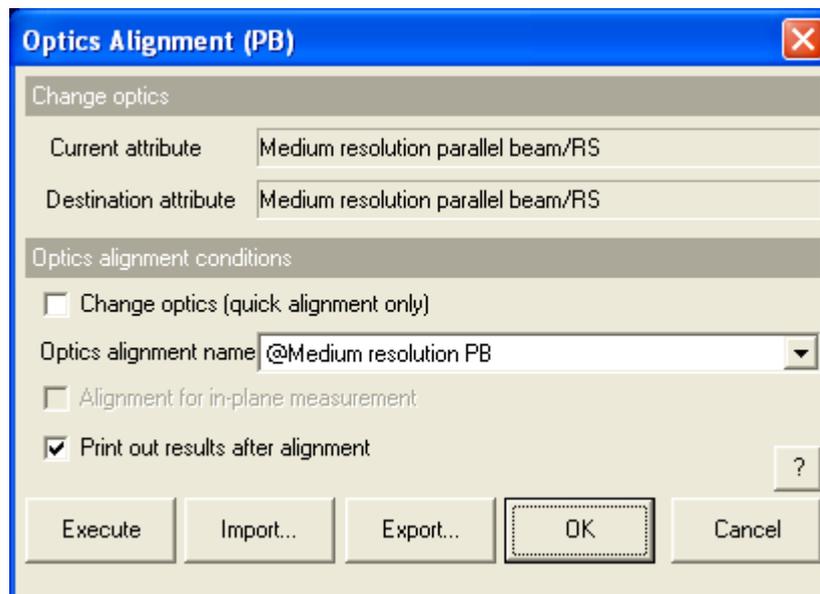


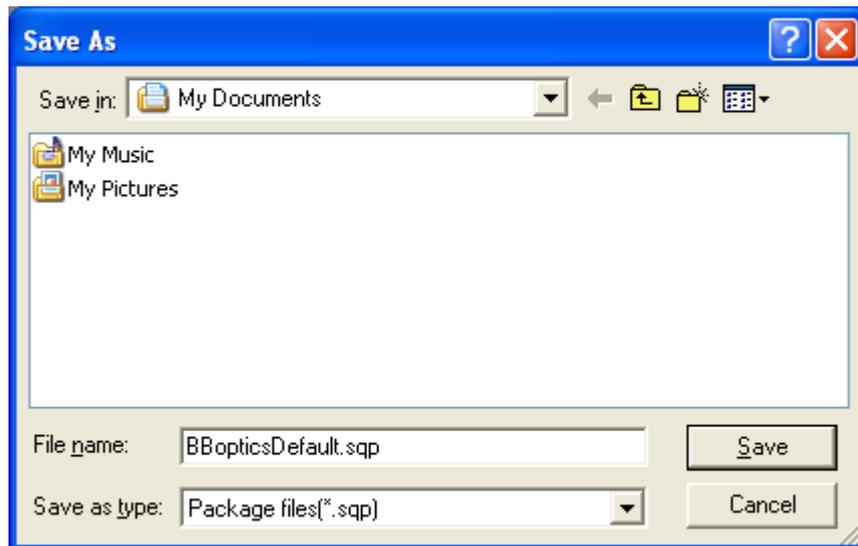
Fig. 2.3.4 Optics Alignment (PB) dialog box

## 2. Measurement procedures

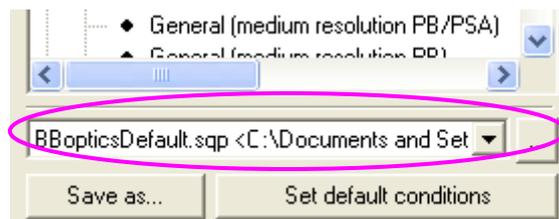
- (2) Uncheck the **Change optics (quick alignment only)** box.
- (3) Select **@Medium resolution PB** in the **Optics alignment name** box.
- (4) Check the **Print out results after alignment** box.
- (5) Click the **OK** button to close the dialog box.



Tip: To save all the Part conditions set in Subsections 2.3.1 through 2.3.4 to a single file, click the **Save as** button on the flow bar to open the **Save As** dialog box, then enter the settings in the **Save in** and **File name** boxes. Click the **Save** button.



Select a saved Package measurement conditions file (\*.sqp) in the box shown on the flow bar to load the conditions stored in that file.



## 2.4 Executing a Package measurement

Described below is the procedure for executing the complete series of measurement operations from the optics alignment to the attenuator correction measurement.

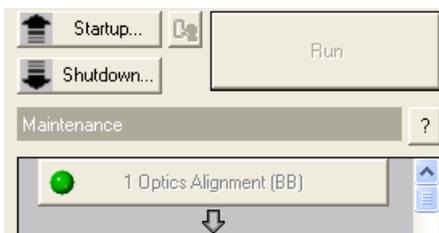


Tip: When executing optics alignment only, HV/PHA adjustment only, dead-time correction measurement only, mirror alignment only, or attenuator correction measurement only, refer to [3. Executing a Part](#) individually.

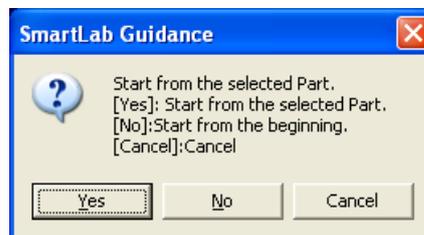
- (1) Click the  (Don't show confirmation messages) button to set it to  (Show confirmation messages).
- (2) Click the **Run** button on the flow bar.



Tip: After executing a Package measurement, the  mark appears on a button on the flow bar. The mark indicates that the Part corresponding to the button is in progress.



- (3) If the following message appears, click the **No** button.



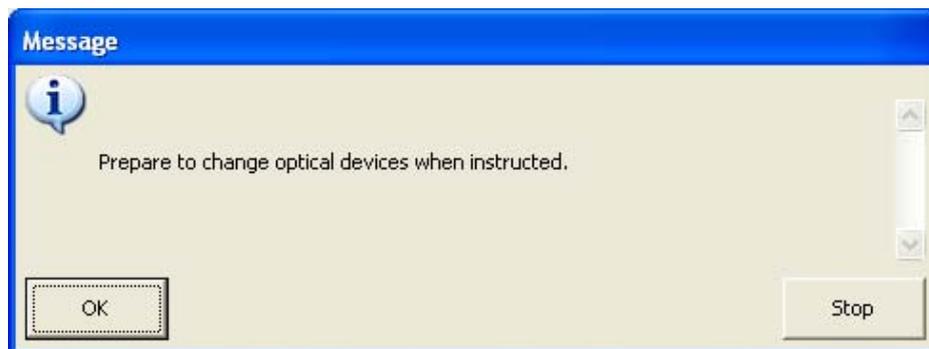
**CAUTION:** If the current hardware configuration setting is different from that for the operation of the **Maintenance** Package measurement, the measurement will be aborted and the **Hardware Configuration** dialog box will open. If this happens, replace the configuration units (e.g., the attachment) as prompted by the message in the dialog box.



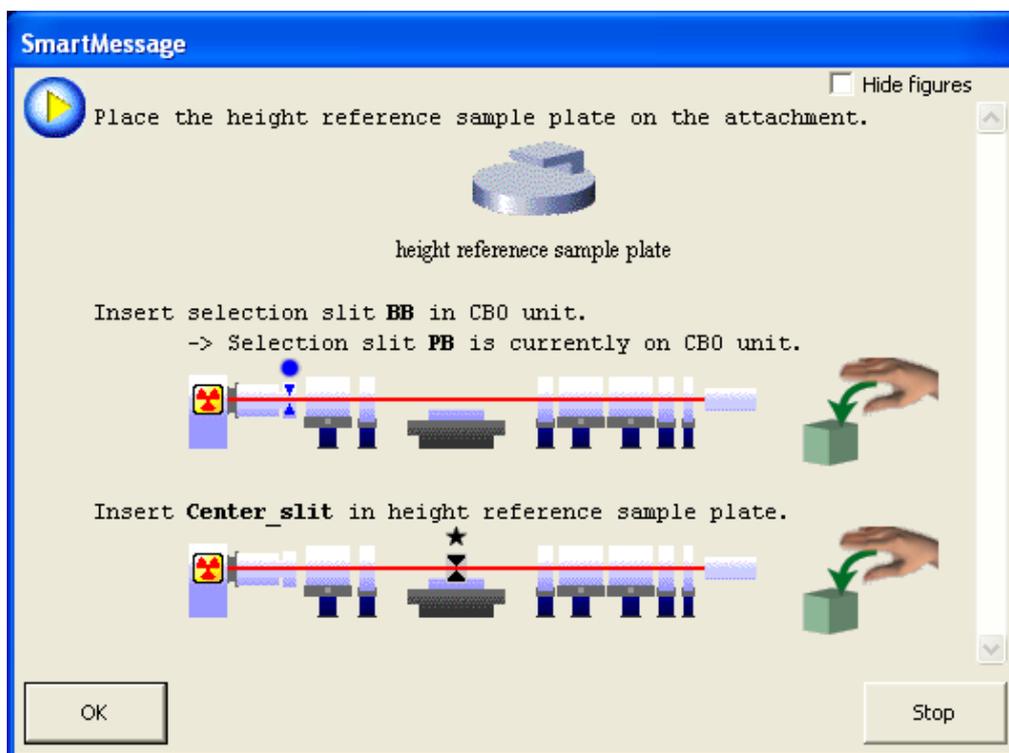
[2.5 Changing configuration units](#)

## 2. Measurement procedures

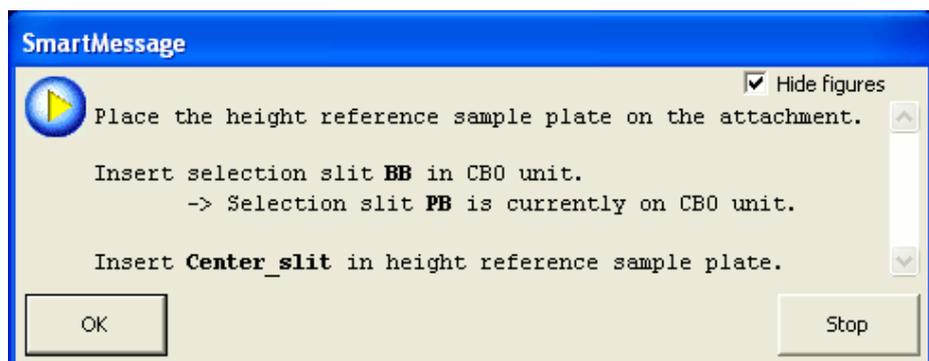
- (4) A message will prompt you to replace optical devices in the middle of the measurement. Confirm the message and click the **OK** button.



- (5) When the following message appears, place the height reference sample plate on the attachment and insert the center slit into the height reference sample plate. If another message appears at the same time prompting for replacement of the optical device(s) such as the selection slit, install the specified optical device(s) as indicated by the message.



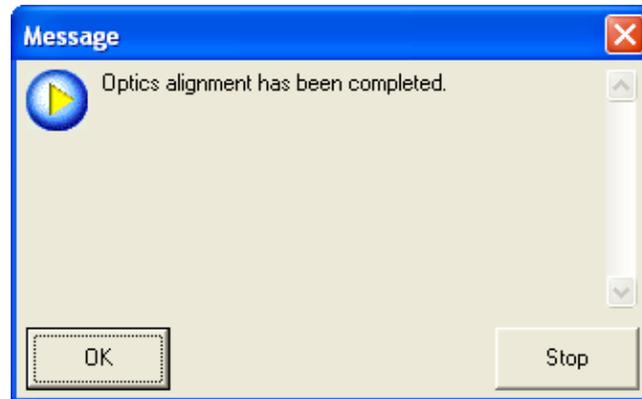
 Tip: When the **Hide figures** box is checked, only the message is displayed without figures.



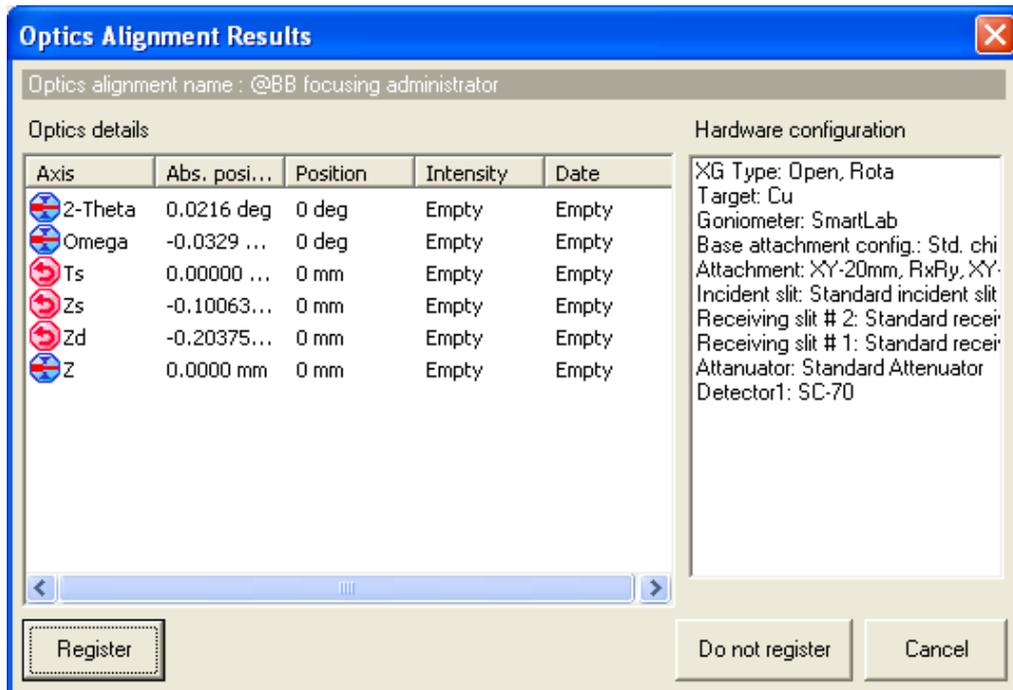
- (6) Click the **OK** button to execute optics alignment.

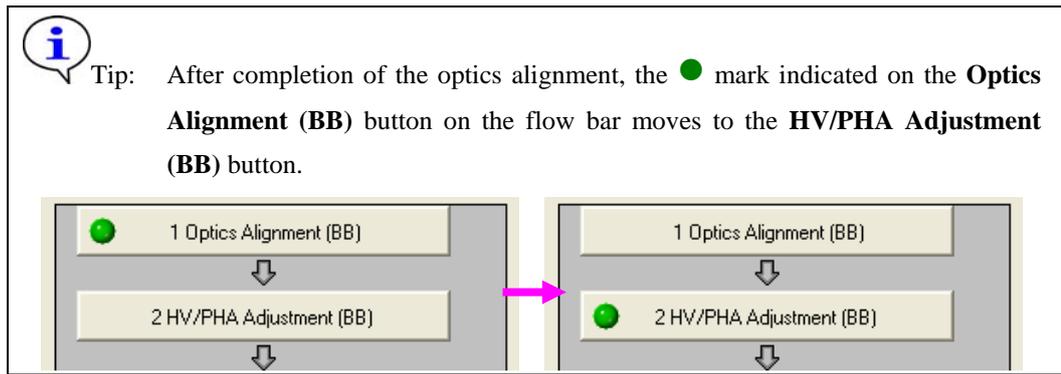
The optics alignment will be performed under the recommended conditions, and it will be completed in about 10 minutes.

- (7) The following message will appear to verify the optics alignment has been completed. Click the **OK** button.

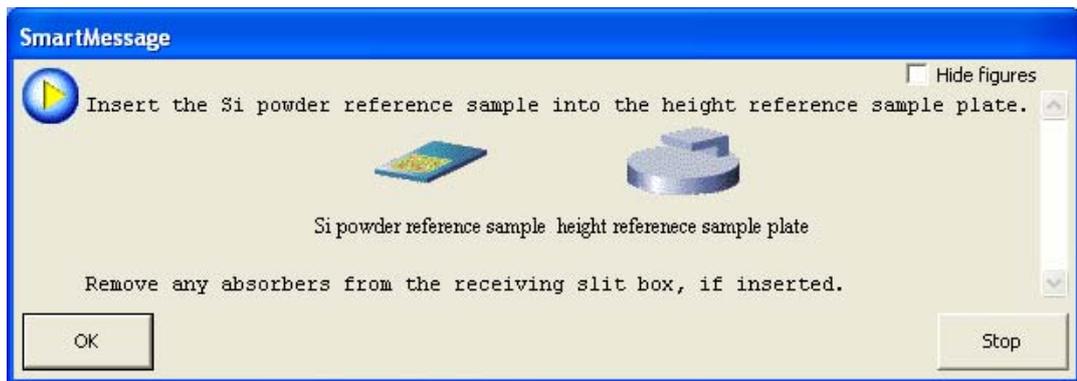


- (8) The **Optics Alignment Results** dialog box will appear. Confirm the results and click the **Register** button. The optics alignment results will be registered in the optics management database.

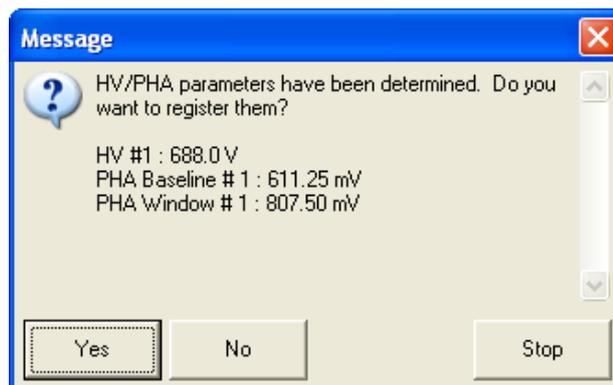




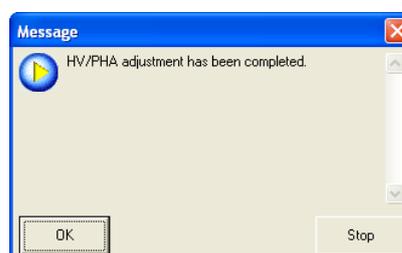
- (9) The following message will appear. Based on this message, insert the Si powder reference sample into the height reference sample plate.

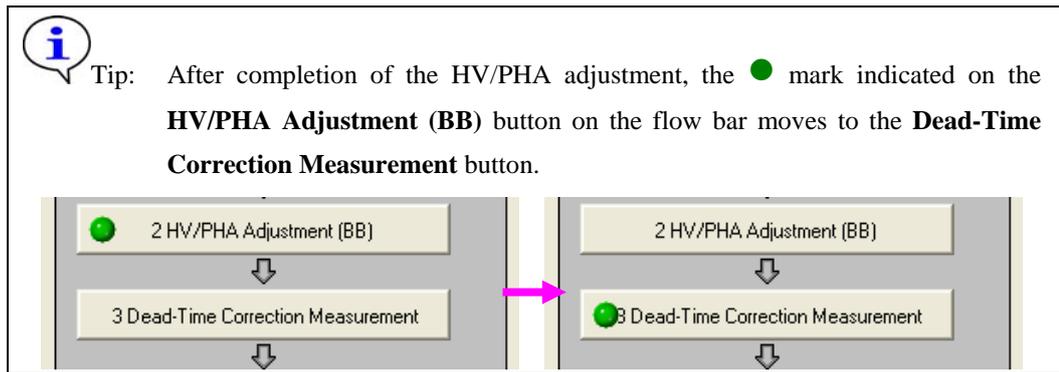


- (10) Click the **OK** button to execute an HV/PHA adjustment. The HV/PHA adjustment will be completed in 5 minutes.
- (11) After the HV scan and the PHA scan are performed, a message will appear to show the values of the HV, PHA baseline, and PHA window width. Confirm the values determined by the adjustment, and click the **Yes** button to register the values in the system parameter management database.

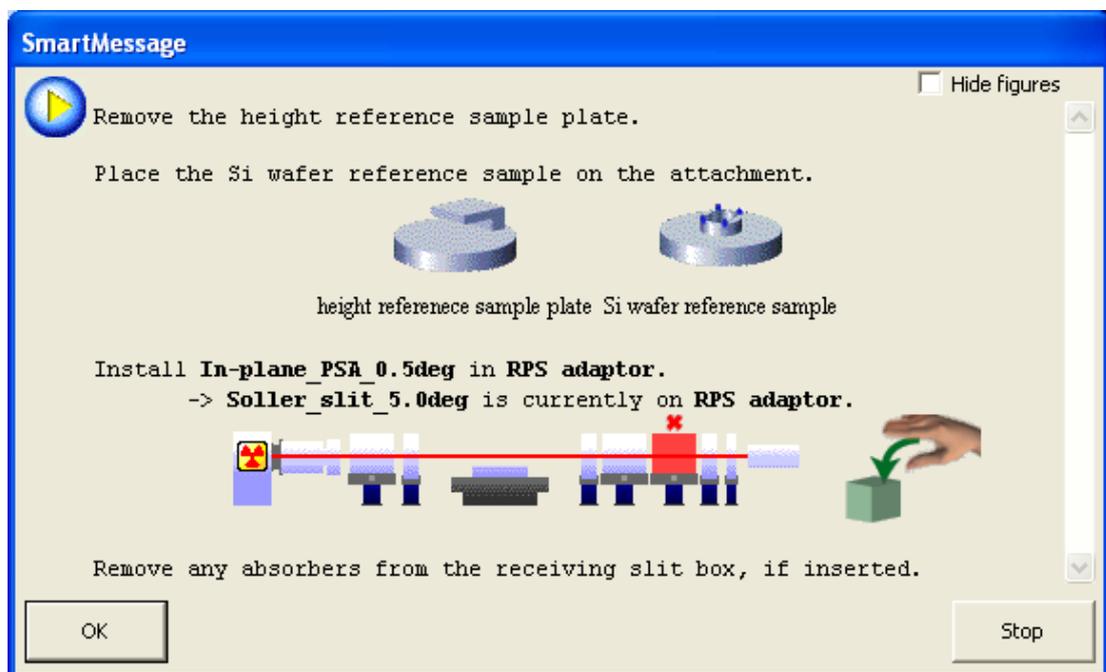


- (12) The following message will appear to verify the HV/PHA adjustment has been completed. Click the **OK** button.

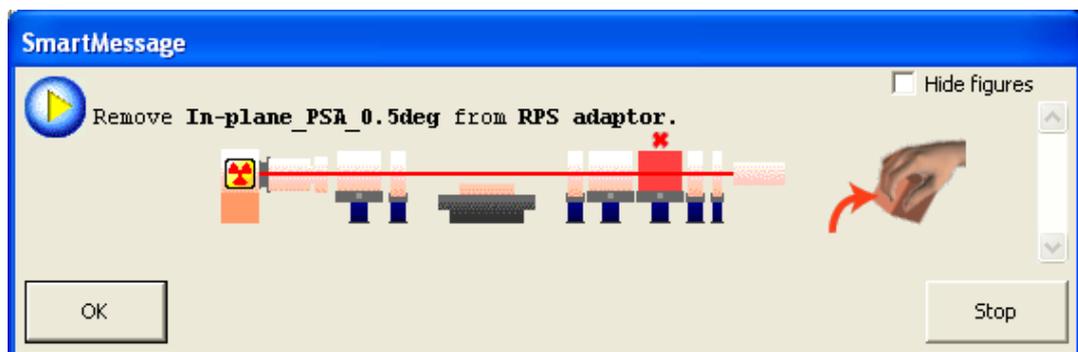




- (13) The following message will appear. Based on this message, place the Si wafer reference sample on the attachment, and install the In-plane PSA (0.5 deg) onto the receiving parallel slit adaptor (RPS adaptor).



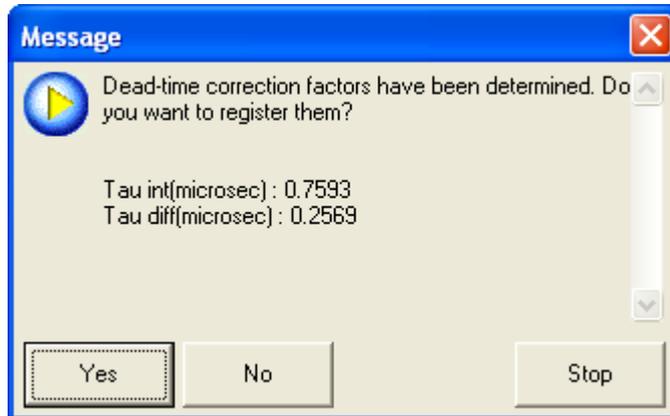
- (14) Click the **OK** button to execute a dead-time correction measurement. The dead-time correction measurement will be completed in 5 minutes.
- (15) After the omega scan is performed, the following message will appear. Based on this message, remove the In-plane PSA (0.5 deg), then click the **OK** button.



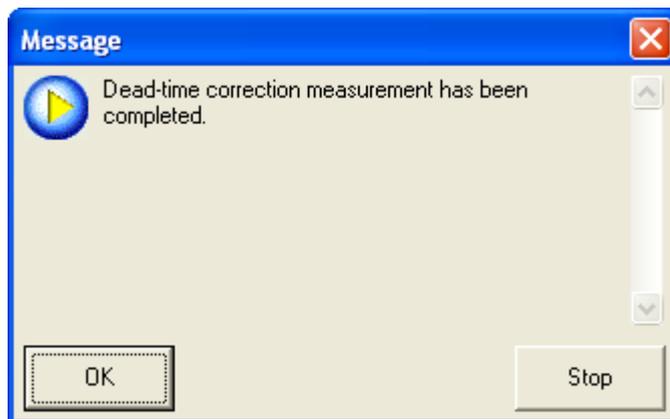
## 2. Measurement procedures

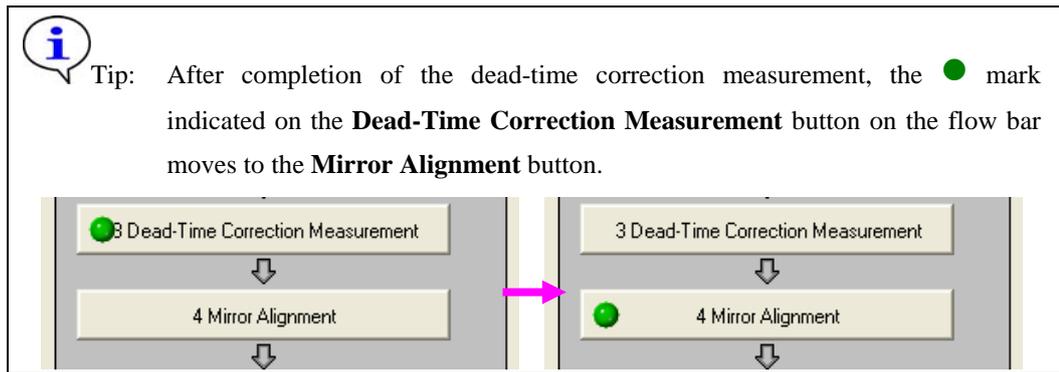
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- (16) After the omega scan is performed again, a message will appear to show the dead-time correction factors. Confirm the values determined by the measurement and click the **Yes** button. The factors will be registered in the system parameter management database.

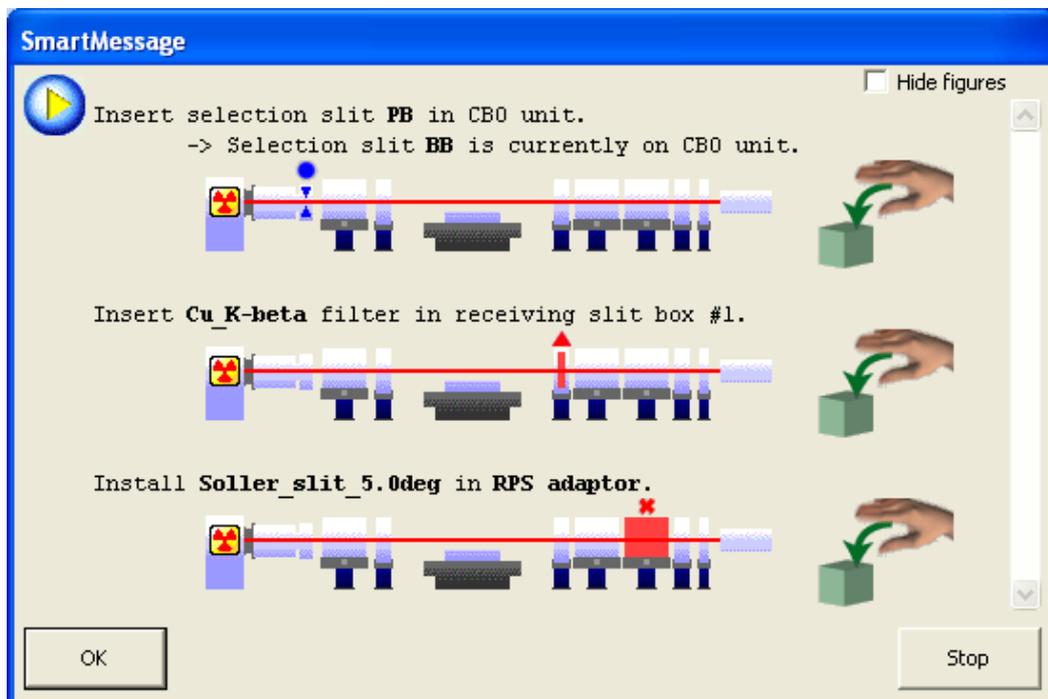


- (17) The message will appear to verify the dead-time correction measurement has been completed. Click the **OK** button.

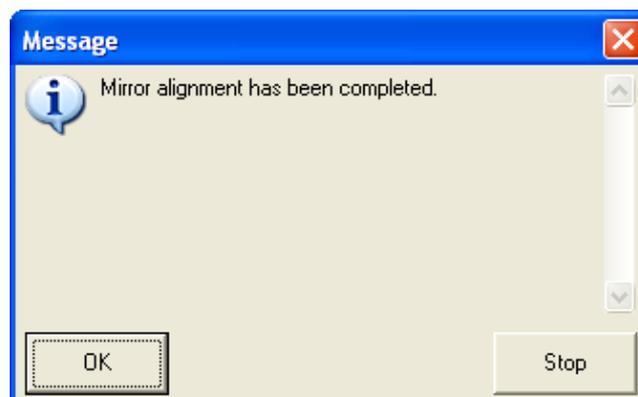


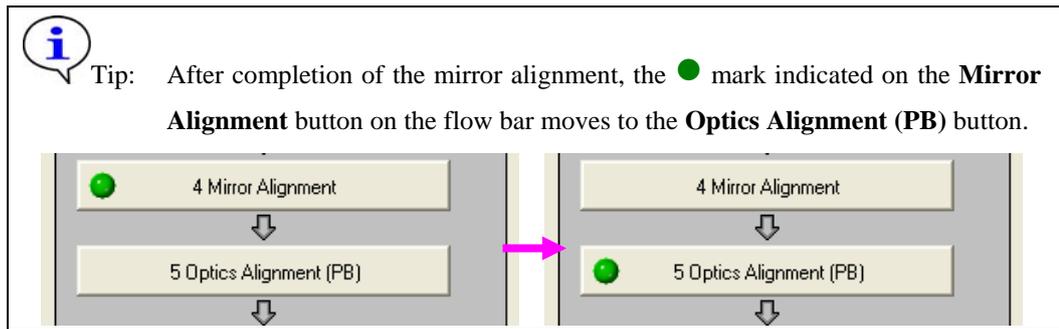


- (18) The following message will appear. Based on this message, insert the selection slit PB into the CBO unit, the  $K\beta$  filter for Cu into the receiving slit box # 1, and install the Soller slit (5.0 deg) onto the receiving parallel slit adaptor (RPS adaptor).

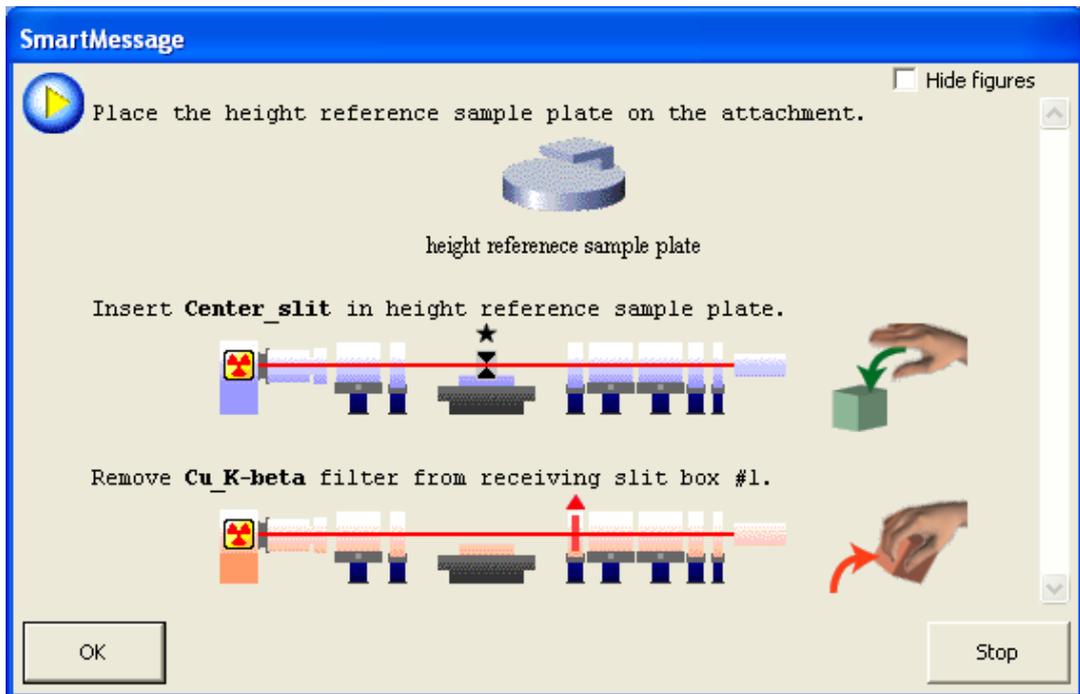


- (19) Click the **OK** button to execute mirror alignment. The mirror alignment will be completed in 5 minutes.
- (20) The following message will appear to verify the mirror alignment has been completed. Click the **OK** button.



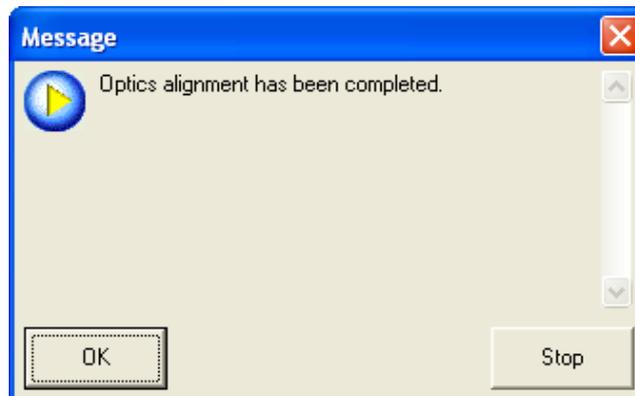


- (21) The following message will appear. Based on this message, place the height reference sample plate on the attachment and insert the center slit into the height reference sample plate, and remove the  $K\beta$  filter for Cu from the receiving slit box # 1.

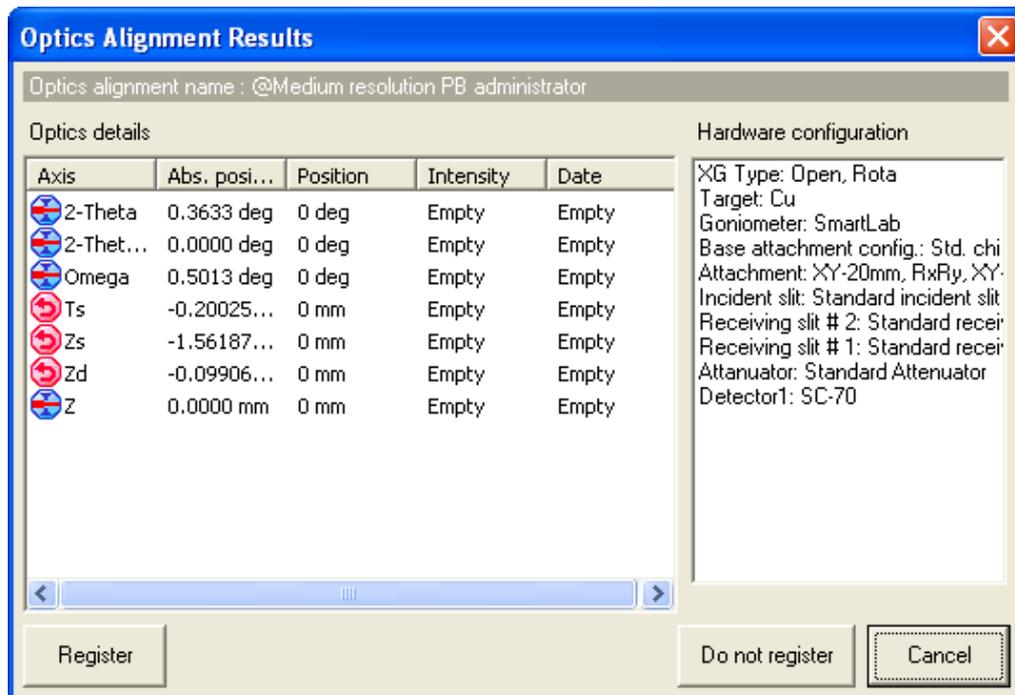


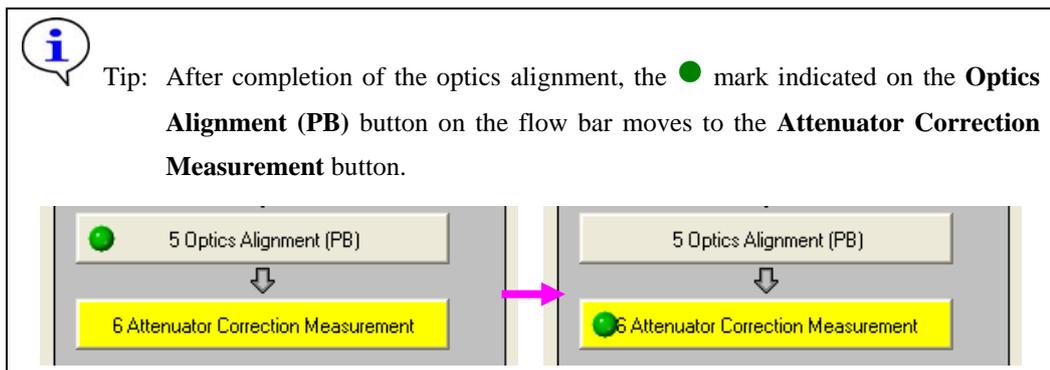
- (22) Click the **OK** button to execute optics alignment.  
The optics alignment will be performed under the recommended conditions, and it will be completed in about 10 minutes.

- (23) The message will appear to verify the optics alignment has been completed. Click the **OK** button.

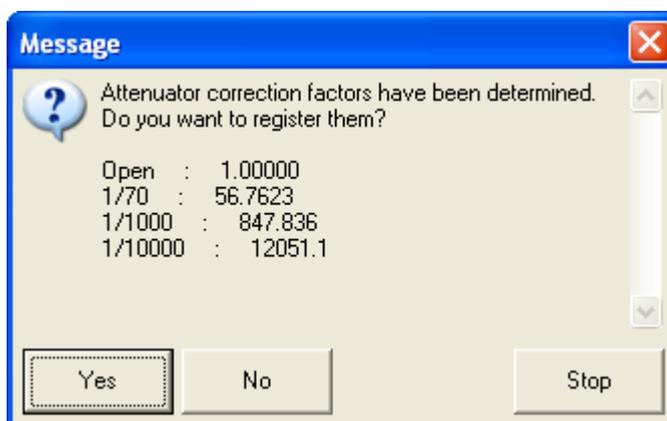


- (24) The **Optics Alignment Results** dialog box will appear. Confirm the results and click the **Register** button. The optics alignment results will be registered in the optics management database.

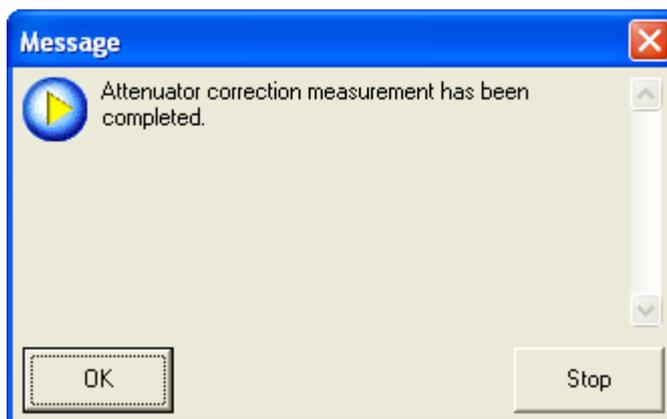




- (25) An attenuator correction measurement will be executed. The attenuator correction measurement will be completed in 5 minutes.
- (26) After the 2-theta scan is performed, the following message will appear to show the estimated correction factors of the attenuators. Confirm the values and click the **Yes** button. The attenuator correction factors will be registered in the system parameter management database.



- (27) The following message will appear to verify the attenuator correction measurement has been completed. Click the **OK** button.



This is the end of the **Maintenance** Package measurement.

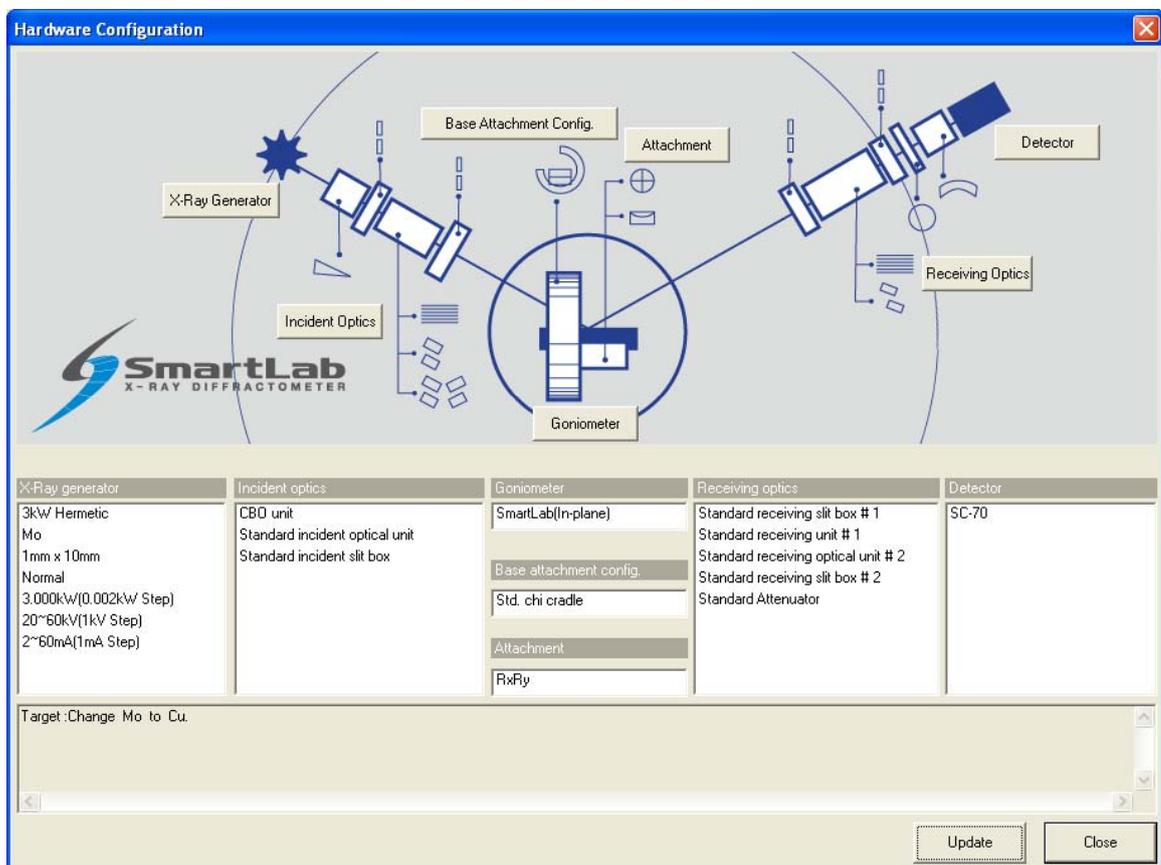
## 2.5 Changing configuration units

After a Package measurement (or Part) is executed, and the hardware configuration is not set for the Package measurement or the Part, the **Hardware Configuration** dialog box will open. A message appears below the dialog box prompting you to change the configuration units preventing the use of the Package measurement or the Part.

For example, if the target has been set to **Mo** in the **X-Ray Generator** dialog box, the displayed message will show “Target: Change Mo to Cu.”, since the target must be Cu for the **Maintenance** Package measurement.



**CAUTION:** Execution of the Package measurement or Part aborts when the **Hardware Configuration** dialog box appears.



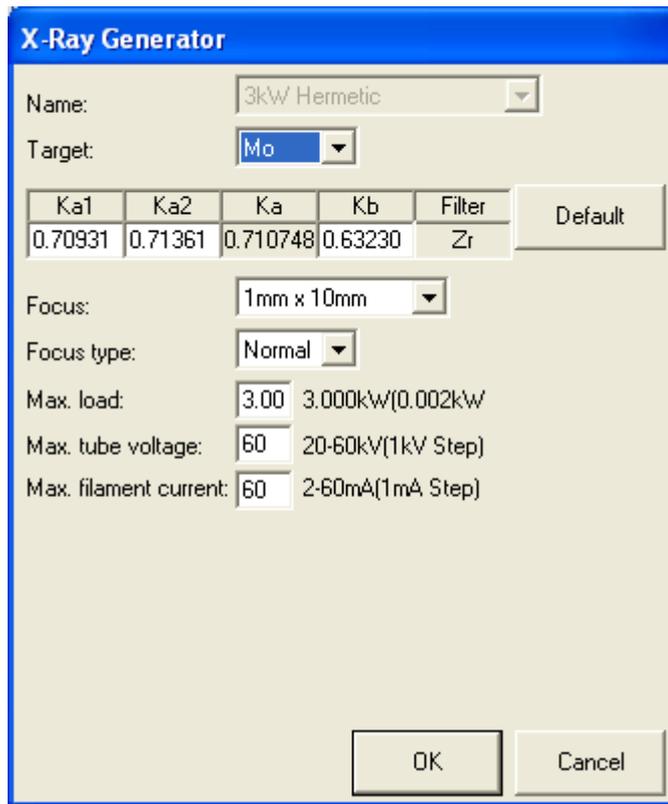
**Fig. 2.5.1 Hardware Configuration dialog box**

If the **Hardware Configuration** dialog box appears, replace the configuration units as prompted by the message in the dialog box and update the contents of the **Hardware Configuration** dialog box.

This procedure is described below.

- (1) Change the target in the x-ray generator from Mo to Cu. For sealed tubes, replace the Mo tube with the Cu tube.

- (2) Click the **X-Ray Generator** button to open the **X-Ray Generator** dialog box.



**Fig. 2.5.2 X-Ray Generator dialog box**

- (3) Select **Cu** in the **Target** box. Change any other parameters as necessary.
- (4) Click the **OK** button to close the dialog box.
- (5) If necessary, make changes for **Incident Optics**, **Receiving Optics**, and **Detector** in the same way.
- (6) Click the **Update** button in the **Hardware Configuration** dialog box.
- (7) Confirm that the **Hardware Configuration** dialog box displays the message “Hardware check OK”, then click the **Close** button.



**CAUTION:** To execute the measurement once again, click the **Run** button on the **Package Measurement** flow bar or the **Execute** button in the applicable Part dialog box.

## 2.6 Shutdown

After completion of all measurements, turn off the x-ray generator as described below.

- (1) Click the **Shutdown** button on the flow bar to open the **Shutdown** dialog box.



- (2) Uncheck the **Execute** box.



**Fig. 2.6.1 Shutdown dialog box**

- (3) Select **XG Off** in the **XG set** box.
- (4) Click the **Execute** button.
- (5) The shutdown operation is executed. The x-ray generator will be turned off in about 10 minutes.



Tip: For information on other functions available from the **Shutdown** dialog box, refer to Chapter 21 of the *SmartLab Guidance Reference Manual* (ME13365A).

### Slit configuration and optics resolution (parallel beam method)

Si diffraction profiles collected with PSAs of various angular divergence acceptance (angular apertures) are shown in the figure. Increasing the PSA's angular aperture increases the diffraction intensity and decreases the peak resolution. Choose a PSA to optimize intensity while still maintaining the required resolution for a given sample. As an example, choose a PSA with smaller angular aperture if the sample is expected to have overlapping peaks.

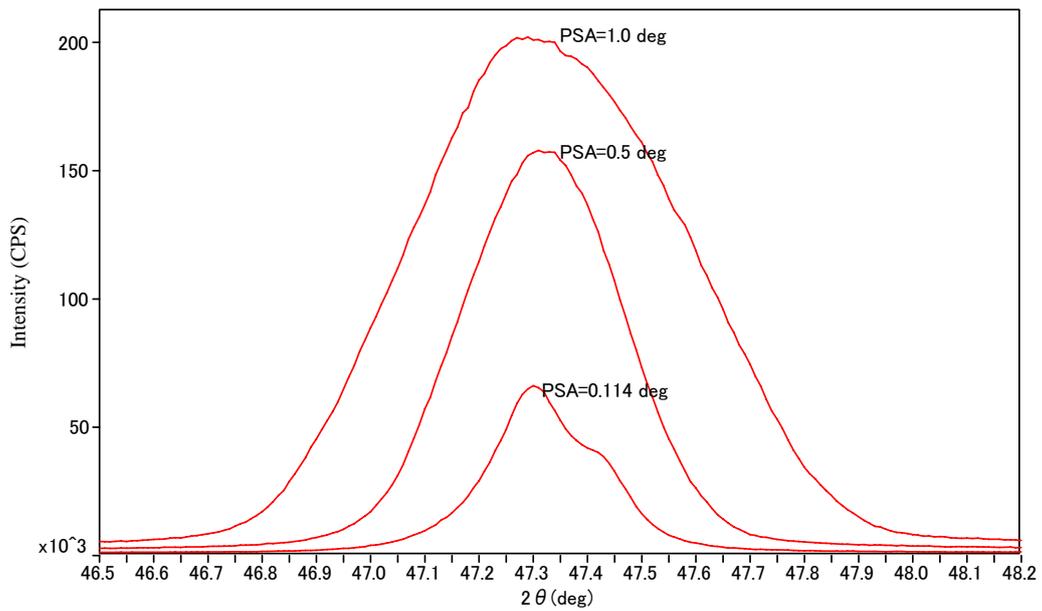
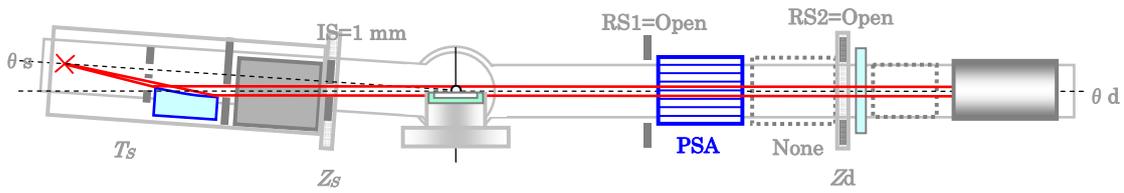


Fig. Diffraction profiles with different PSA angular apertures

### 3. Executing a Part individually

In this chapter, how to execute the following Parts individually is described.

**Optics Alignment (BB) Part**

**HV/PHA Adjustment (BB) Part**

**Dead-Time Correction Measurement Part**

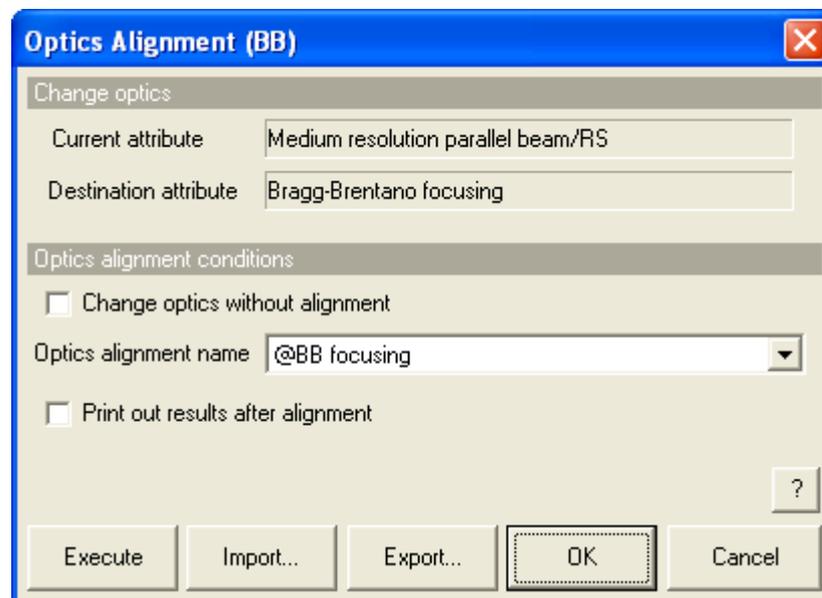
**Mirror Alignment Part**

**Optics Alignment (PB) Part**

**Attenuator Correction Measurement Part**

#### 3.1 Executing the Optics Alignment (BB) Part

- (1) Click the **Optics Alignment (BB)** button on the flow bar to open the **Optics Alignment (BB)** dialog box.



**Fig. 3.1.1 Optics Alignment (BB) dialog box**

- (2) Uncheck the **Change optics without alignment** box.



Tip: Check the **Change optics without alignment** box to switch optics for the HV/PHA adjustment or dead-time correction measurement using the alignment results stored under the selected optics alignment name without performing optics alignment.

- (3) In the **Optics alignment name** box, select a location for storing optics alignment results.



Tip: To store optics alignment results under a new optics alignment name, click the **OK** or **Cancel** button to close the **Optics Alignment (BB)** dialog box. Then, select the **Optics Management** command from the **Option** menu to open the **Optics Management** dialog box and add a new optics alignment name. After adding a new optics alignment name, return to step (1) in this section. For more information on creating an optics alignment name, refer to Chapter 17 of the *SmartLab Guidance Reference Manual* (ME13365A).

- (4) To print the optics alignment results, check the **Print out results after alignment** box.



Tip: If both the **Change optics without alignment** and **Print out results after alignment** boxes are checked, the alignment results stored under the selected optics alignment name will be printed.

- (5) Click the **Execute** button in the **Optics Alignment (BB)** dialog box.  
(6) Optics alignment is executed followed by steps (5) through (8) in Section 2.4.



**CAUTION:** If the current hardware configuration setting is different from that for the operation of the **Optics Alignment (BB)** Part, the optics alignment will be aborted and the **Hardware Configuration** dialog box will open. If this happens, replace the configuration units (e.g., the attachment) as prompted by the message in the dialog box.



[2.5 Changing configuration units](#)

### 3.2 Executing the HV/PHA Adjustment (BB) Part

- (1) Click the **HV/PHA Adjustment (BB)** button on the flow bar to open the **HV/PHA Adjustment (BB)** dialog box.

**HV/PHA Adjustment (BB)**

HV/PHA adjustment conditions

Tube voltage(kV)  Tube current(mA)

Theta/2-theta position(deg)

Initial HV(V)  Center of PHA(mV)

Theta/2-theta scan conditions

Scan axis	Mode	Range	Start (deg)	Stop (deg)	Step (deg)	Speed (deg/min)
Theta/2-Theta	Continuous	Relative	-0.4000	0.4000	0.0100	2.0000

HV scan conditions

Scan axis	Mode	Range	Start (V)	Stop (V)	Step (V)	Duration time (sec)
HV	Step	Relative	-170.0	170.0	4.0	0.40

PHA scan conditions

Scan axis	Mode	Range	Start (mV)	Stop (mV)	Step (mV)	Duration time (sec)
PHA	Step	Relative	-800.00	1000.00	50.00	1.00

Print out results

Default ?

Execute... Import... Export... OK Cancel

**Fig. 3.2.1 HV/PHA Adjustment (BB) dialog box**

- (2) Click the **Default** button.
- (3) If the HV/PHA adjustment is executed using different values of the tube voltage and current from the default values, enter the tube voltage and current in the **Tube voltage (kV)** and **Tube current (mA)** boxes.
- (4) If the Si powder reference sample is not used, enter the theta/2-theta position at which diffraction from the powder sample can be detected in the **Theta/2-theta position (deg)** box.
- (5) If necessary, set the conditions in each section.
- (6) To print the HV/PHA adjustment results, check the **Print out results** box.
- (7) Click the **Execute** button in the **HV/PHA Adjustment (BB)** dialog box.

### 3. Executing a Part individually

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- (8) HV/PHA adjustment is executed followed by steps (9) through (12) in Section 2.4.



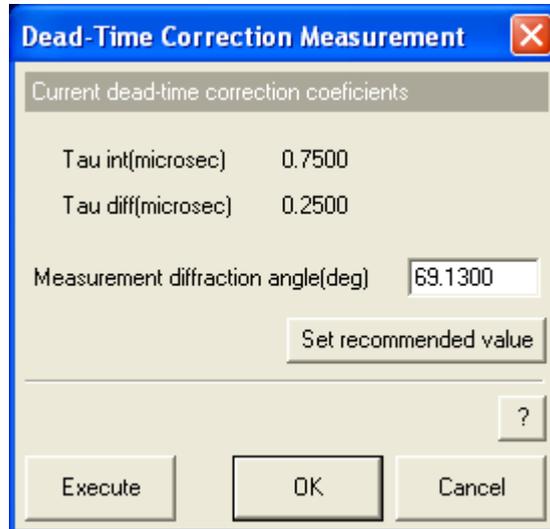
**CAUTION:** If the current hardware configuration setting is different from that for the operation of the **HV/PHA Adjustment (BB)** Part, the HV/PHA adjustment will be aborted and the **Hardware Configuration** dialog box will open. If this happens, replace the configuration units (e.g., the attachment) as prompted by the message in the dialog box.



[2.5 Changing configuration units](#)

### 3.3 Executing the Dead-Time Correction Measurement Part

- (1) Click the **Dead-Time Correction Measurement** button on the flow bar to open the **Dead-Time Correction Measurement** dialog box.



**Fig. 3.3.1 Dead-Time Correction Measurement dialog box**

- (2) If the Si wafer reference sample is used, click the **Set recommended value** button. If the Si wafer reference sample is not used, enter the diffraction angle of the sample to be measured in the **Measurement diffraction angle (deg)** box.
- (3) Click the **Execute** button in the **Dead-Time Correction Measurement** dialog box.
- (4) Dead-time correction measurement is executed followed by steps (13) through (17) in Section 2.4.



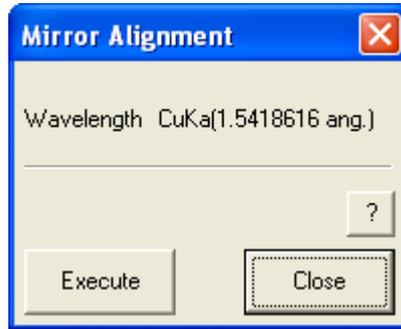
**CAUTION:** If the current hardware configuration setting is different from that for the operation of the **Dead-Time Correction Measurement** Part, the dead-time correction measurement will be aborted and the **Hardware Configuration** dialog box will open. If this happens, replace the configuration units (e.g., the attachment) as prompted by the message in the dialog box.



[2.5 Changing configuration units](#)

### 3.4 Executing the Mirror Alignment Part

- (1) Click the **Mirror Alignment** button on the flow bar to open the **Mirror Alignment** dialog box.



**Fig. 3.4.1 Mirror Alignment dialog box**

- (2) Click the **Execute** button in the **Mirror Alignment** dialog box.
- (3) Mirror alignment is executed followed by steps (18) through (20) in Section 2.4.



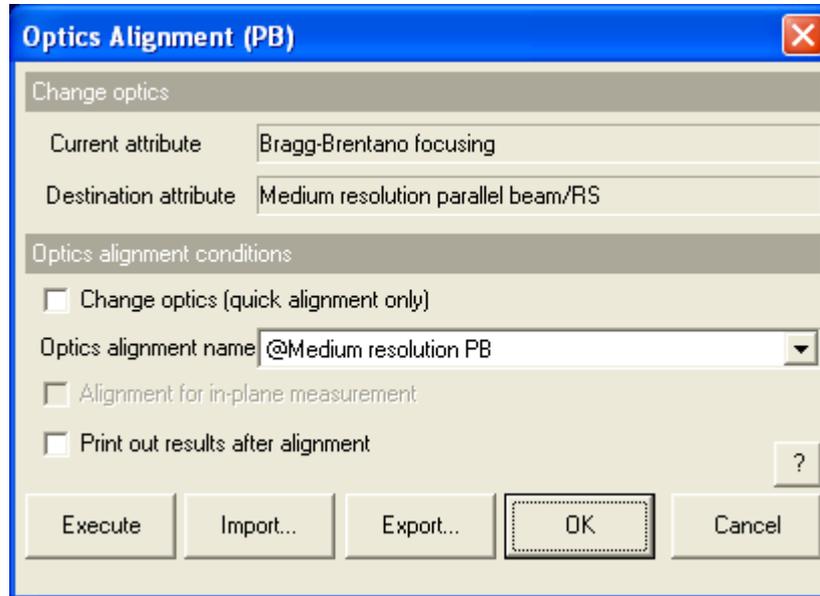
**CAUTION:** If the current hardware configuration setting is different from that for the operation of the **Mirror Alignment** Part, the mirror alignment will be aborted and the **Hardware Configuration** dialog box will open. If this happens, replace the configuration units (e.g., the attachment) as prompted by the message in the dialog box.



[2.5 Changing configuration units](#)

### 3.5 Executing the Optics Alignment (PB) Part

- (1) Click the **Optics Alignment (PB)** button on the flow bar to open the **Optics Alignment (PB)** dialog box.



**Fig. 3.5.1 Optics Alignment (PB) dialog box**

- (2) Uncheck the **Change optics (quick alignment only)** box.



Tip: Check the **Change optics (quick alignment only)** box to switch optics for the attenuator correction measurement using the alignment results stored under the selected optics alignment name by performing a quick alignment.

- (3) In the **Optics alignment name** box, select a location for storing optics alignment results.



Tip: To store optics alignment results under a new optics alignment name, click the **OK** or **Cancel** button to close the **Optics Alignment (PB)** dialog box. Then, select the **Optics Management** command from the **Options** menu to open the **Optics Management** dialog box and add a new optics alignment name. After adding a new optics alignment name, return to step (1) in this section. For more information on creating an optics alignment name, refer to Chapter 17 of the *SmartLab Guidance Reference Manual (ME13365A)*.

- (4) To print the optics alignment results, check the **Print out results after alignment** box.



Tip: If both the **Change optics (quick alignment only)** and **Print out results after alignment** boxes are checked, the alignment results stored under the selected optics alignment name will be printed.

- (5) Click the **Execute** button in the **Optics Alignment (PB)** dialog box.

- (6) Optics alignment is executed followed by steps (21) through (24) in Section 2.4.

 **CAUTION:** If the current hardware configuration setting is different from that for the operation of the **Optics Alignment (PB)** Part, the optics alignment will be aborted and the **Hardware Configuration** dialog box will open. If this happens, replace the configuration units (e.g., the attachment) as prompted by the message in the dialog box.

 [2.5 Changing configuration units](#)

### 3.6 Executing the Attenuator Correction Measurement Part

- (1) Click the **Attenuator Correction Measurement** button on the flow bar to open the **Attenuator Correction Measurement** dialog box.

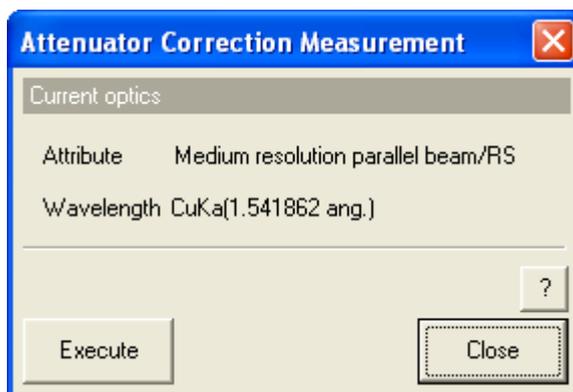


Fig. 3.6.1 Attenuator Correction Measurement dialog box

- (2) Click the **Execute** button in the **Attenuator Correction Measurement** dialog box.
- (3) Attenuator correction measurement is executed followed by steps (25) through (27) in Section 2.4.

 **CAUTION:** If the current hardware configuration setting is different from that for the operation of the **Attenuator Correction Measurement** Part, the attenuator correction measurement will be aborted and the **Hardware Configuration** dialog box will open. If this happens, replace the configuration units (e.g., the attachment) as prompted by the message in the dialog box.

 [2.5 Changing configuration units](#)

## 4. Troubleshooting

Problem	Response
Previously saved conditions cannot be imported through the <b>Optics Alignment (BB)</b> or <b>Optics Alignment (PB)</b> dialog box.	<ul style="list-style-type: none"> <li>• Confirm that the user name displayed on the title bar of the main window is correct.</li> <li>• Add the name of the optics alignment again in the <b>Optics Management</b> dialog box.</li> </ul>
Previously saved conditions cannot be imported through the <b>HV/PHA Adjustment (BB)</b> dialog box.	<ul style="list-style-type: none"> <li>• Confirm that the user name displayed on the title bar of the main window is correct.</li> </ul>
Package measurement cannot be executed.	<ul style="list-style-type: none"> <li>• Check to see if the XG output is as specified.</li> <li>• Check to see if the door of the radiation enclosure is closed.</li> </ul>
Package measurement will stop at the <b>Mirror Alignment</b> Part.	<ul style="list-style-type: none"> <li>• Check to see if the CBO unit is installed correctly.</li> </ul>
When optics alignment is executed, the goniometer will move slightly and the operation will immediately stop.	<ul style="list-style-type: none"> <li>• Confirm that the <b>Change optics without alignment</b> box in the <b>Optics Alignment (BB)</b> dialog box is unchecked.</li> </ul>
Clicking the <b>OK</b> button in a message box will result in the same message box reappearing.	<ul style="list-style-type: none"> <li>• Confirm that the specified slit and other devices are installed correctly. Also, make sure that the necessary devices have not been removed.</li> </ul>
Sufficient intensity cannot be obtained for attenuator correction measurement.	<ul style="list-style-type: none"> <li>• <u>Check to see if an absorber is inserted in the receiving slit box.</u></li> <li>• Confirm that the XG output has reached the specified levels.</li> </ul>