InnoSpectra Corporation

ISC MetaScan

User's Guide

Apr. 28, 2023

RISE

Responsibility Innovation Superiority Entrepreneurship

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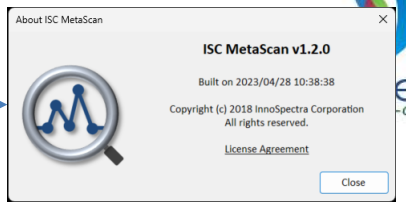
- Introduction
- Perform a Scan
- Configurations Operation
- Collect Spectrum Data
- Utility Functions Operation

Introduction

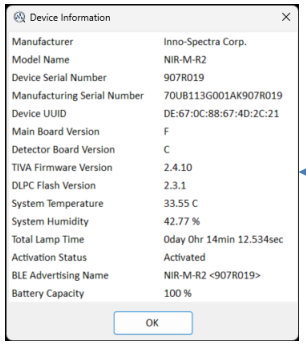
Application Outline

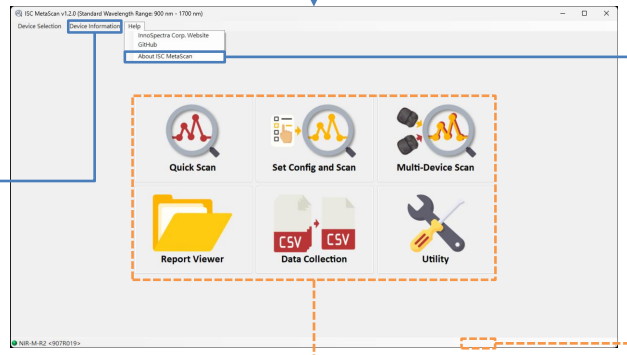
2 seconds after

About ISC MetaScan

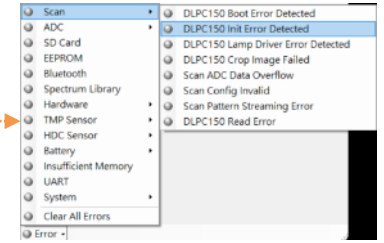


Device Information

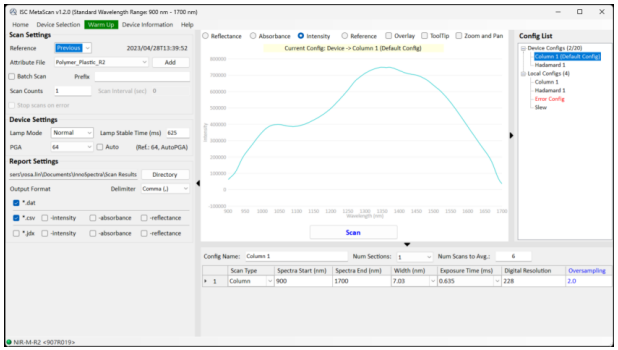




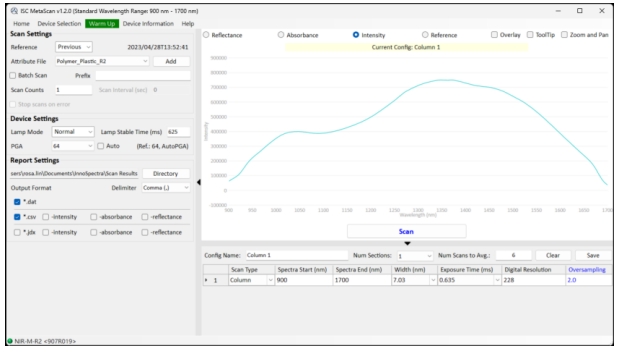
Error Status



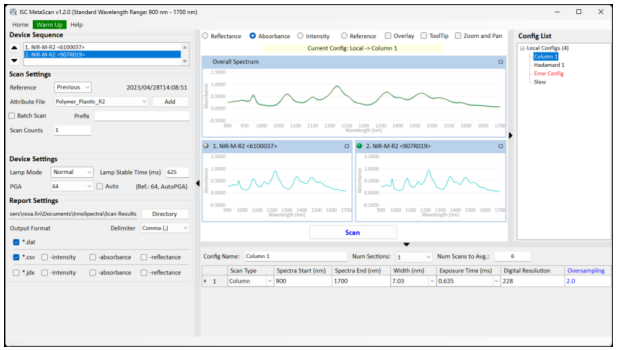
Quick Scan



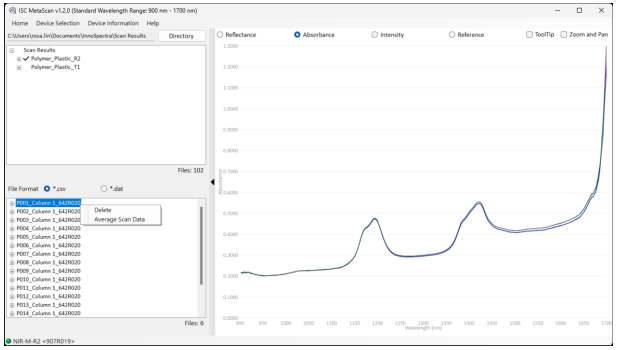
Set Config and Scan



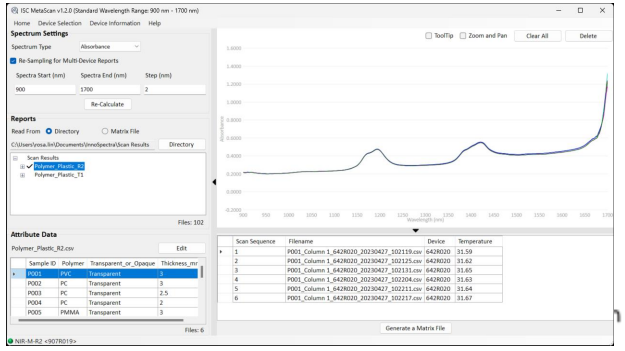
Multi-Device Scan



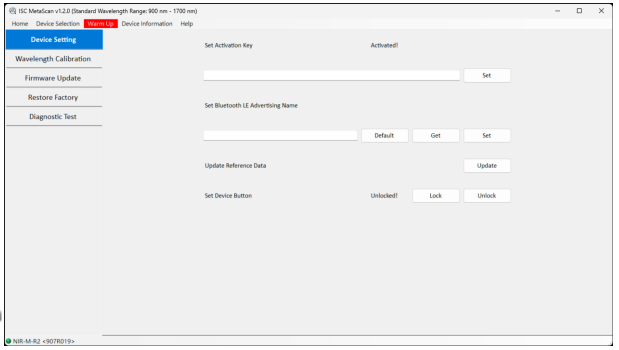
Report Viewer



Data Collection



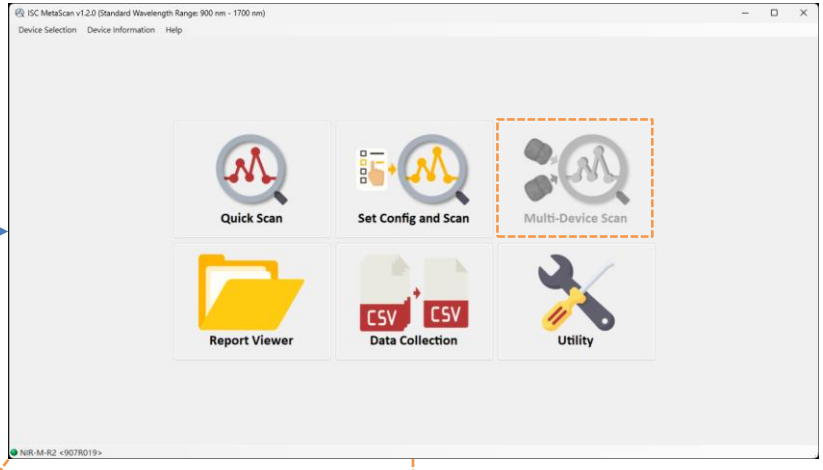
Utility



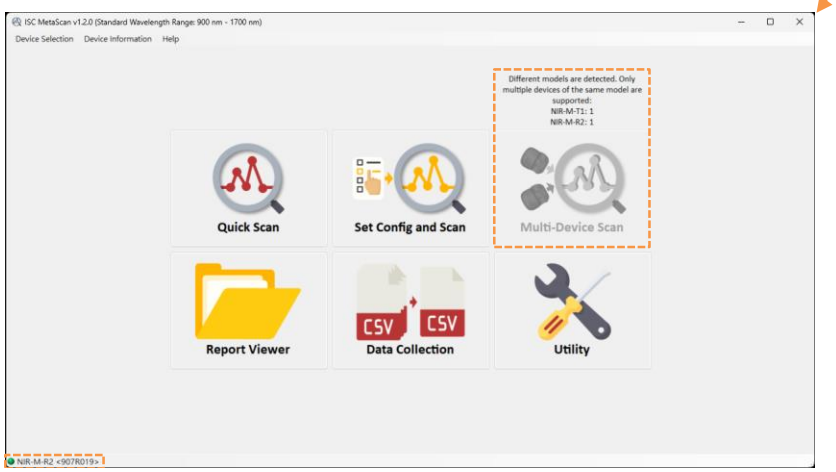
Application Start

- The application starts from the splash screen and goes to the main menu after 2 seconds.
- The device will automatically connect after entering the main menu.
- Connectable devices are detected every 2 seconds. If multiple devices of the same model are detected, the multi-device scan button is enabled.

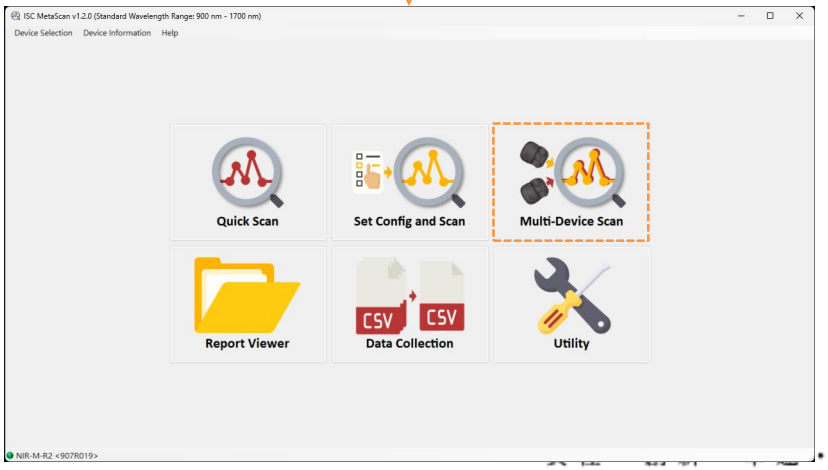
2 seconds after



Example: NIR-M-T1 * 1
NIR-M-R2 * 1



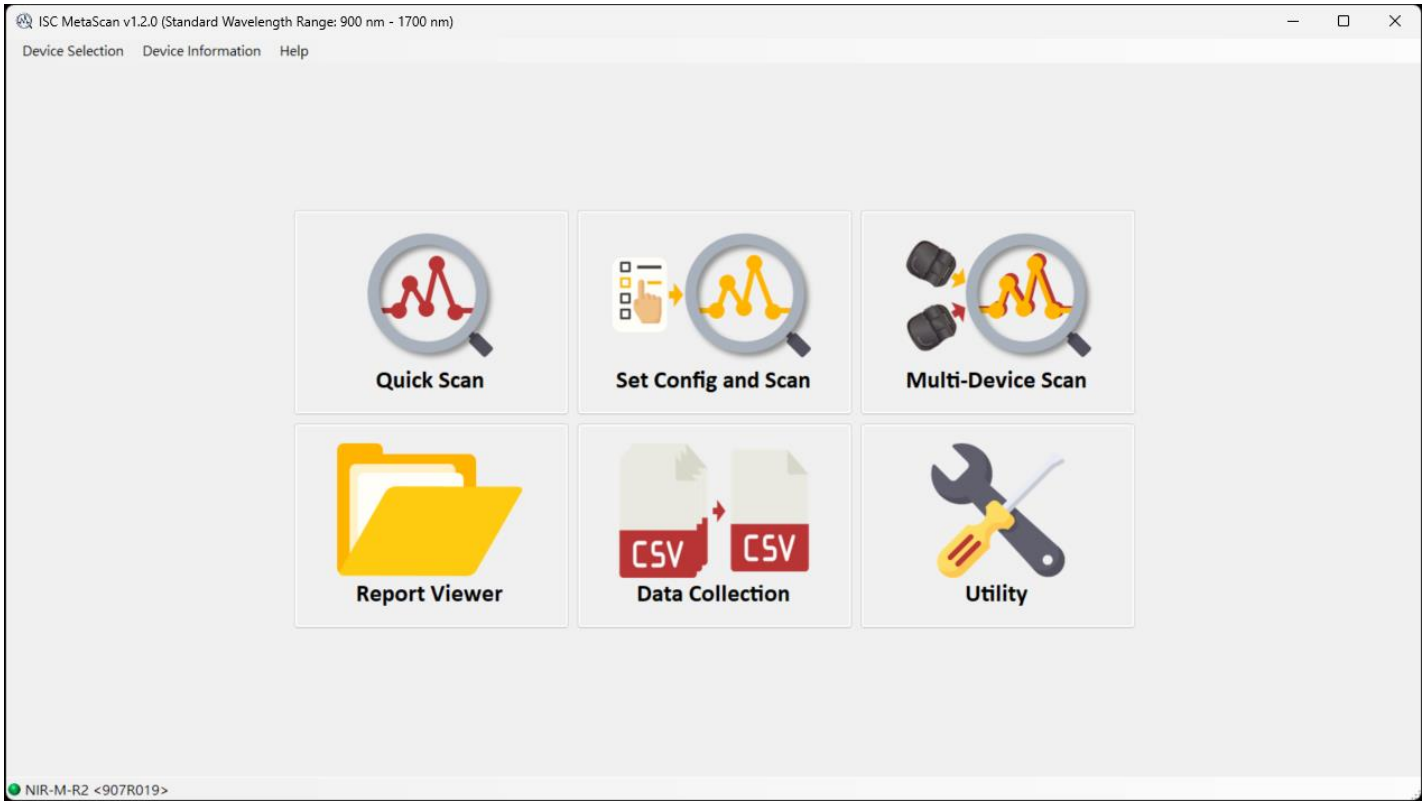
Example: NIR-M-R2 * 2



If the device is not activated, it will display “(Advanced Functions Locked!)” at the end.

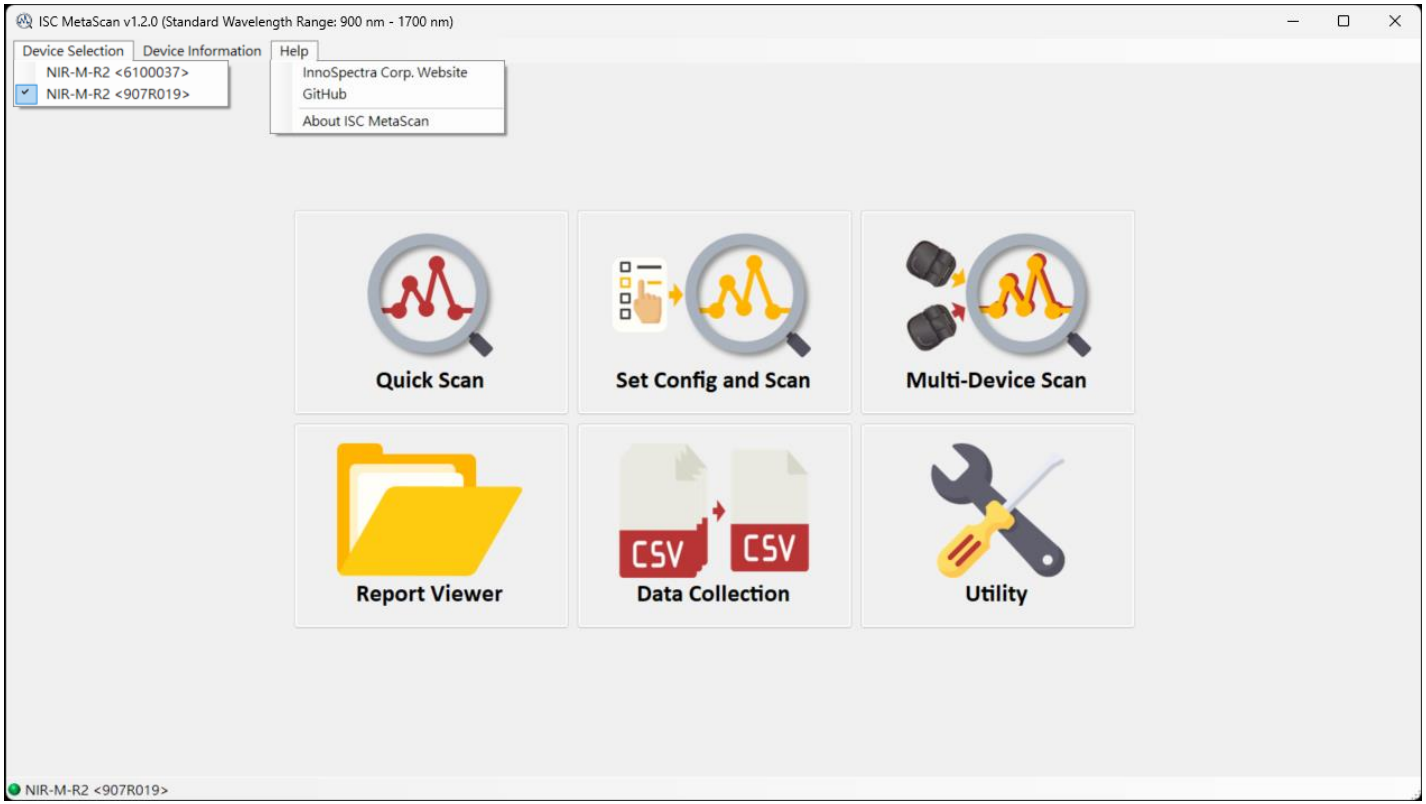
Menu

- **Quick Scan**: Direct to scan view with device default scan configuration.
- **Set Config and Scan**: Direct to scan view which needs to set a config before scanning. It supports saving new configuration or updating exist configuration to device or local.
- **Multi-Device Scan**: Direct to scan view which only supports multiple devices of one model.
- **Report Viewer**: Direct to report view which supports average scan data and delete reports.
- **Data Collection**: Direct to data collection view where preprocessed data is loaded. It also supports generating a matrix file for model building.
- **Utility**: Direct to utility view that contains device setting, wavelength calibration, firmware update, restore factory, and diagnostic test.



Menu Bar

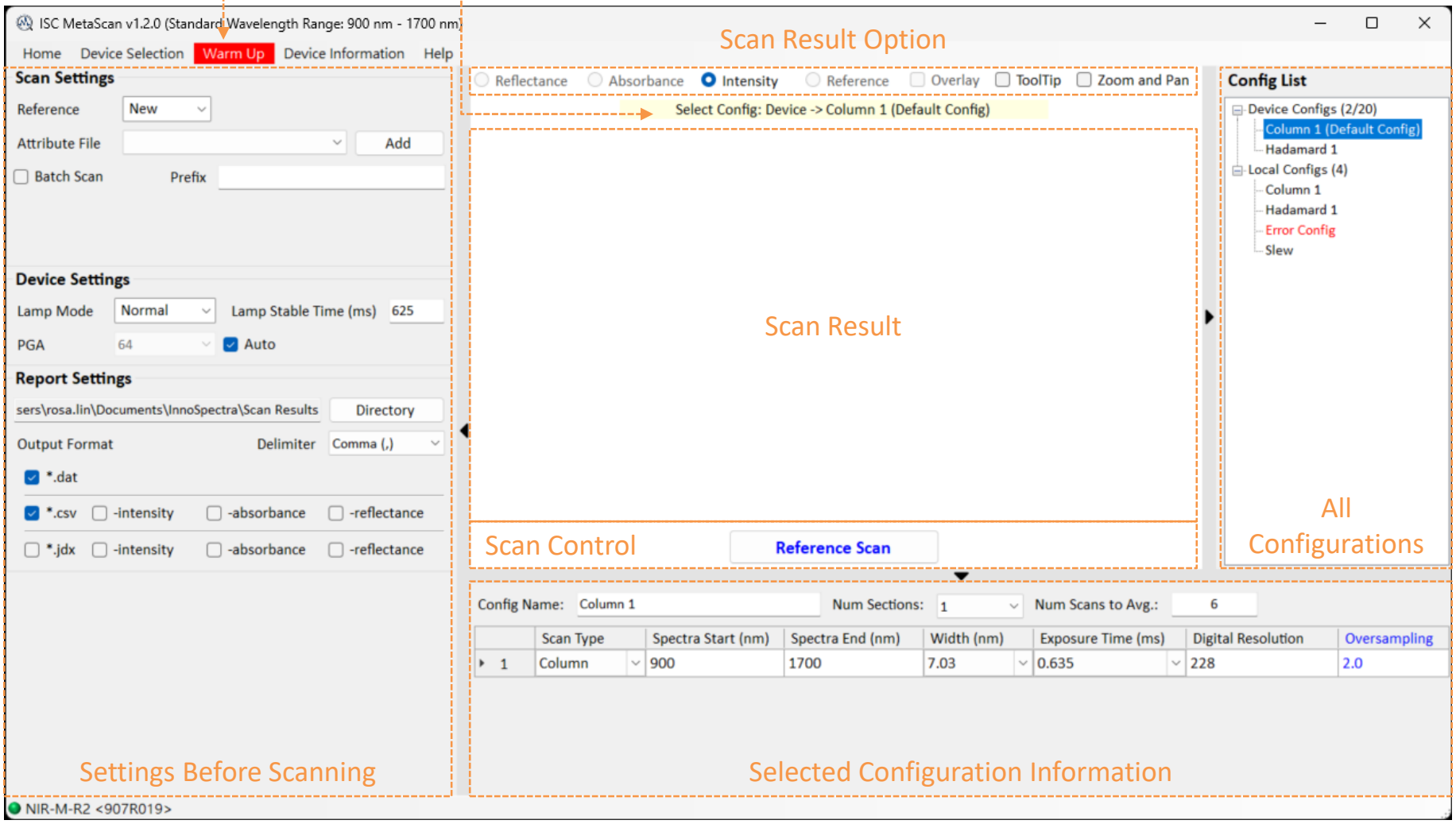
- **Device Selection**: Select one device and connect it directly. The connected device shows a tick.
- **Device Information**: Direct to information view which shows the device related information.
- **Help**:
  - **InnoSpectra Corp. Website**: Go to ISC website.
  - **GitHub**: Go to ISC GitHub.
  - **About ISC MetaScan**: Direct to information view which includes GUI version, built time and license agreement.



Quick Scan

After entering the page, the warm up reminder will be displayed.

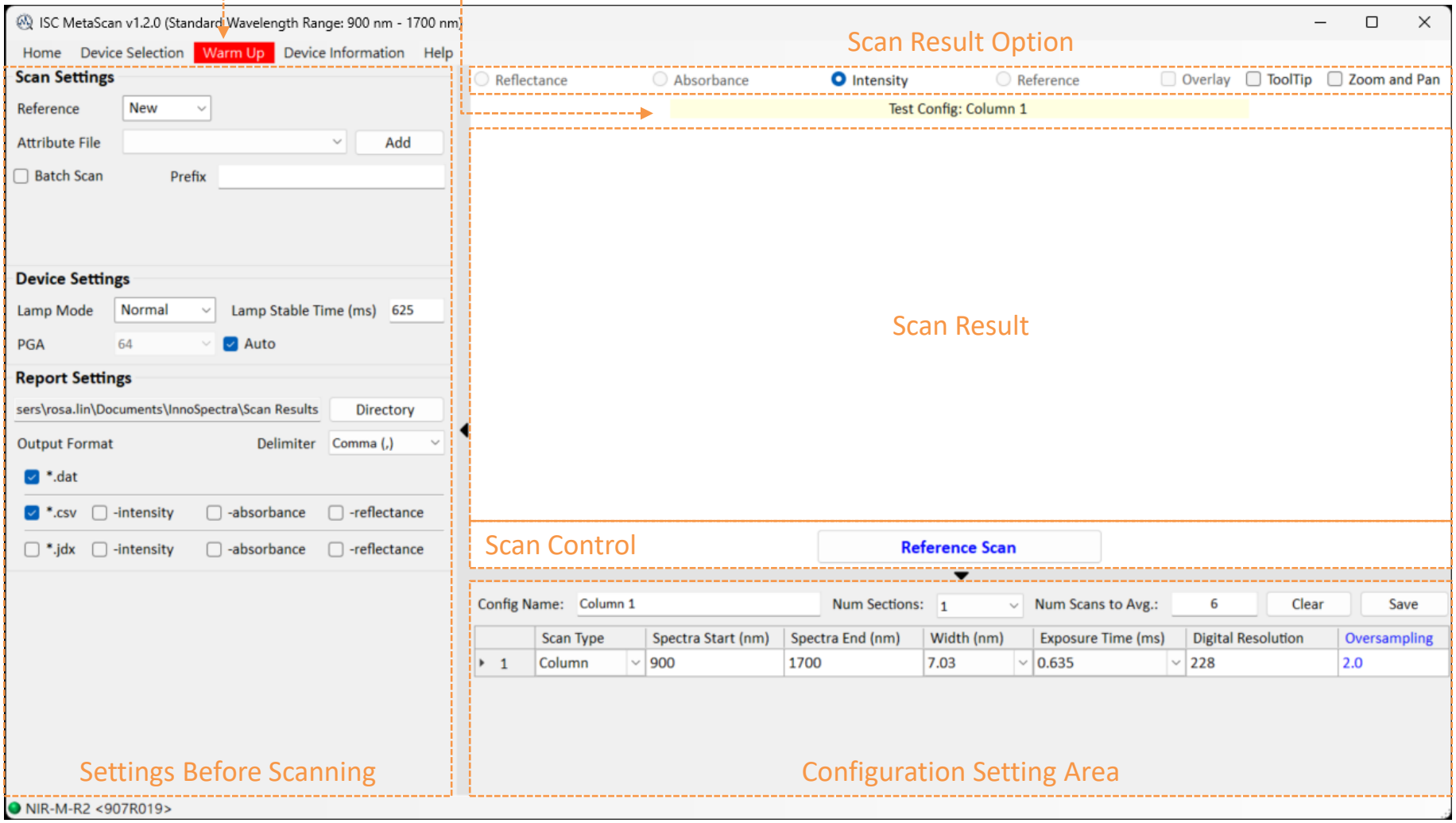
After entering the page, the device default configuration will be selected.



Set Configuration and Scan

After entering the page, the warm up reminder will be displayed.

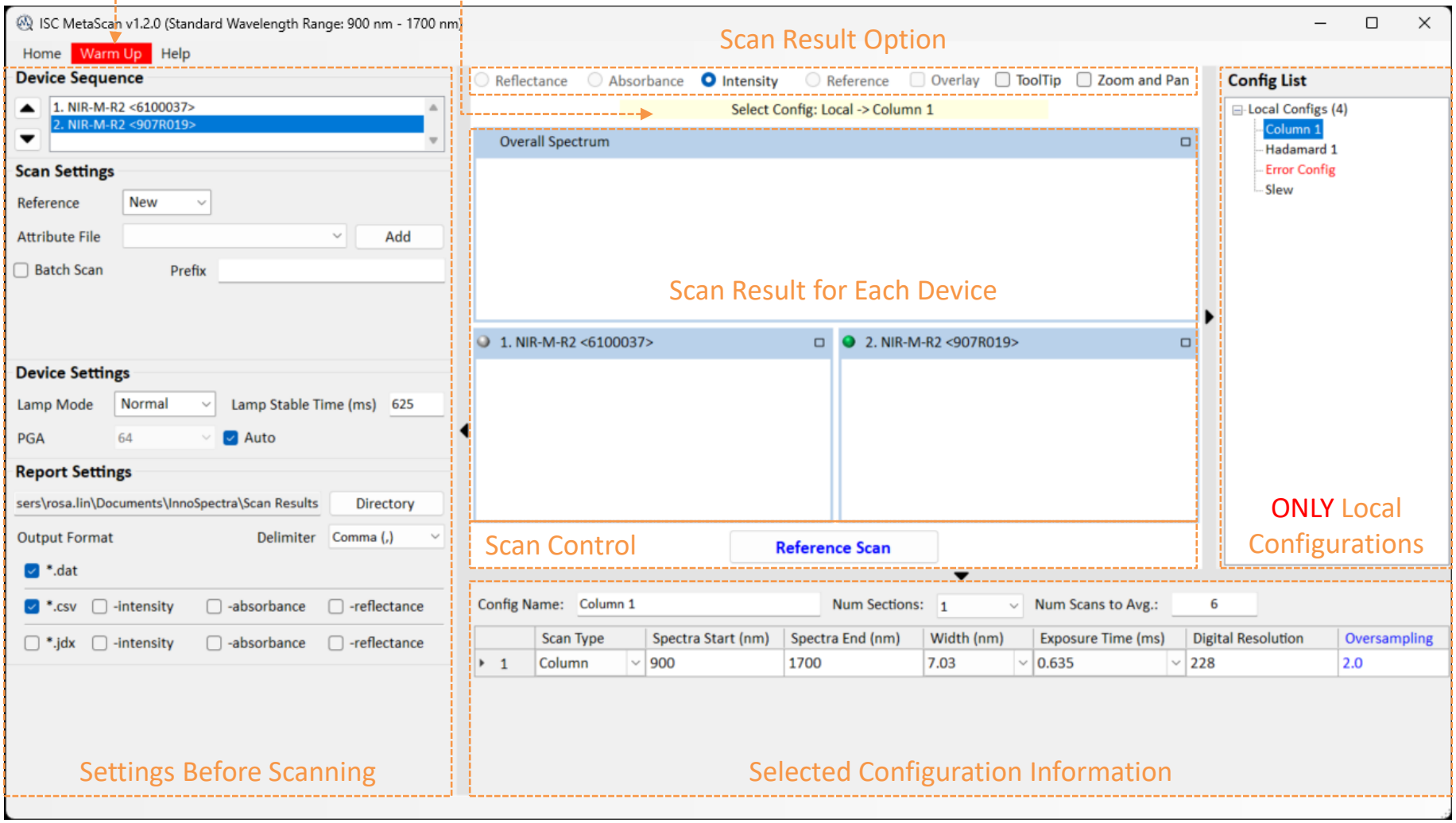
After entering the page, a test configuration will be displayed.



Multi-Device Scan

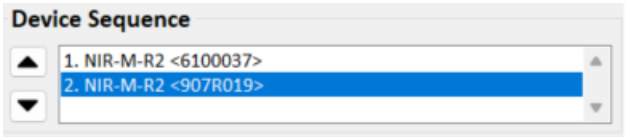
After entering the page, the warm up reminder will be displayed.

After entering the page, the first valid configuration will be selected.



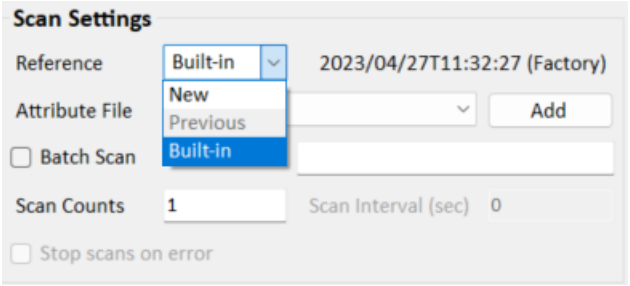
Device Sequence

- All devices of the same model are displayed.
- Provides up and down buttons to adjust the scanning order of devices.
- The current connected device will display white text on a blue background.



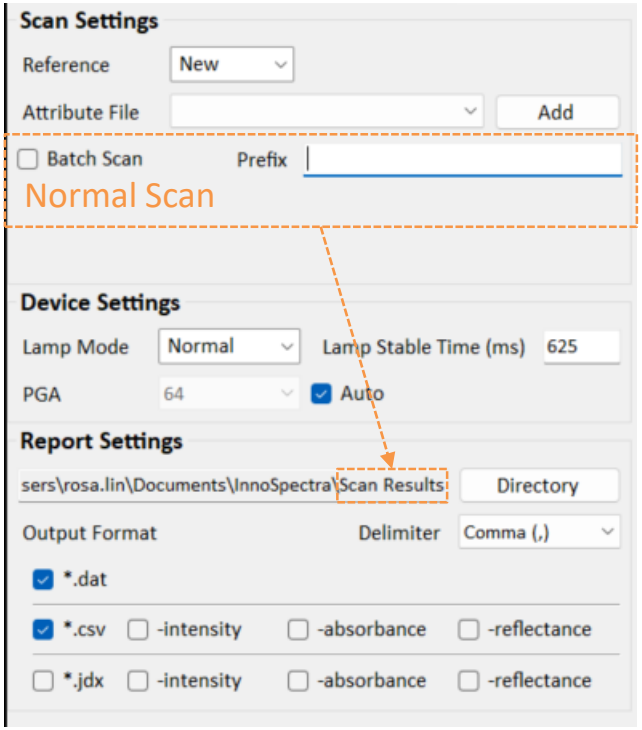
Scan Settings

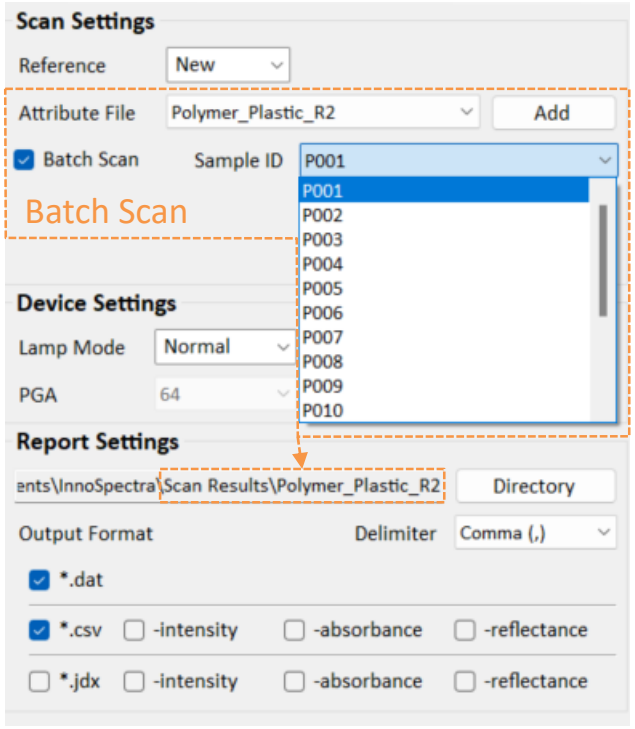
- **Reference Selection**: Provides the user to choose the reference for the absorbance or reflectance graph.
  - **New**: Place a white reference sample on the scan window and perform a new reference scan. This new scan is stored on the PC and can then be selected with the “Previous” reference radio button.
  - **Previous**: Choose the reference from the previous use of the “New” option.
  - **Built-In**: Interpolates the reference stored on TIVA EEPROM at the factory to match the current scan configuration parameters.
- **Attribute File**: If the user would like to use batch scan, the attribute file is required, and the file needs to be added. When user adds an attribute file, the system will automatically create a directory with the same name as the attribute file under the report directory, and copy the attribute file to this directory.
- **Enable/Disable Batch Scan**: Controls batch scan enable/disable. When the function is enabled, it needs to be used with attribute file. When the function is disabled, it is equivalent to a normal scan.
- **Continuous Scan**: Provides the user to do single scan, auto continuous scan and manual continuous scan. The system will calculate the average scan data based on the number of scans.



Normal Scan / Batch Scan

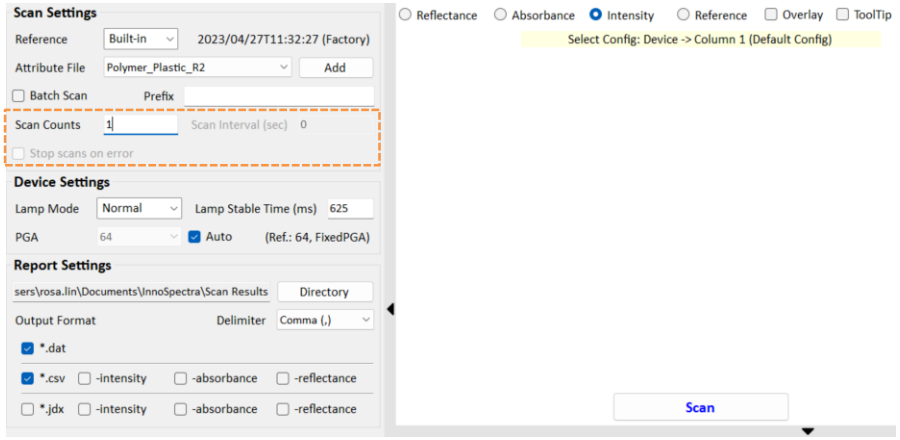
- Normal scan provides filename prefix input. Scan results are saved under the report directory.
- Batch scan provides sample ID selection. Scan results are saved to a directory with the same name as the attribute file under the report directory.



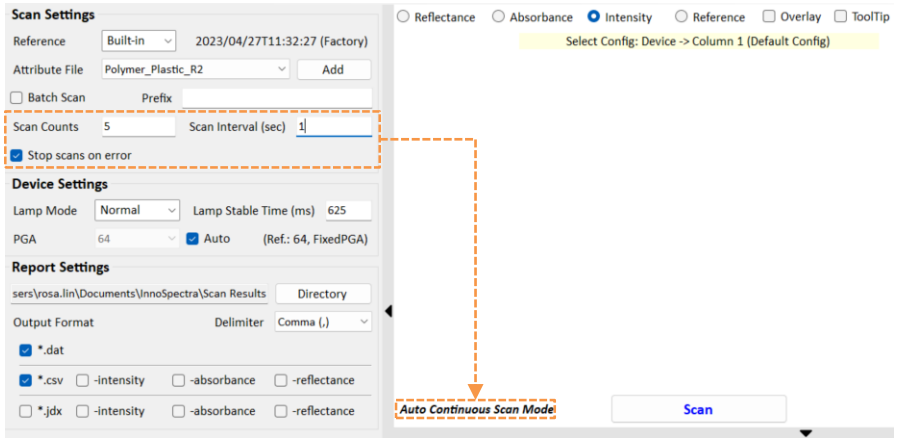


Single Scan / Auto Continuous Scan / Manual Continuous Scan

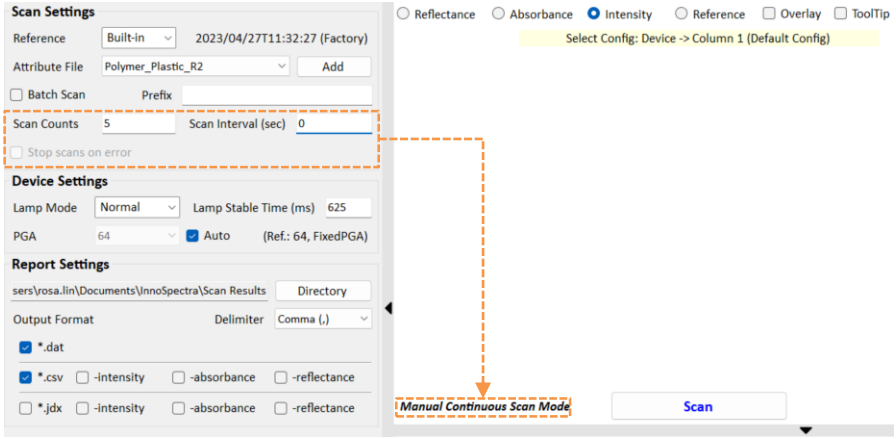
Single Scan Mode:
Scan Counts = 1



Auto Continuous Scan Mode:
Scan Counts > 1 & Scan Interval **> 0**

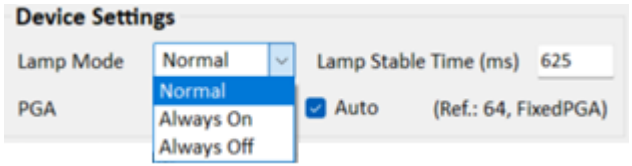


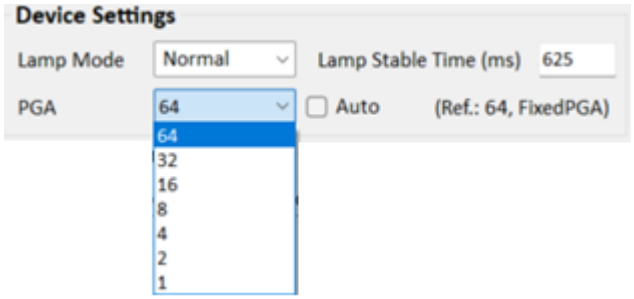
Manual Continuous Scan Mode:
Scan Counts > 1 & Scan Interval **= 0**



Device Settings

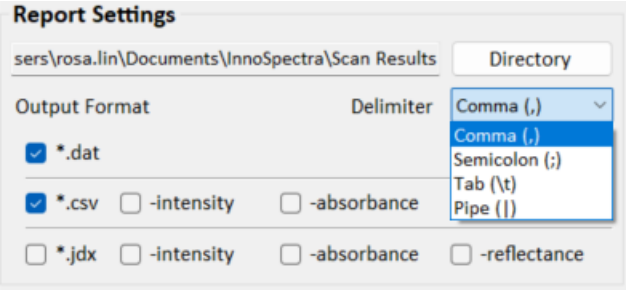
- **Lamp Mode**: Controls lamp normal and always on/off. When “Normal” is selected, user can set lamp stable time to extend lamp stabilization. This allows the user to avoid any lamp stability issues and reduce lamp wear caused by turning on and off the lamps, as well as the additional time needed to wait for the lamps to stabilize before executing a scan.
- **PGA Gain Control**: Provides the user to choose the PGA gain setting for scan.
    - **Auto**: The system will calculate a suitable gain value.
    - **Fixed**: The user can select one gain value before starting a scan.





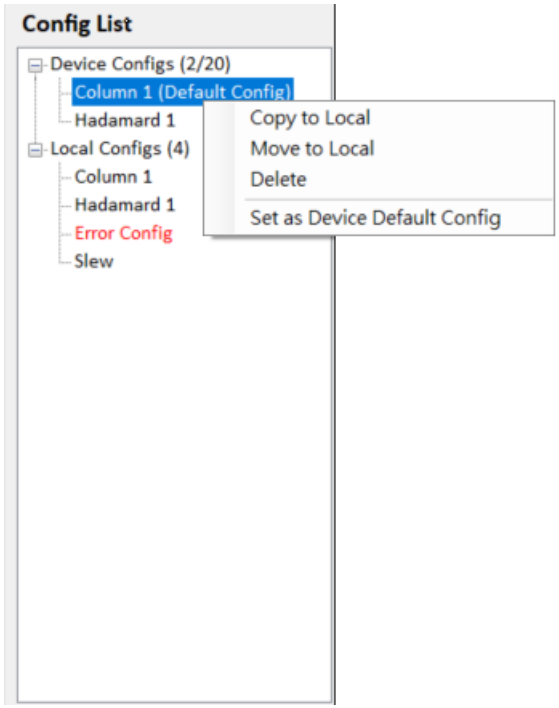
Report Settings

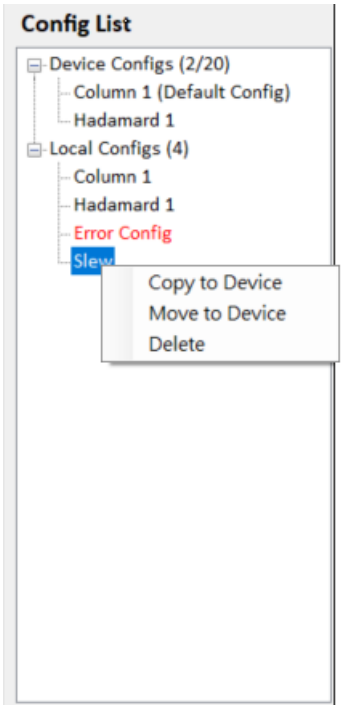
- **Directory**: Provides the user to choose where to store scan reports.
- **Output Format**: Provides the user to save which kind of file. The *.dat and *.csv files are always saved.
- **File Delimiter**: Provides the user to select the delimiter type for the scan report.



Configuration List

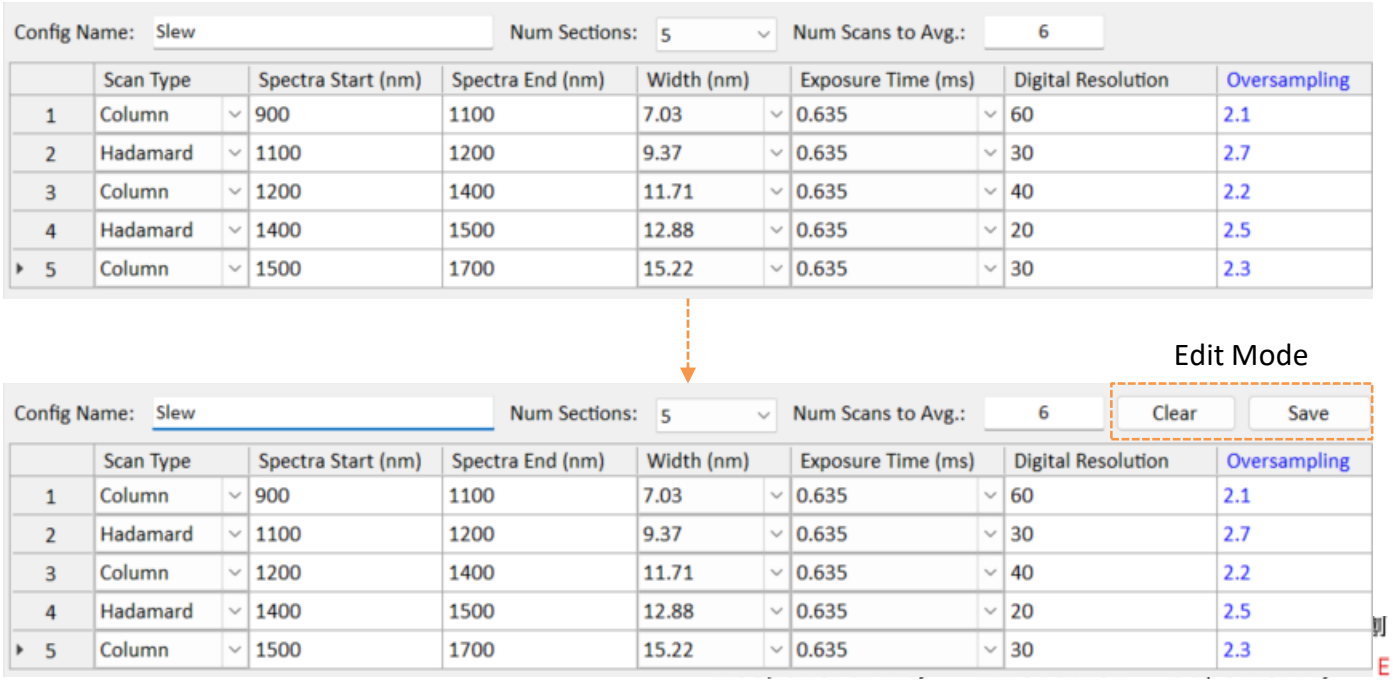
- The config list includes device configurations and local configurations. Only display local configurations in Multi-Device Scan.
- Device configurations are saved on the device at most 20 sets.
- Local configurations are saved on the PC.
- If the configuration is invalid, it will display the red text.
- The config list control functions are placed on the right mouse button.
    - **Set as Device Default Configuration**: Set the configuration as device default configuration for Quick Scan default use.
    - **Copy/Move**: Provides the user to copy/move configuration(s) between device and PC. Configuration(s) can optionally be overwritten based on the same configuration name.
    - **Delete**: Provides the user to delete configuration(s).





Scan Configuration

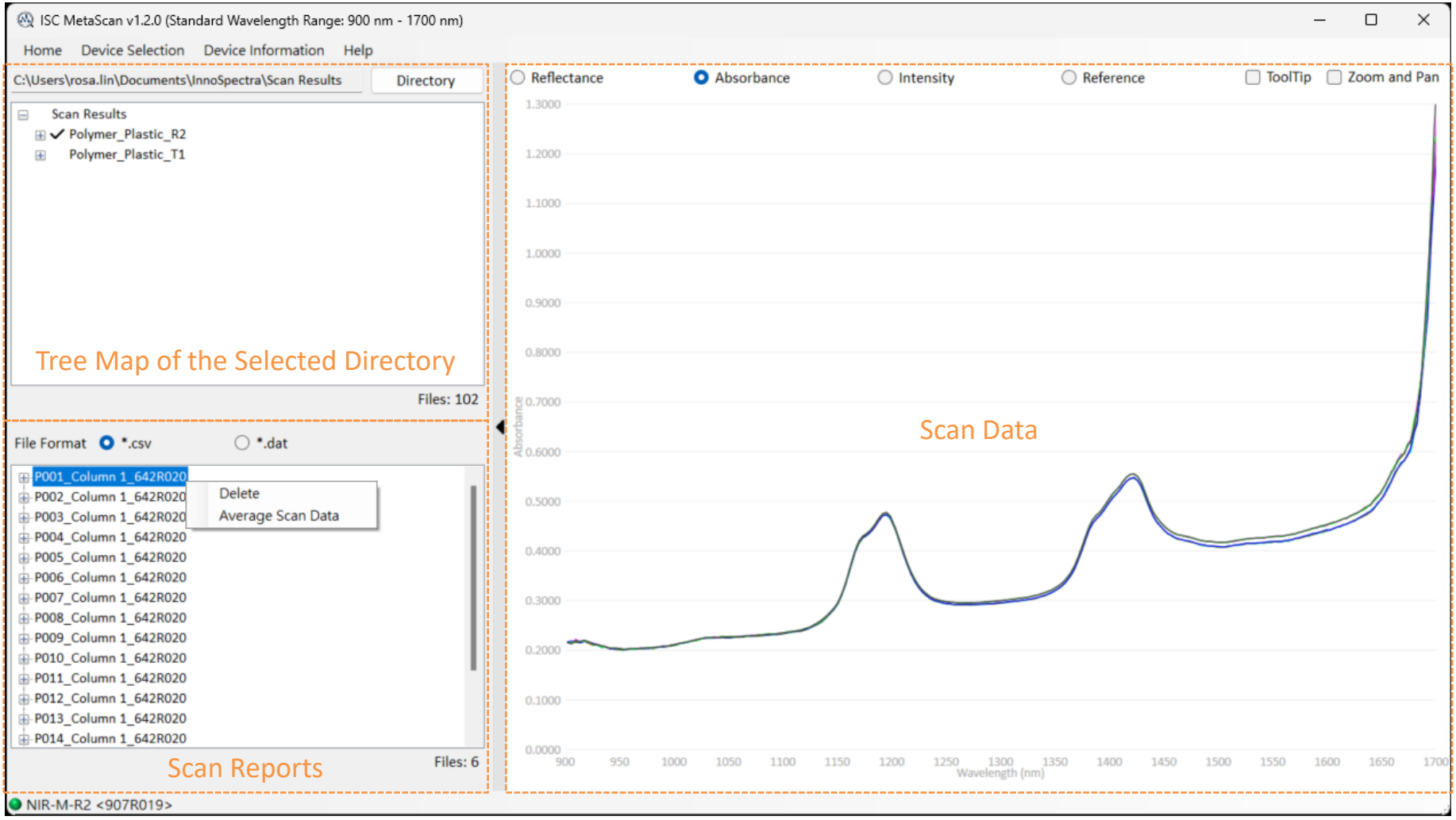
- The information of scan configuration items are as follows:
  - **Config Name**: Configuration name which display to the list.
  - **Number of Scans to Average**: This is the repeated continuous scans that are averaged together.
  - **Number of Sections**: A scan can be broken up into 1 ~ 5 sections. Each section can have individual set of the following parameters:
  - **Scan Type**:
    - **Column**: Selects one wavelength at a time.
    - **Hadamard**: Creates a set with several wavelengths multiplexed at a time and then decodes the individual wavelengths.
  - **Spectra Range (nm)**: Start and End wavelengths or spectral range of interest for the scan.
  - **Width (nm)**: This number selects the width of the groups of pixels in the generated Column or Hadamard patterns.
  - **Exposure Time (ms)**: The exposure time can be individually set for each section in the range of 0.635ms to 60.960ms.
  - **Digital Resolution**: This number defines how many wavelength points are captured across the defined spectral range. Each wavelength point corresponds to a pattern that is displayed on the DMD.
  - **Oversampling**: This number displays the oversampling rate for the section pattern width setting.
- The user can directly click on the content to enter the edit mode for modification.



	Scan Type	Spectra Start (nm)	Spectra End (nm)	Width (nm)	Exposure Time (ms)	Digital Resolution	Oversampling
1	Column	900	1100	7.03	0.635	60	2.1
2	Hadamard	1100	1200	9.37	0.635	30	2.7
3	Column	1200	1400	11.71	0.635	40	2.2
4	Hadamard	1400	1500	12.88	0.635	20	2.5
5	Column	1500	1700	15.22	0.635	30	2.3

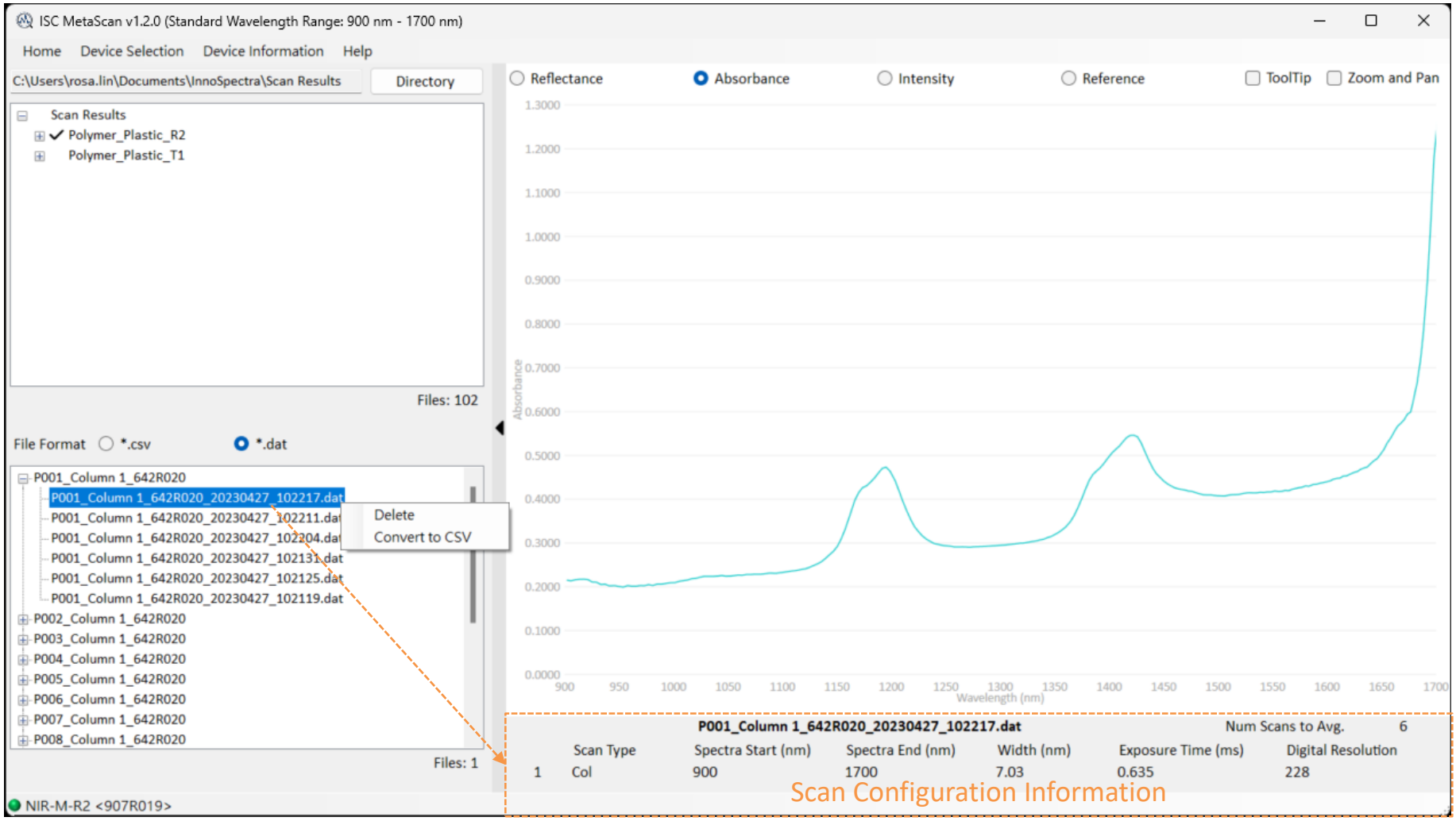
Report Viewer

- All subdirectories under the selected directory are displayed. All the readable files in the selected directory are displayed.
- The file control functions are placed on the right mouse button which contains delete files, average scan data, and convert to CSV with *.dat.
- The “Average Scan Data” function is only available for selected multiple scan reports.



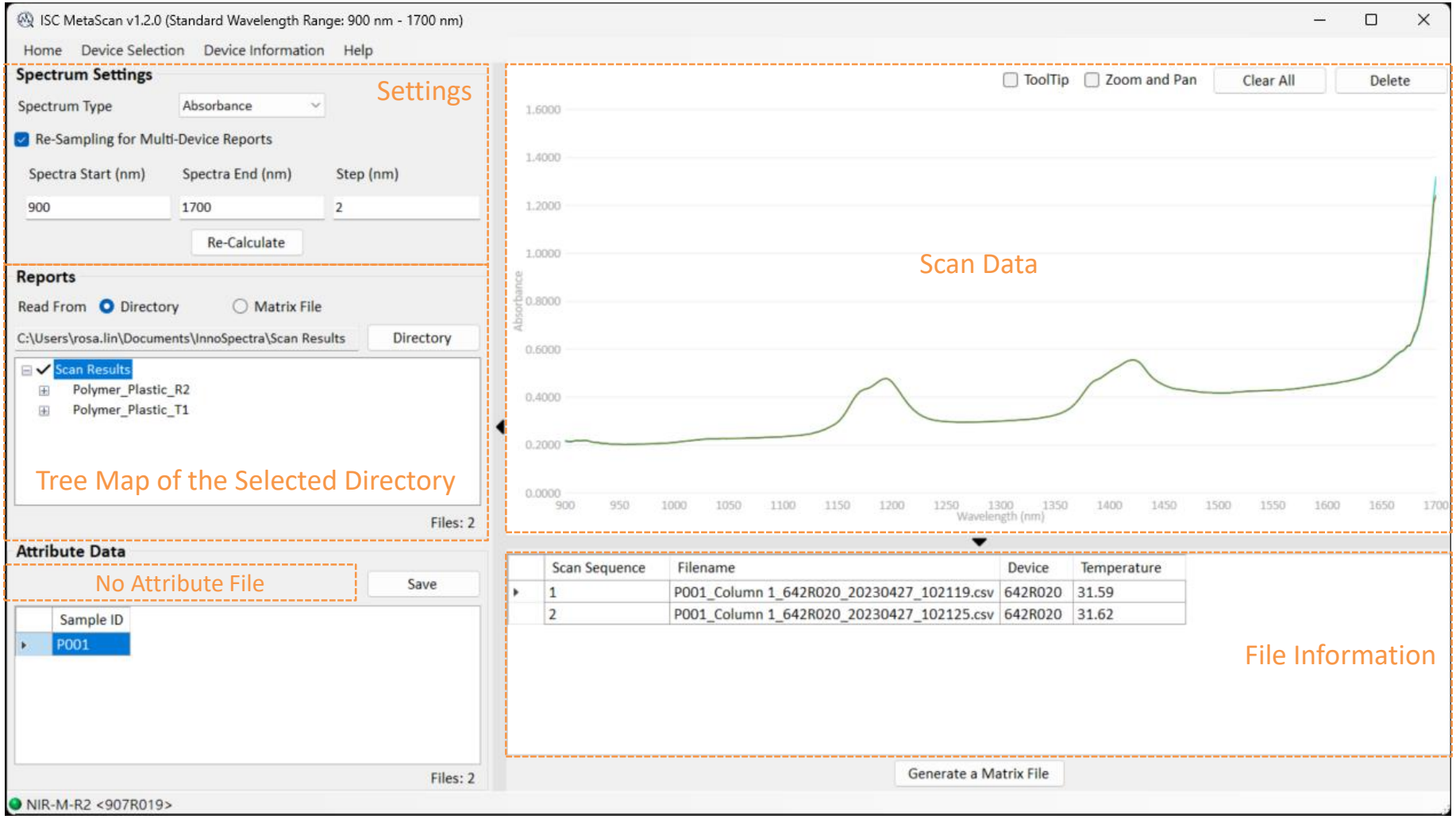
Report Viewer (Cont.)

- The scan configuration information is displayed only when ONE file is selected.



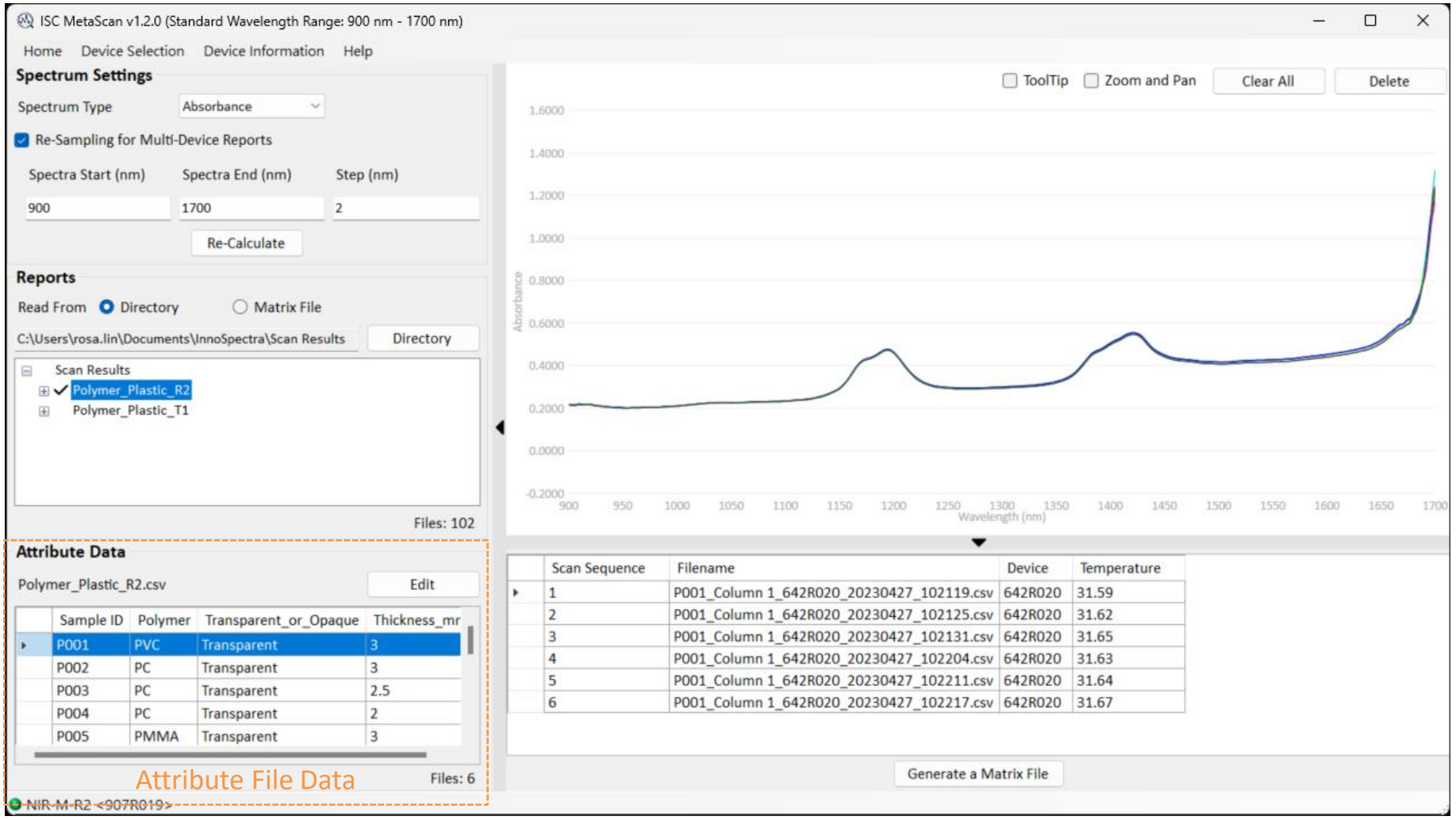
Data Collection

- All subdirectories under the selected directory are displayed.
- Classify data according to sample ID if the attribute file exists.
- If the attribute file does not exist, the system will classify by file name as the sample id.



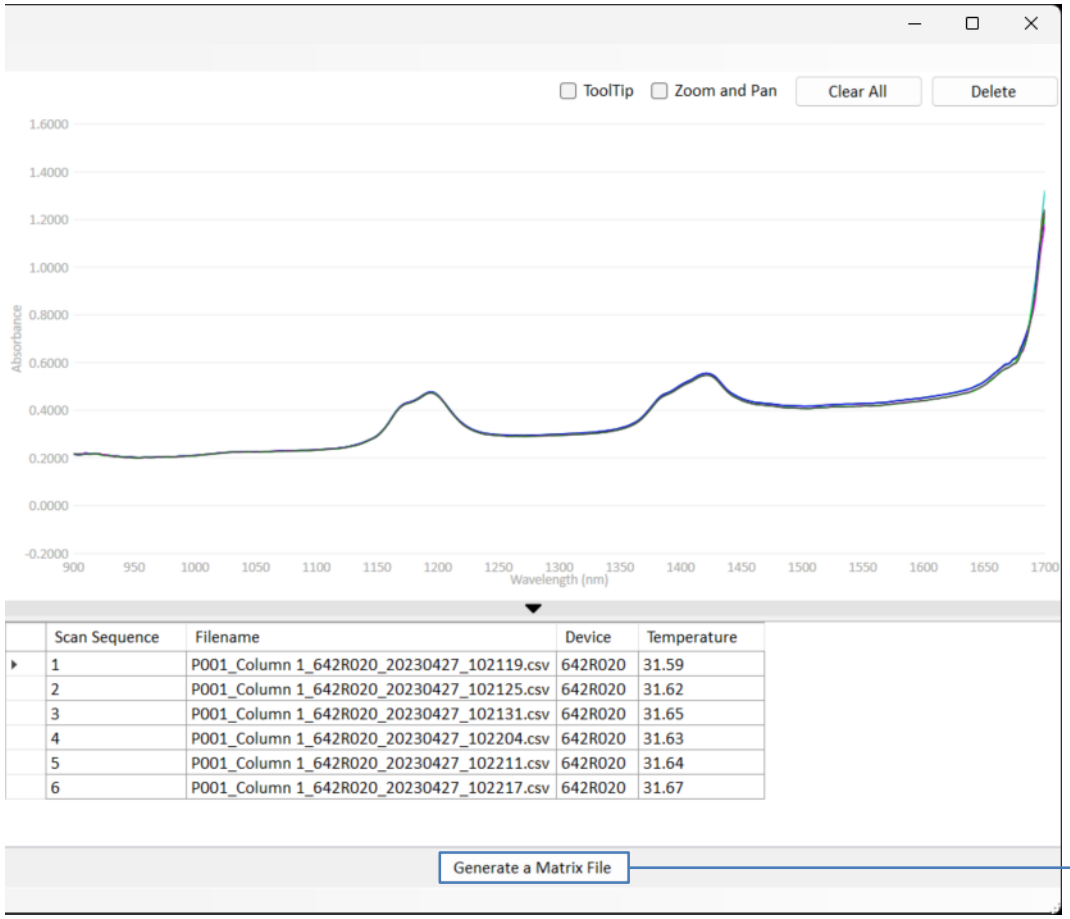
Data Collection (Cont.)

- If the attribute file exists, the system will display the file data.
- The sample ID without data displays a gray background.



Data Collection (Cont.)

- The system provides generating a matrix file for modeling.

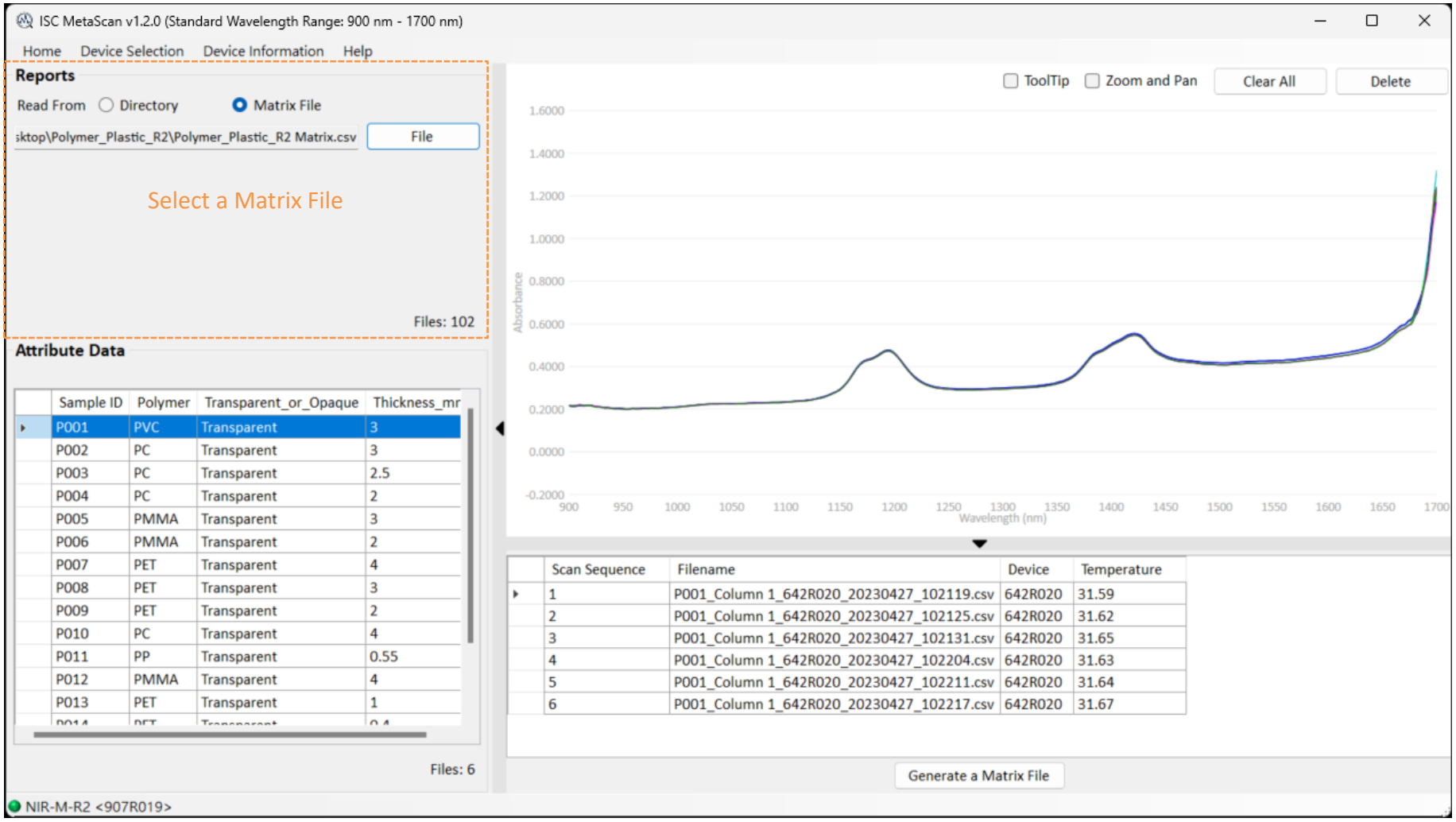


Scan Sequence	Filename	Device	Temperature
1	P001_Column 1_642R020_20230427_102119.csv	642R020	31.59
2	P001_Column 1_642R020_20230427_102125.csv	642R020	31.62
3	P001_Column 1_642R020_20230427_102131.csv	642R020	31.65
4	P001_Column 1_642R020_20230427_102204.csv	642R020	31.63
5	P001_Column 1_642R020_20230427_102211.csv	642R020	31.64
6	P001_Column 1_642R020_20230427_102217.csv	642R020	31.67

Scan Sequ	Sample ID	Polymer	Thickness	Filename	Device	Temperatu	900	902	904
1	P001	PVC	3	P001_Col	642T006	31.9	0.068833	0.069401	0.069943
2	P001	PVC	3	P001_Col	642T006	31.94	0.069941	0.070456	0.070947
3	P001	PVC	3	P001_Col	642T006	31.99	0.071208	0.071587	0.071974
4	P001	PVC	3	P001_Col	642T006	32.06	0.072363	0.072907	0.073428
5	P001	PVC	3	P001_Col	642T006	32.1	0.070309	0.070813	0.071318
1	P002	PC	3	P002_Col	642T006	32.16	0.207686	0.207872	0.208013
2	P002	PC	3	P002_Col	642T006	32.2	0.208691	0.208883	0.209027
3	P002	PC	3	P002_Col	642T006	32.25	0.209174	0.209266	0.209323
4	P002	PC	3	P002_Col	642T006	32.3	0.208522	0.20886	0.209133
5	P002	PC	3	P002_Col	642T006	32.35	0.210387	0.210529	0.210631
1	P003	PC	2.5	P003_Col	642T006	32.58	0.055994	0.056335	0.056653
2	P003	PC	2.5	P003_Col	642T006	32.62	0.055206	0.055691	0.056131
3	P003	PC	2.5	P003_Col	642T006	32.65	0.054909	0.055273	0.055615
4	P003	PC	2.5	P003_Col	642T006	32.7	0.054999	0.055343	0.055664
5	P003	PC	2.5	P003_Col	642T006	32.74	0.05432	0.054748	0.055144
1	P004	PC	2	P004_Col	642T006	32.73	0.050778	0.051288	0.051762
2	P004	PC	2	P004_Col	642T006	32.77	0.052468	0.053018	0.053525
3	P004	PC	2	P004_Col	642T006	32.82	0.055838	0.056415	0.056942
4	P004	PC	2	P004_Col	642T006	32.87	0.059141	0.059602	0.060031
5	P004	PC	2	P004_Col	642T006	32.91	0.066654	0.067062	0.067443
1	P005	PMMA	3	P005_Col	642T006	32.92	0.044095	0.043974	0.043778
2	P005	PMMA	3	P005_Col	642T006	32.95	0.044174	0.04397	0.043721
3	P005	PMMA	3	P005_Col	642T006	32.99	0.044419	0.044112	0.043774
4	P005	PMMA	3	P005_Col	642T006	33.03	0.044519	0.044261	0.043955
5	P005	PMMA	3	P005_Col	642T006	33.08	0.045055	0.044711	0.044336

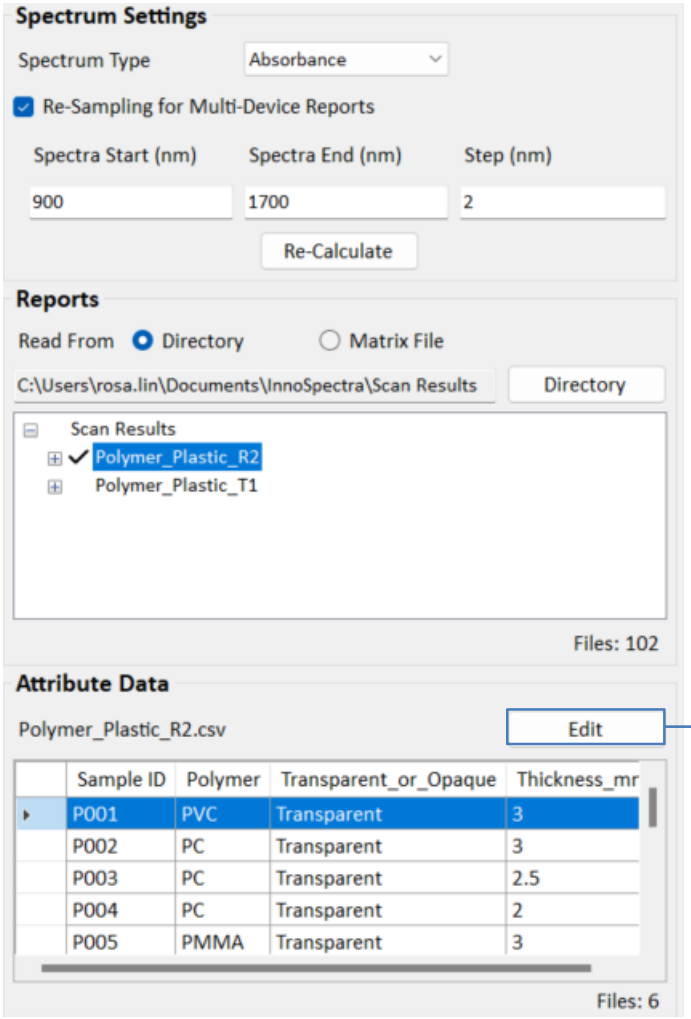
Data Collection (Cont.)

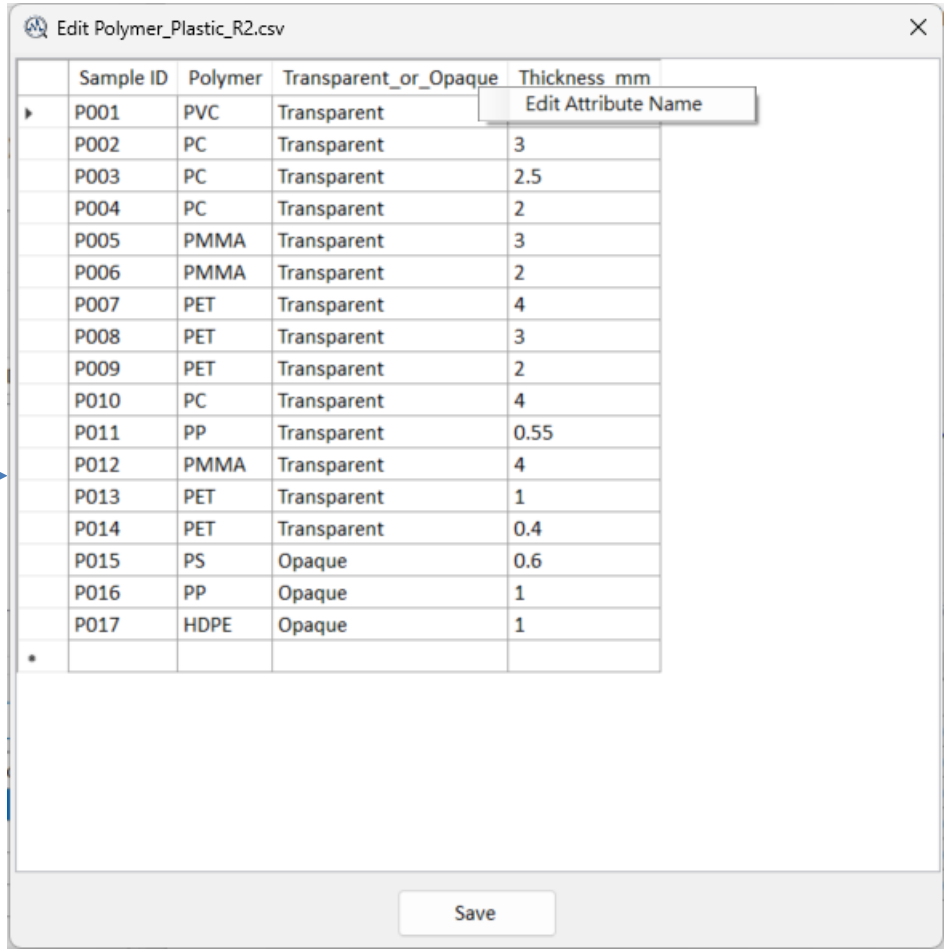
- The system provides reading a matrix file for viewing and organizing.



Attribute File

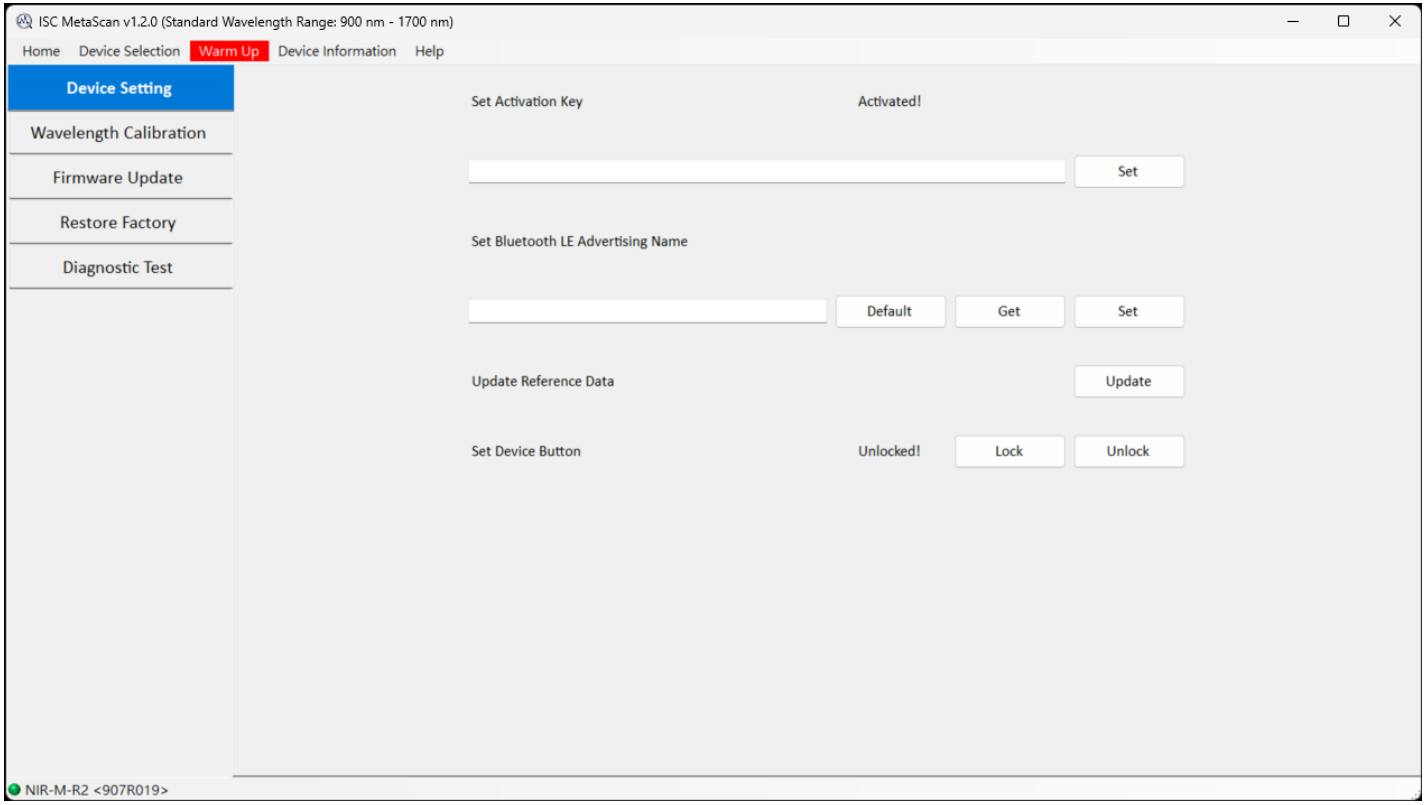
- The system provides simple editing functions for attribute files: adding row, editing attribute name, and modifying content.
- “Sample ID” is required field, and the scan data is classified according to this.





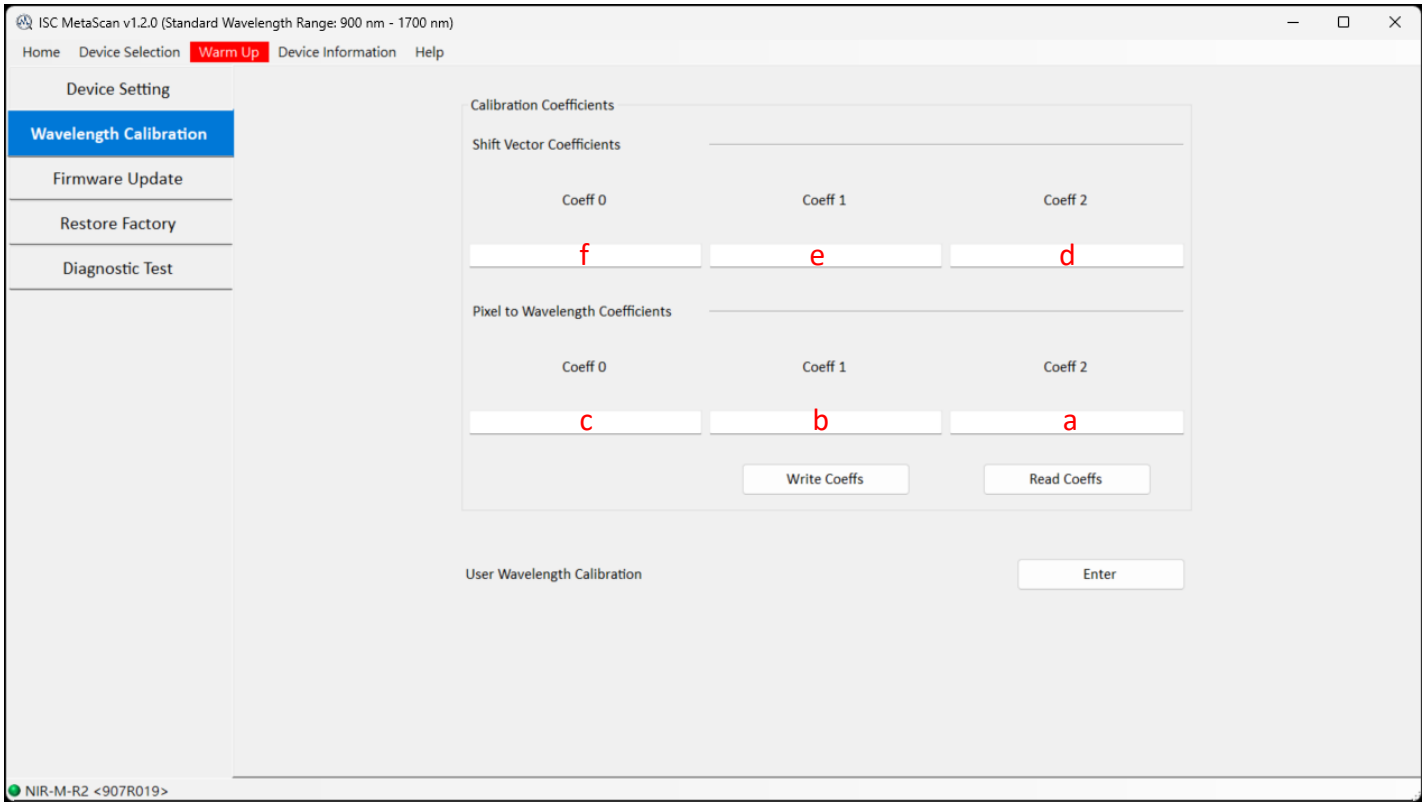
Utility – Device Setting

- **Set Activation Key**:
  - Key Activated Functions: Lamp Usage Time, Bluetooth LE Advertising Name Default/Get/Set, Lock/Unlock Device Button, Restore Calibration Data.
  - Key Not Activated: None.
- **Set Bluetooth LE Advertising Name**: Sets to the default advertising name, sets the customized advertising name to the device, or gets the current advertising name of the device.
- **Update Reference Data**: Replace factory reference data to customized reference data.
- **Set Device Button**: Lock or unlock the button on the device.



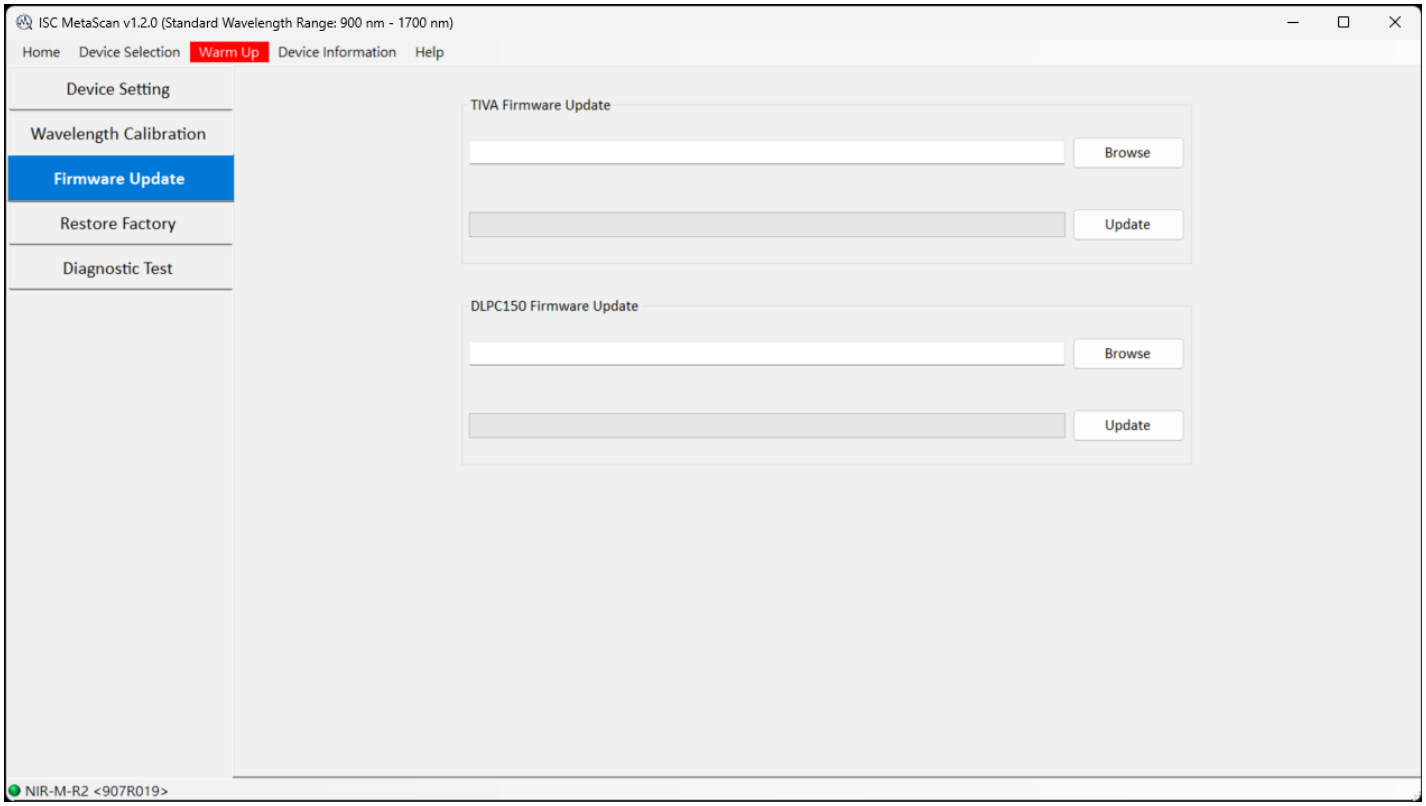
Utility – Wavelength Calibration

- **Calibration Coefficients**:
  - Calibration Coefficient Parameter Mapping
    - Shift Vector: $Y = d \times X^2 + e \times X + f$
    - Pixel to Wavelength: $Wavelength = a \times Pixel^2 + b \times Pixel + c$
  - **Write Coeffs**: Write coefficients to the device.
  - **Read Coeffs**: Read coefficients from the device.
- **User Wavelength Calibration**: Provides the user with standard materials to do wavelength calibration.



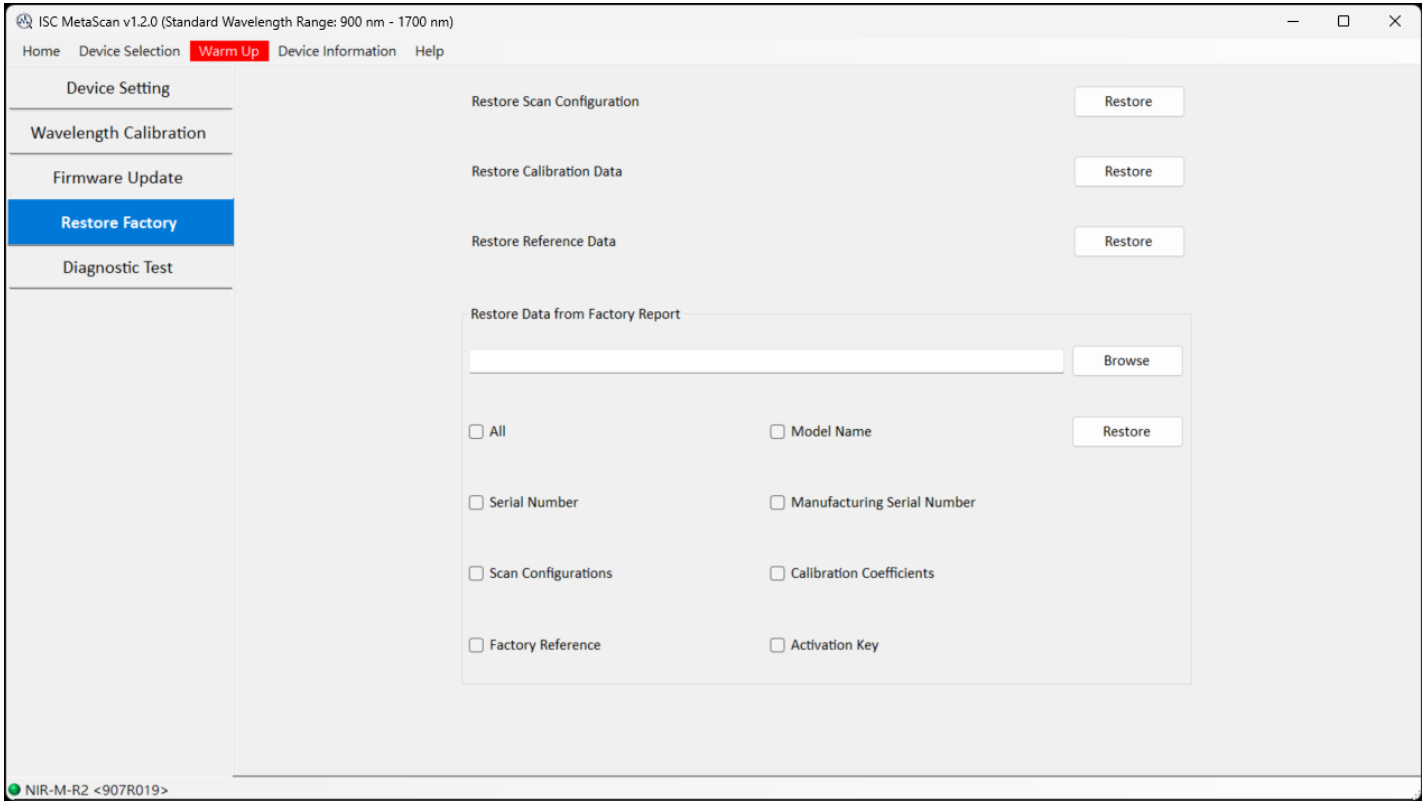
Utility – Firmware Update

- **TIVA Firmware Update**: Binary File for main board.
- **DLPC150 Firmware Update**: Image File for detector board.



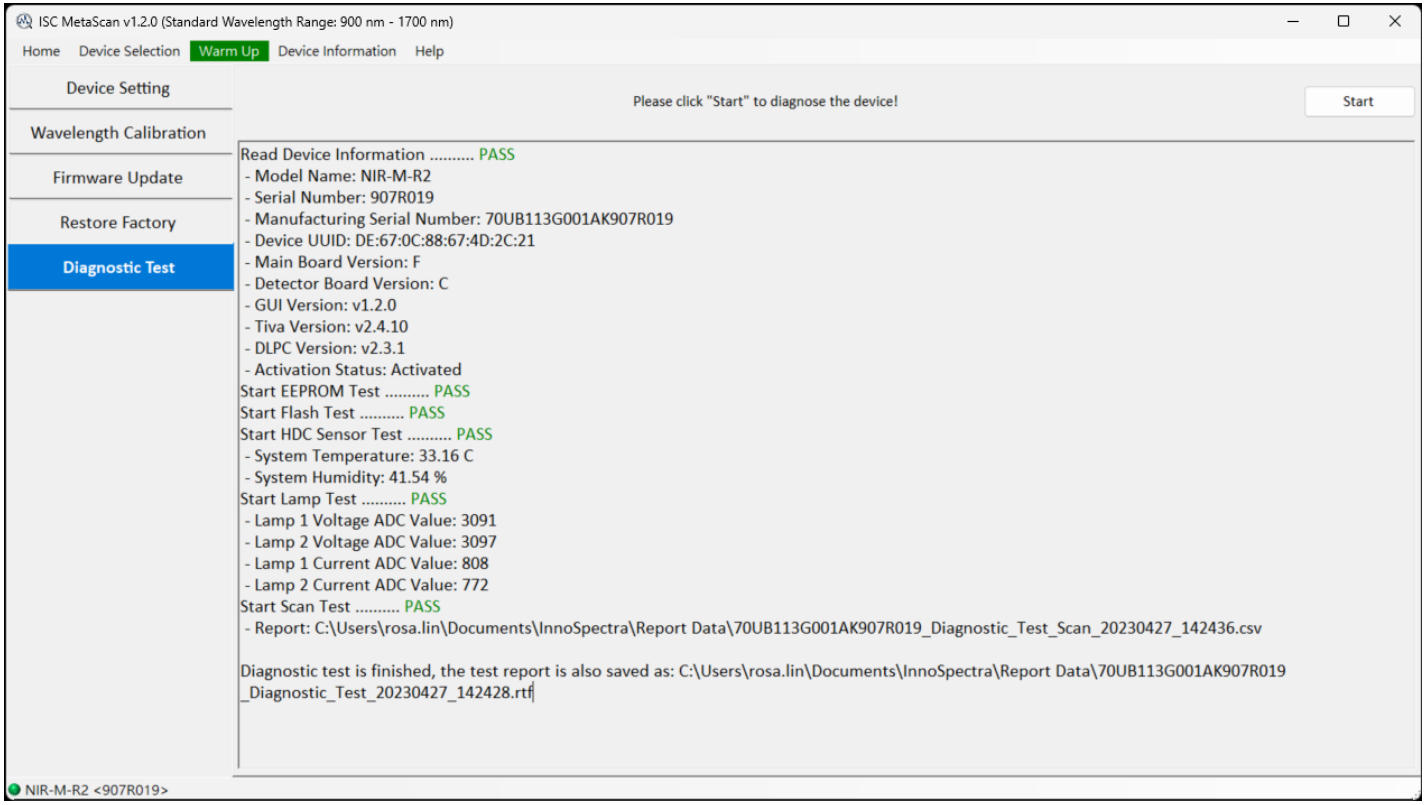
Utility – Restore Factory

- **Restore Scan Configuration**: This function will delete all configurations on the device and restore the default configuration.
- **Restore Calibration Data**: The three conditions should be reached.
  - The Tiva version of device ≥ 2.1.0.67.
  - The device is activated.
  - The factory calibration data has saved in the device.
- **Restore Reference Data**: This function only restores the factory reference data, which cannot be performed without backing up the data. The factory reference data is restored from the PC.
- **Restore Data from Factory Report**: Restores the factory data from factory test report. If the factory report doesn't contain some data, the selection can not display.



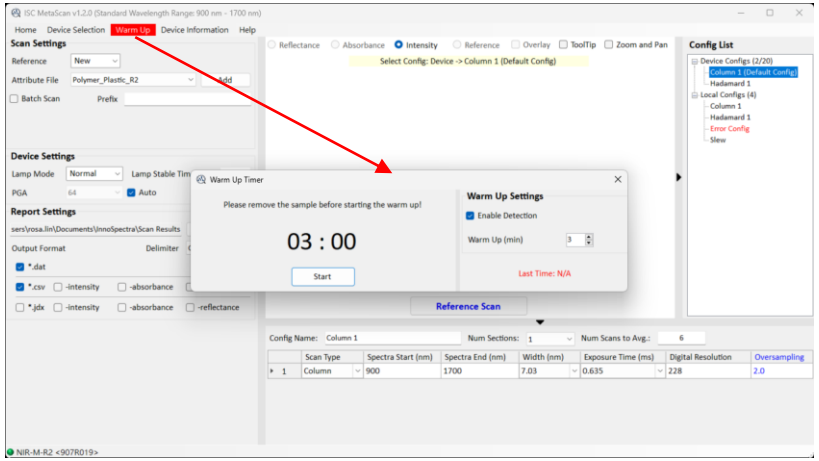
Utility – Diagnostic Test

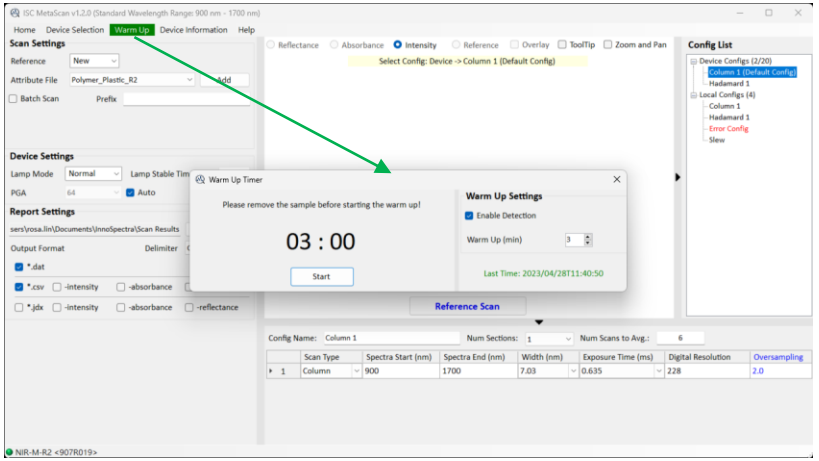
- The system provides software and hardware related tests to help analyze whether there is a problem with the device.

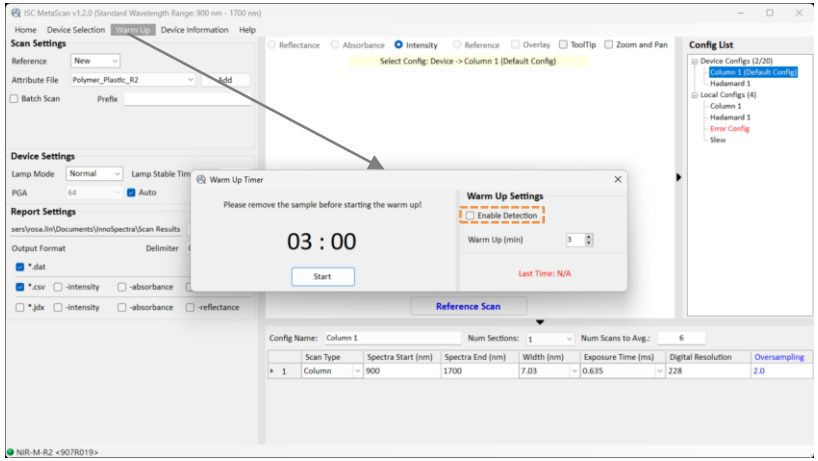


Warm Up Reminder

- If the system detects that the warm up is required, the “Warm Up" button will flash a red background.
- If the system detects that the warm up is not required, the “Warm Up” button will have a green background.
- If the warm up detection is canceled, the "Warm Up" button will have a gray background.

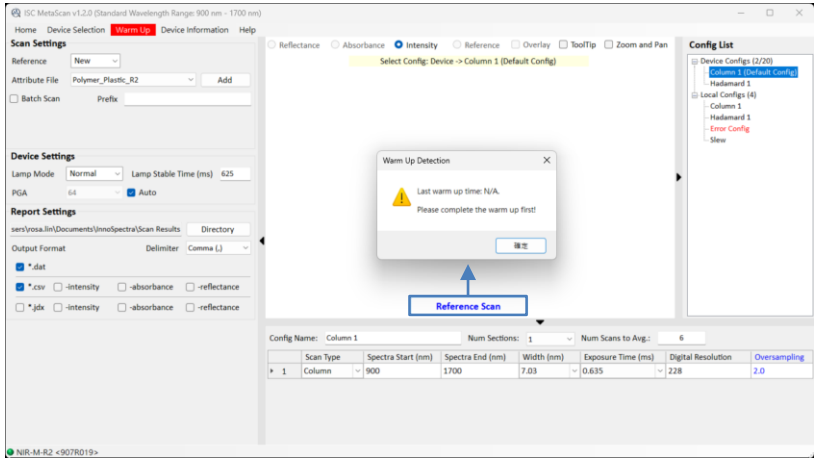


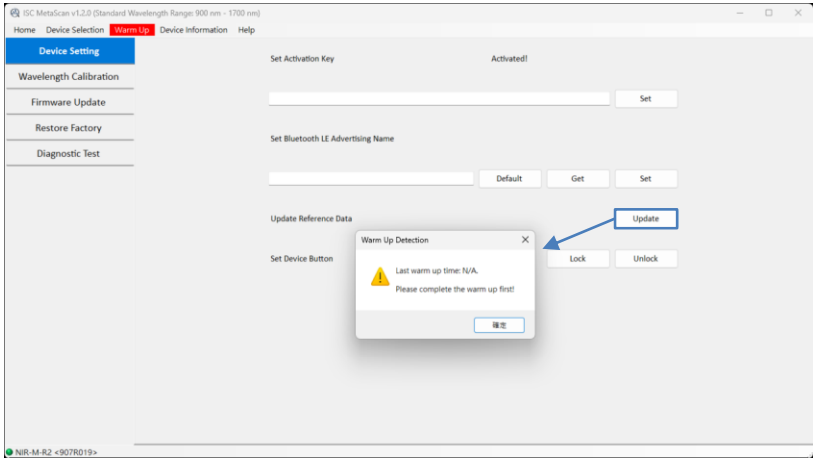


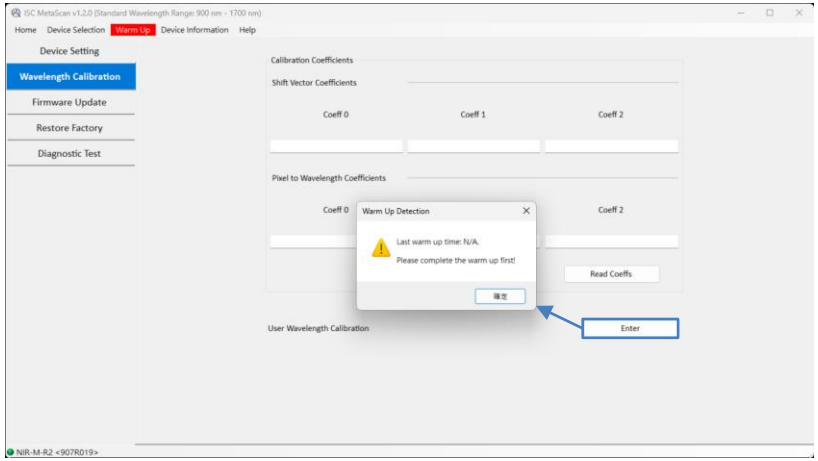


Warm Up Reminder (Cont.)

- If the lamp has not been used for more than 30 minutes, the lamp must be warmed up before scanning, including scan, update reference data, and wavelength calibration functions.

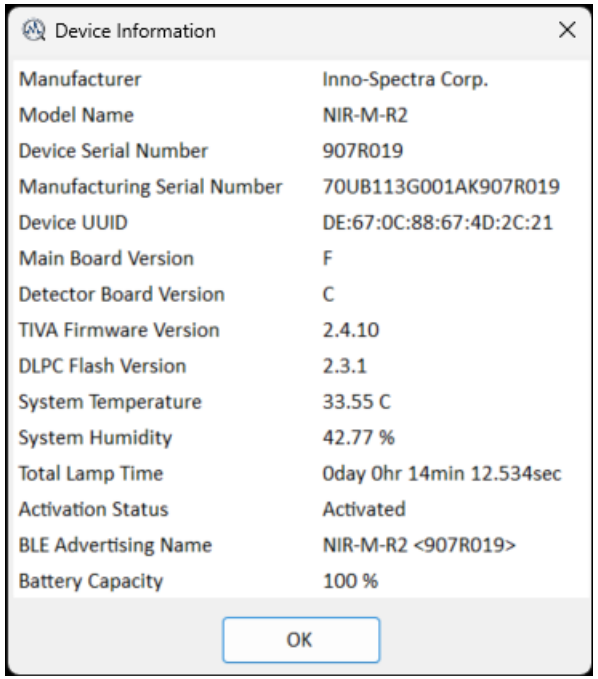




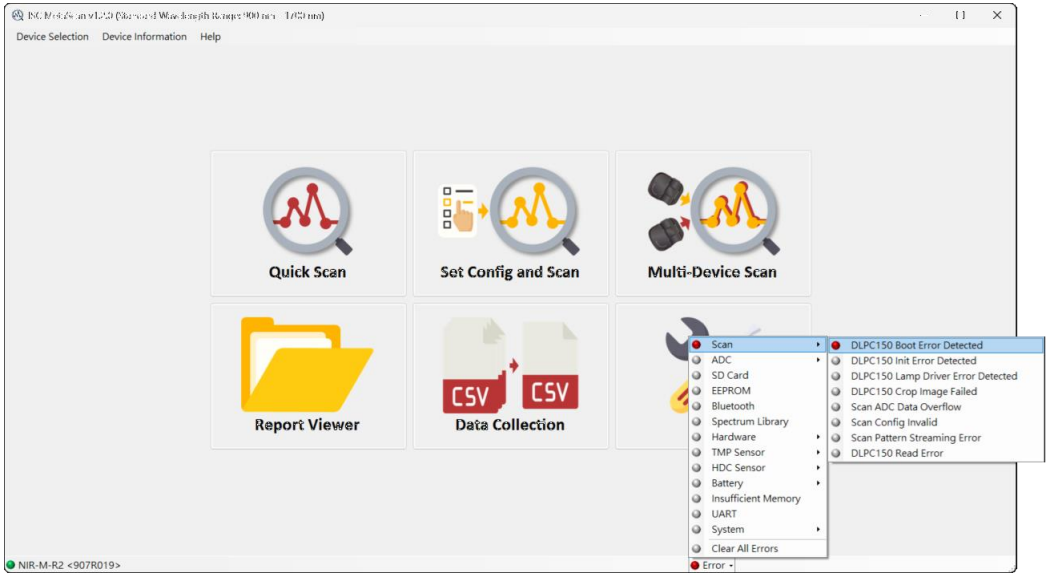


Device Information & Error Status

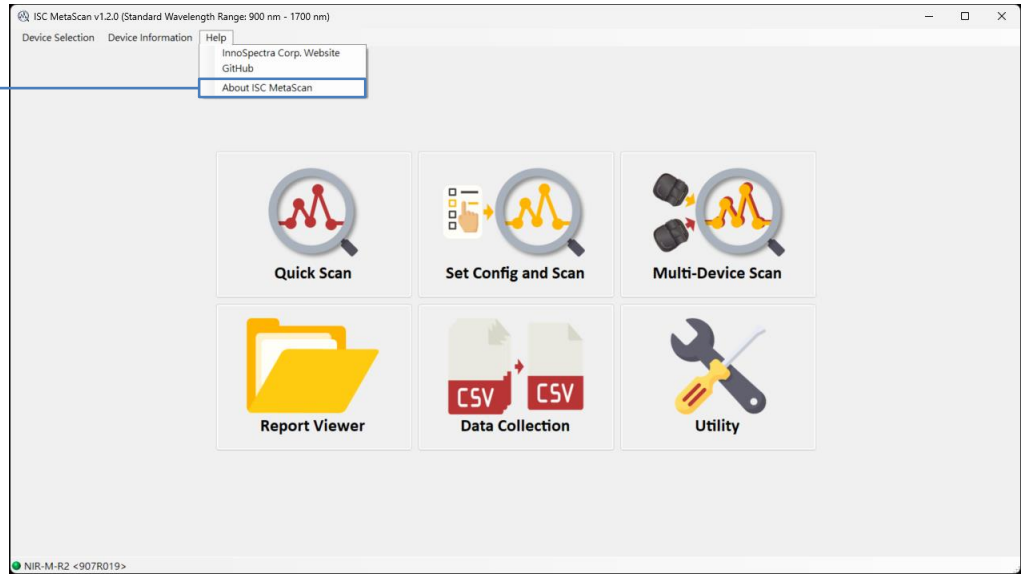
Device Information

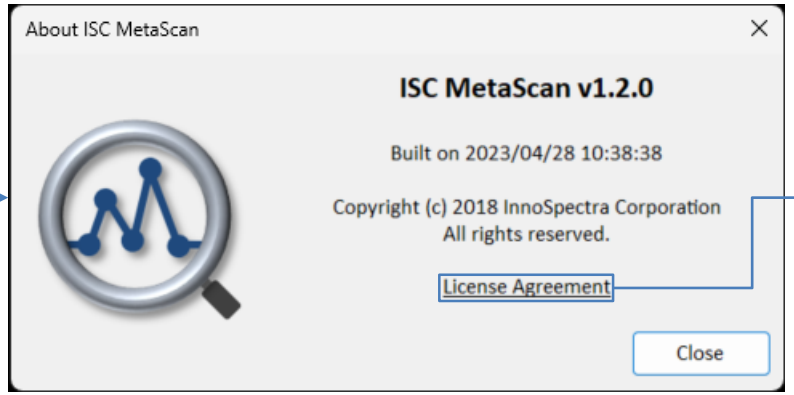


Error Status



About ISC MetaScan & License Agreement

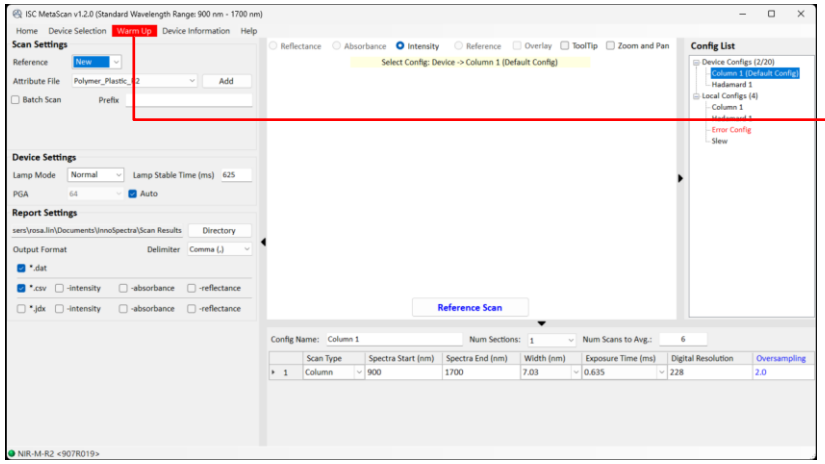


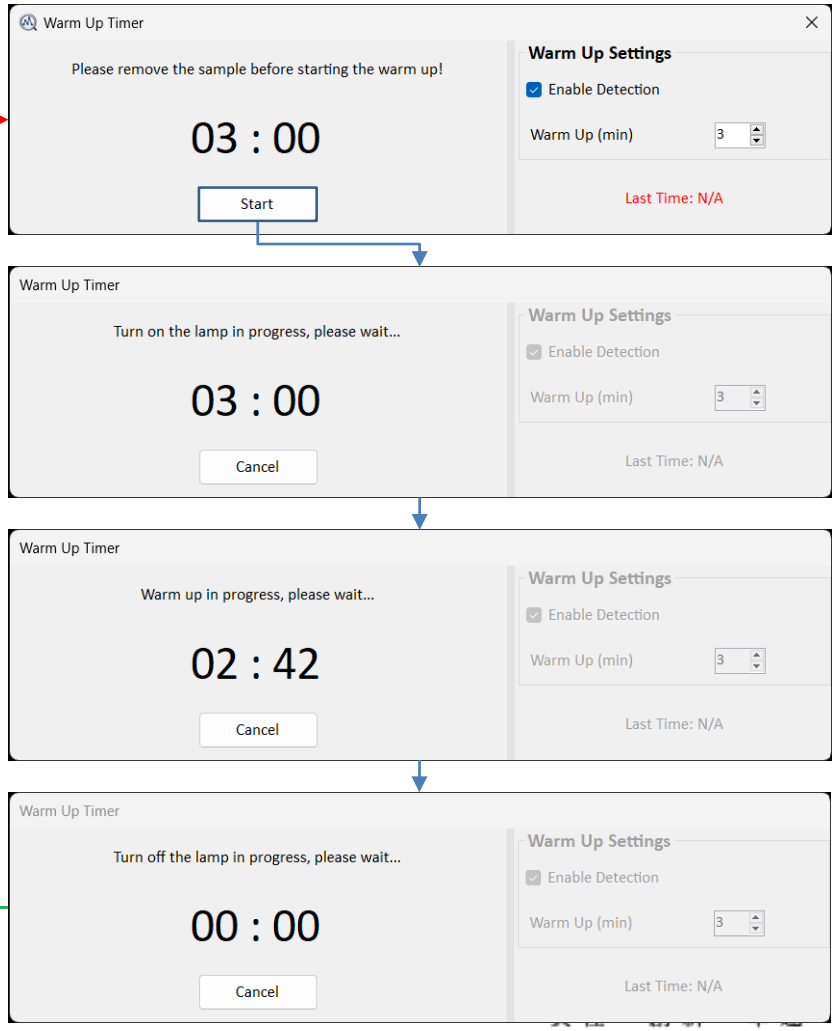


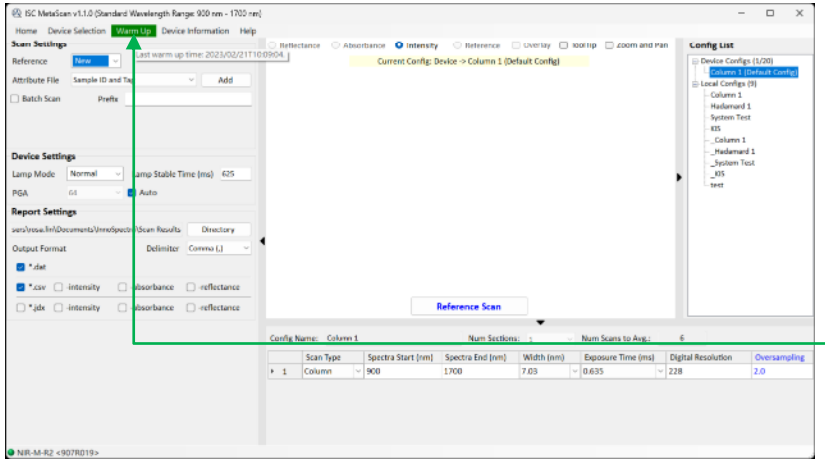
Perform a Scan

Warm Up Before Starting a Scan

1. Enter one of scan pages, the “Warm Up” button will display on the top menu.
2. Click “Warm Up” button, and it will enter the setting dialog. All settings will be recorded locally.
3. After warm up finished, the dialog closes automatically and the “Warm Up” button will have a green background.
4. The warm-up dialog can be entered at any time by pressing “Warm Up” button.

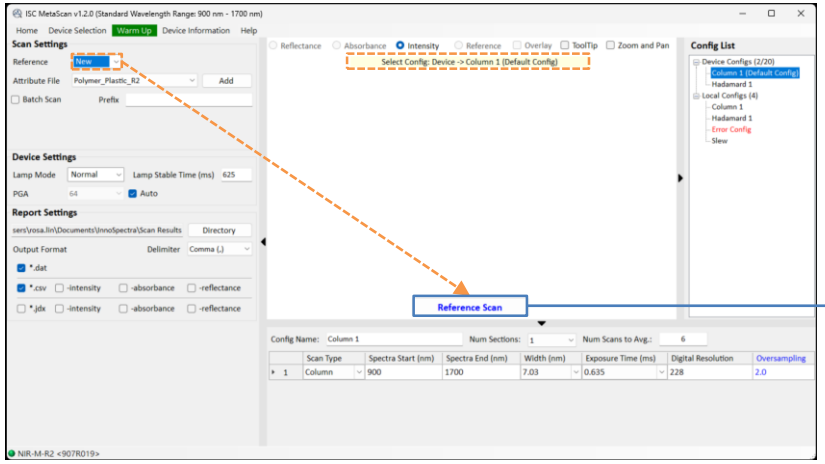


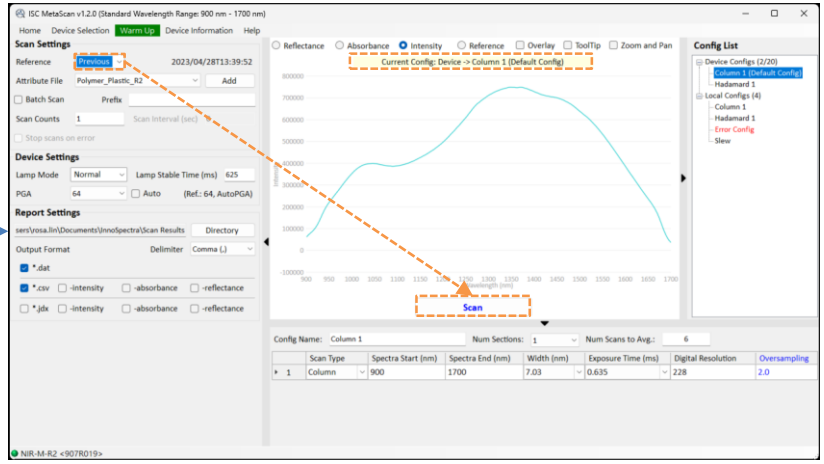




Scan a Local Reference

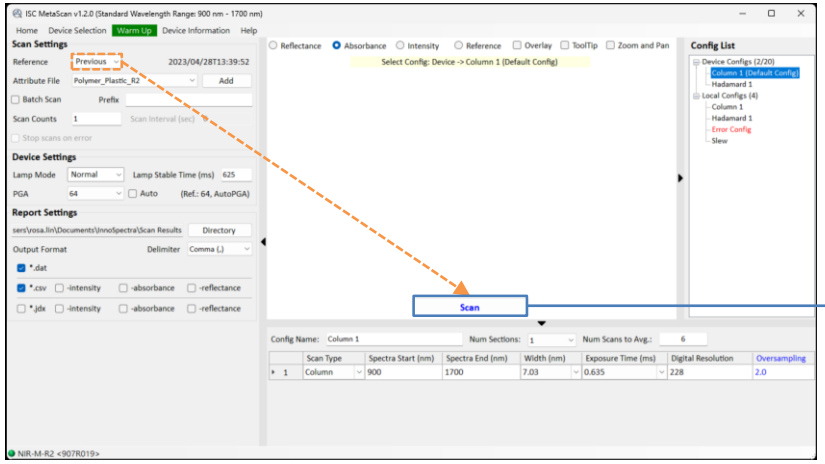
- Enter “Quick Scan” page and select a configuration from the list of device or local configurations.
- To perform a reference scan, the operation process is as follows:
    1. Select “New” reference to perform a scan. This scan result is stored on the local PC as a “Local Reference” and then you can select it with the “Previous” reference combo box for sample scan.
    2. The scan plot will draw the intensity of reference scan result.
    3. The “New” reference doesn’t provide continuous scan selection.

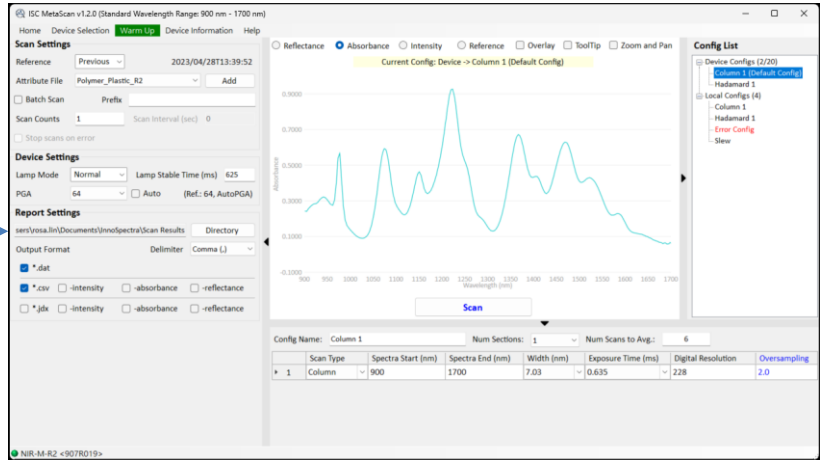




Scan a Sample

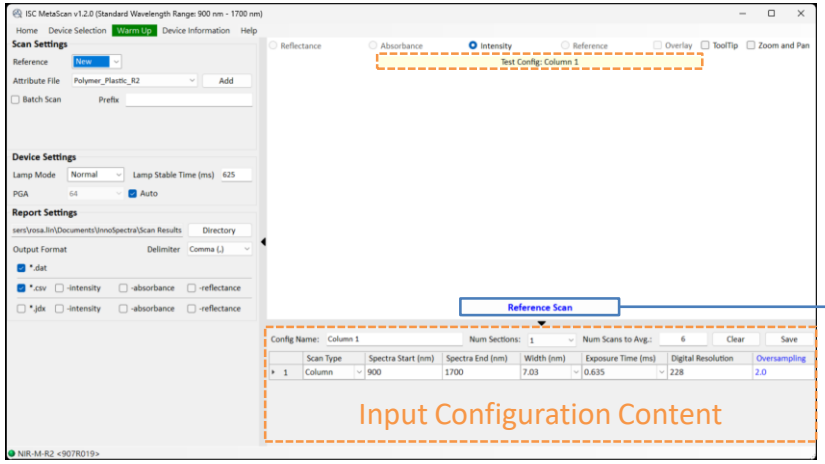
- Enter “Quick Scan” page and select a configuration from the list of device or local configurations.
- To perform a scan, the operation process is as follows:
    1. Select the reference from built-in or previous. Select “Built-in” will use the factory made reference (SRS99) as sample scan reference.
    2. Lamp control and gain control can be set before scanning.
    3. The location of the scan is saved under the report directory.
    4. Click “Scan” button to perform a new scan.
    5. The scan result will be plotted by one of the reflectance, absorbance, intensity or reference selection.

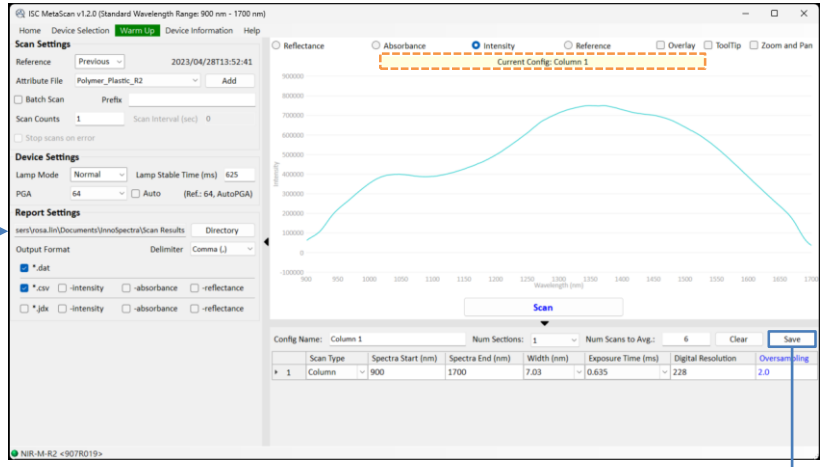


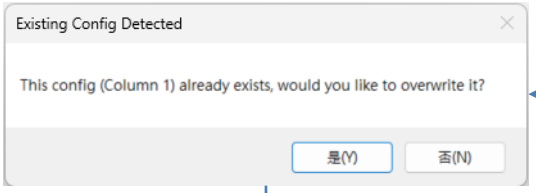


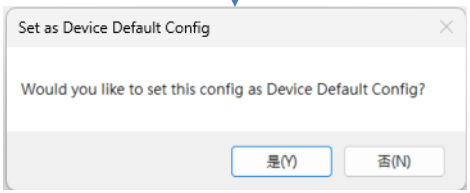
Create a New Configuration and Scan

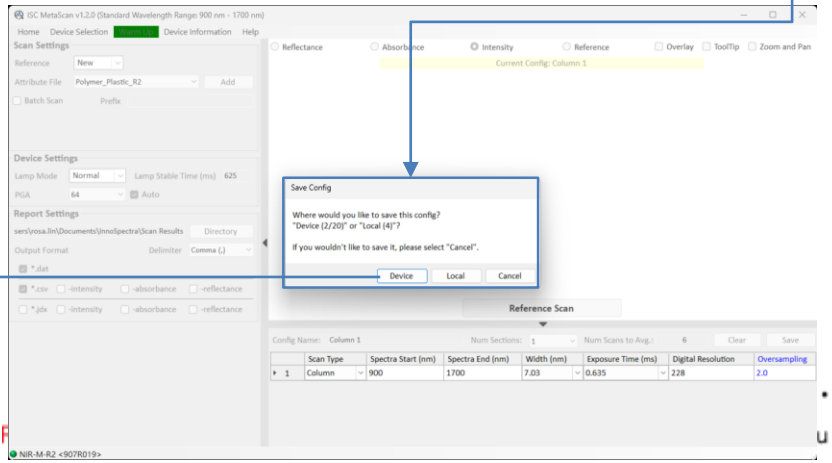
- Enter “Set Config and Scan” page. This page provides to create new configurations or replace the exist configurations.
- The created configuration can be saved to device or local, or not saved for testing only.
- To perform a scan, the operation process is as follows:
    1. Input the configuration content, and the system will check whether the content is valid.
    2. Select “New” reference to perform a reference scan, and then select “Previous” reference to perform a sample scan.
    3. If the configuration test is ok and wants to save it, click “Save” button.
    4. If the configuration name already exists, the system will ask whether to replace its content.
    5. If the configuration is to be saved in the device, the system will ask whether to set it as the default configuration.





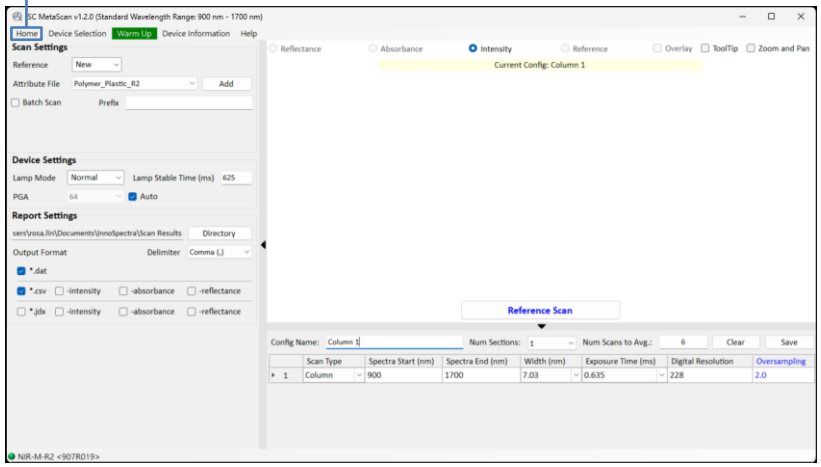


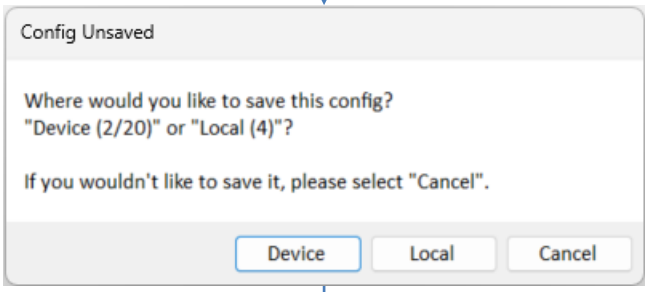


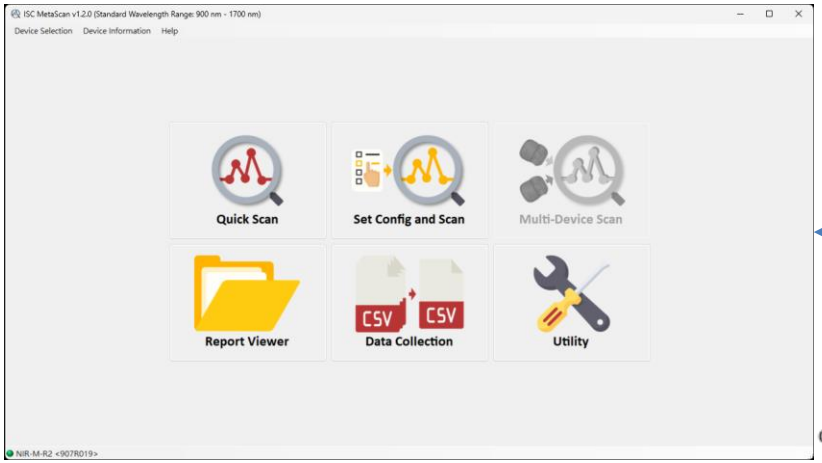


Create a New Configuration and Scan (Cont.)

- If the user leaves this page without saving the configuration, a dialog will pop up to ask user where to save it.

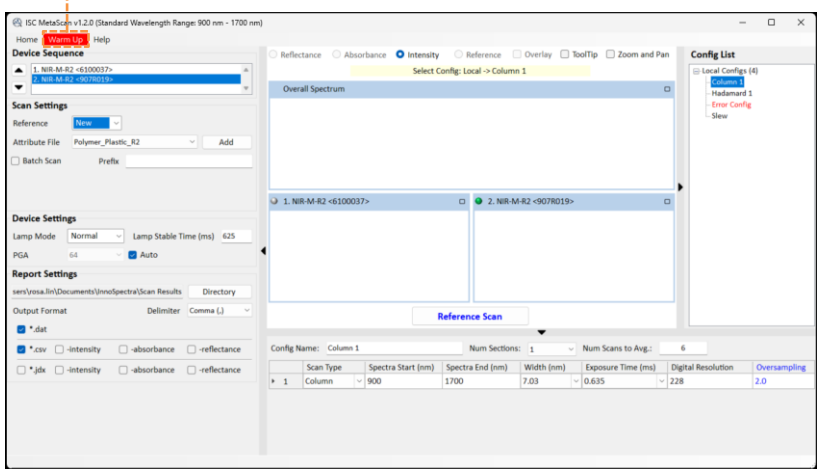


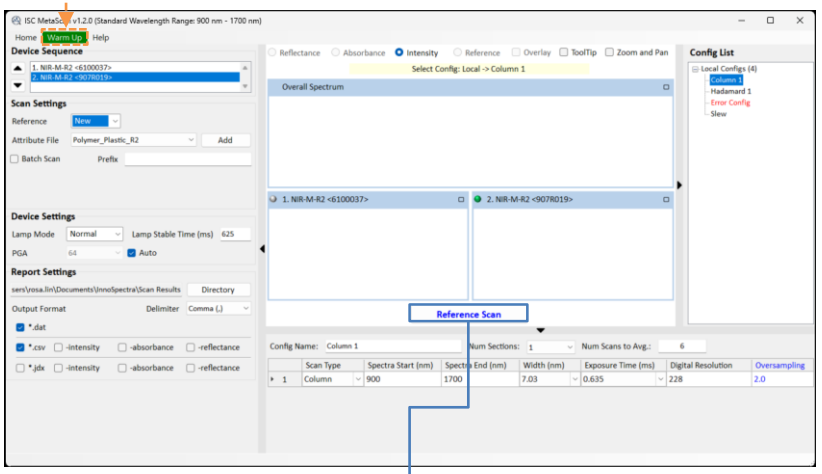


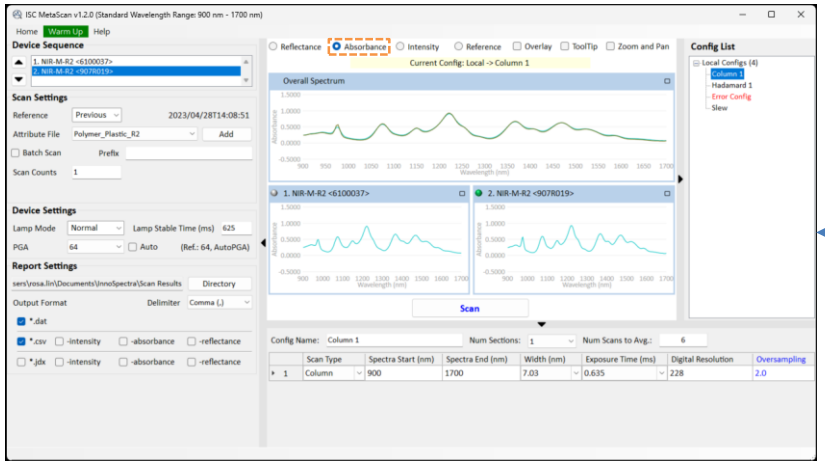


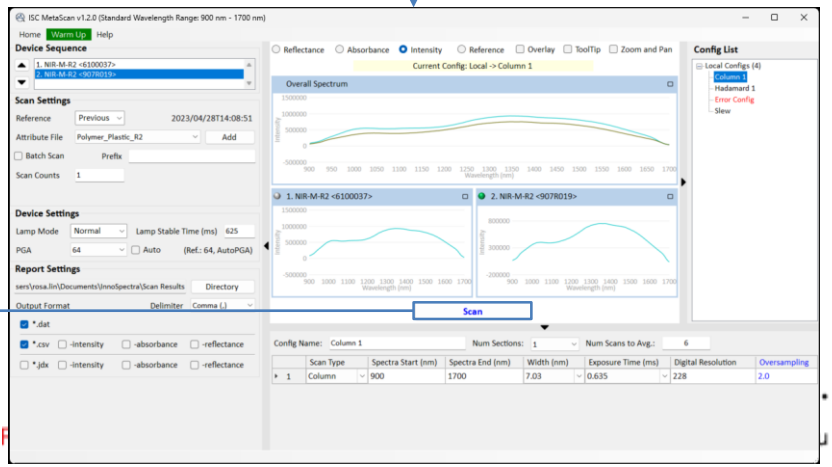
Multi-Device Scan

- Enter “Multi-Device Scan” page. This page only supports multiple devices of one model.
- To perform a scan, the operation process is as follows:
    1. Check multiple devices whether the warm up needs to be executed.
    2. Check whether the device sequence is correct.
    3. Set scan settings, device settings, or report settings if needs.
    4. Select a configuration in the configuration list.
    5. Select “New” reference to perform a reference scan, and then select “Previous” reference to perform a sample scan.



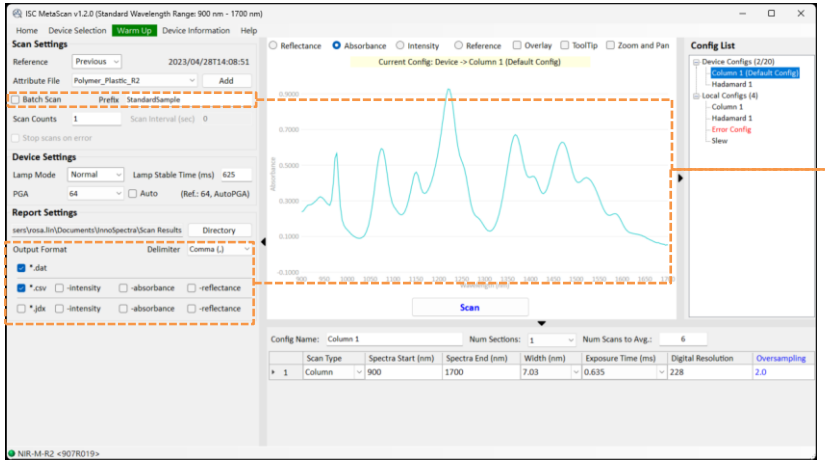


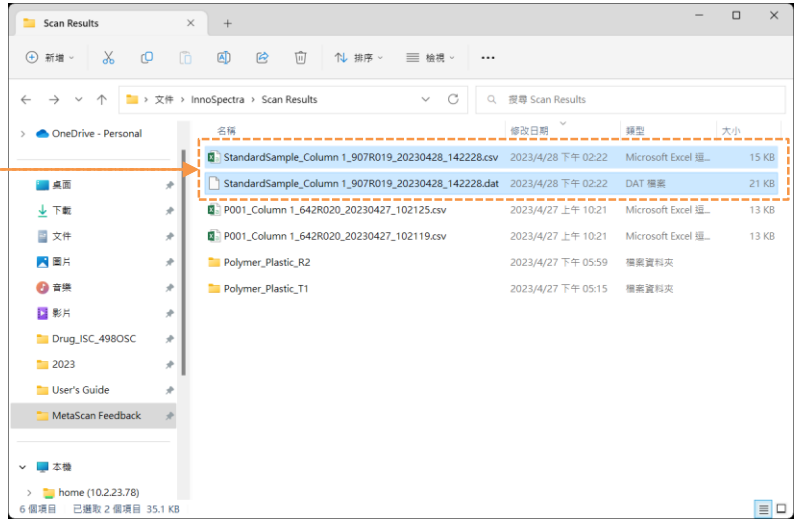




Normal Scan with Filename Prefix

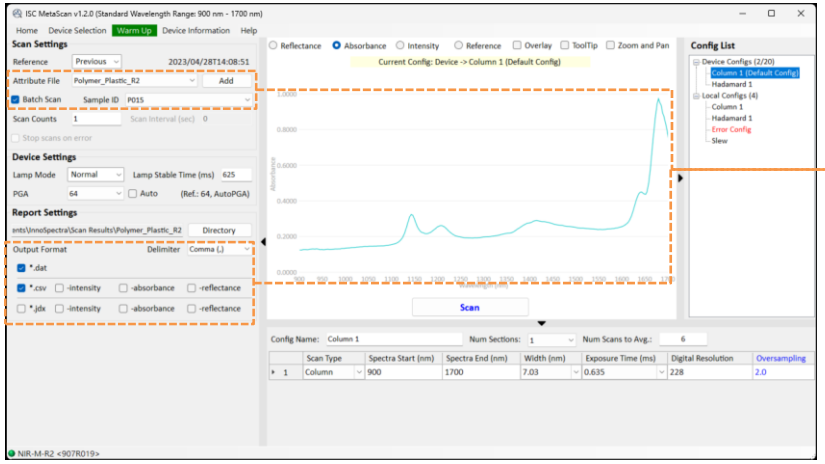
1. The user can select the configuration to be scanned.
2. Disable “Batch Scan” option, and input the prefix before scanning.
3. The location of the scan is saved under the report directory.
4. Click “Scan” button to perform a scan.
5. The scan result will be plotted by one of the reflectance, absorbance, intensity or reference selection.
6. This function is provided in the scan pages.

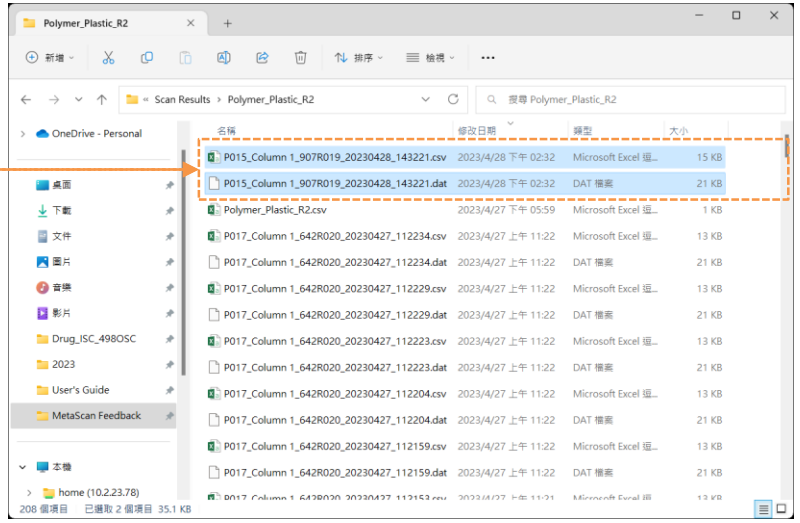




Batch Scan with Sample ID

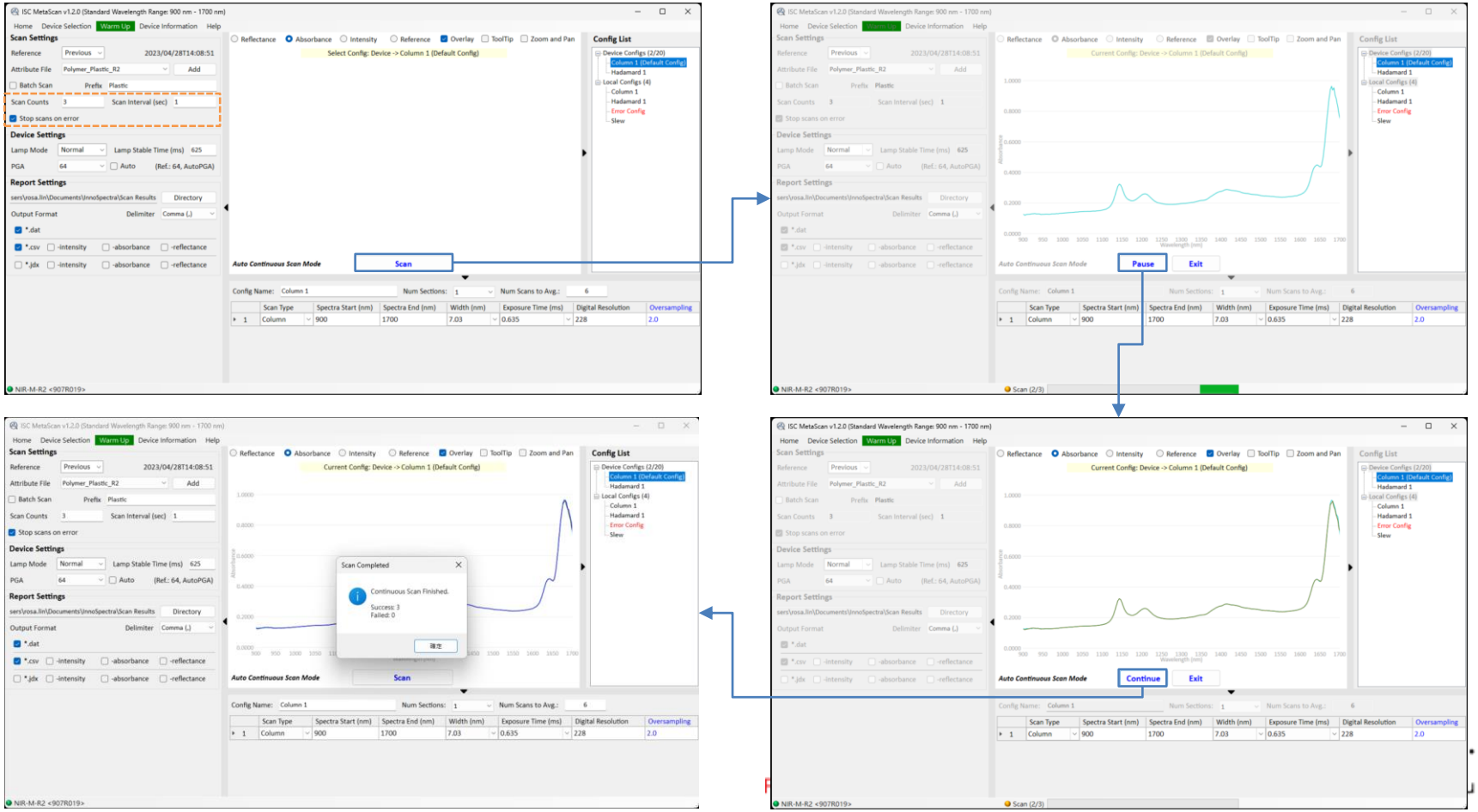
1. The user can select the configuration to be scanned.
2. Add or select one attribute file before starting batch scan.
3. Enable “Batch Scan” option, and select one sample ID before scanning.
4. The location of the scan is saved in the directory with the same name as the attribute file under the report directory.
5. Click “Scan” button to perform a new scan.
6. The scan result will be plotted by one of the reflectance, absorbance, intensity or reference selection.
7. This function is provided in the scan pages.





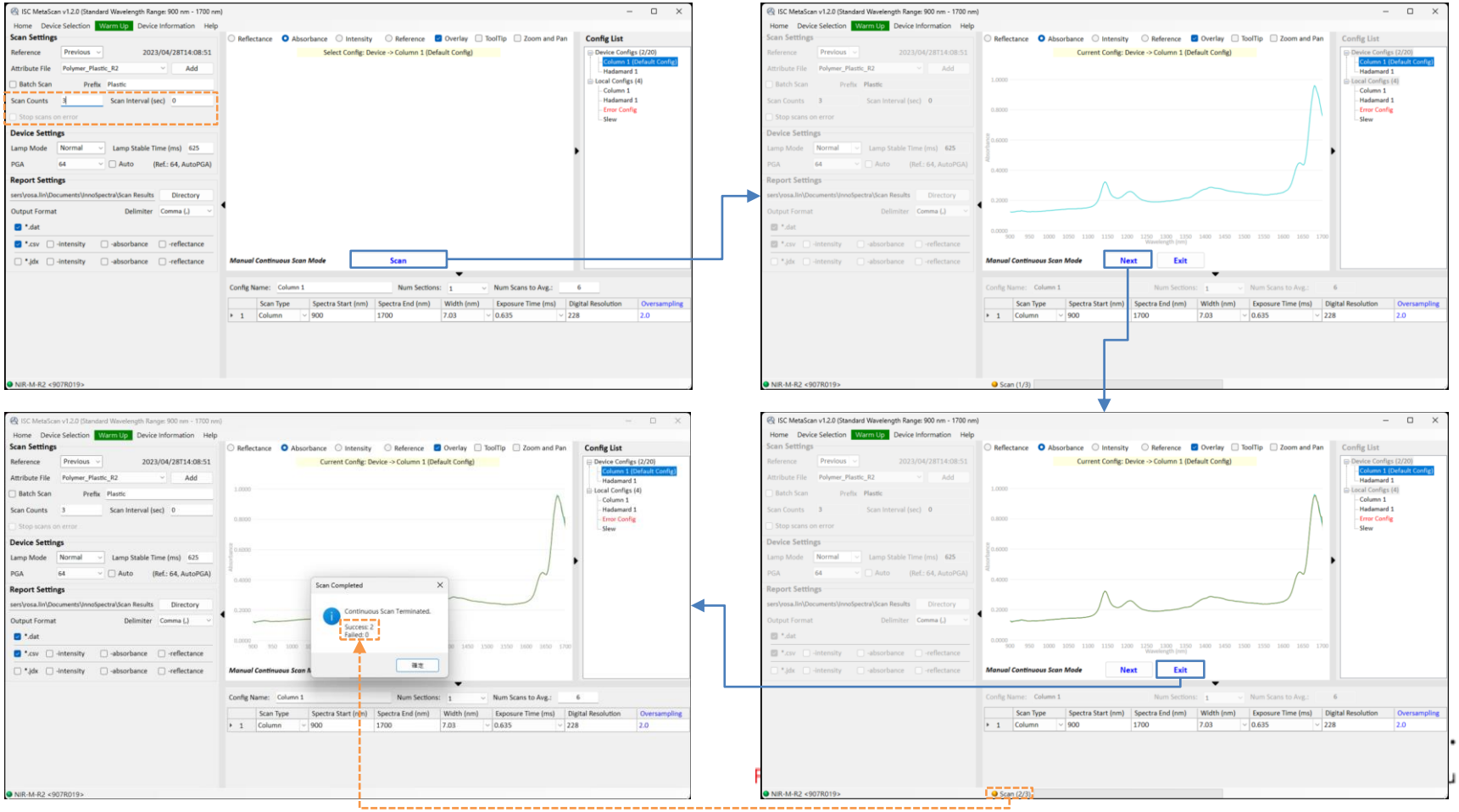
Auto Continuous Scan

1. Input a scan count greater than 1 and a scan interval greater than 0 seconds.
2. Click “Scan” button to perform scans.
3. Click “Pause” to temporarily stop continuous scanning, and click “Continue” to resume continuous scanning.
4. If the user would like to stop continuous scanning directly, click “Exit”.
5. The scan result will be plotted by one of the reflectance, absorbance, intensity or reference selection.
6. The system will calculate the average scan data based on the number of scans.
7. This function is provided in the scan pages.



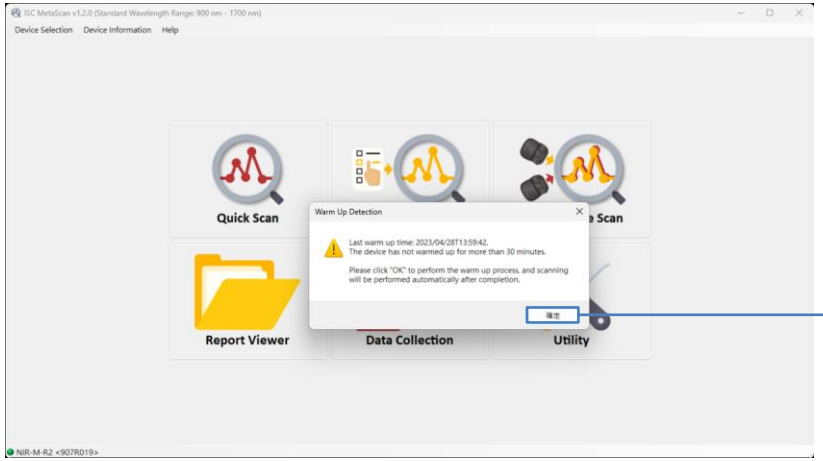
Manual Continuous Scan

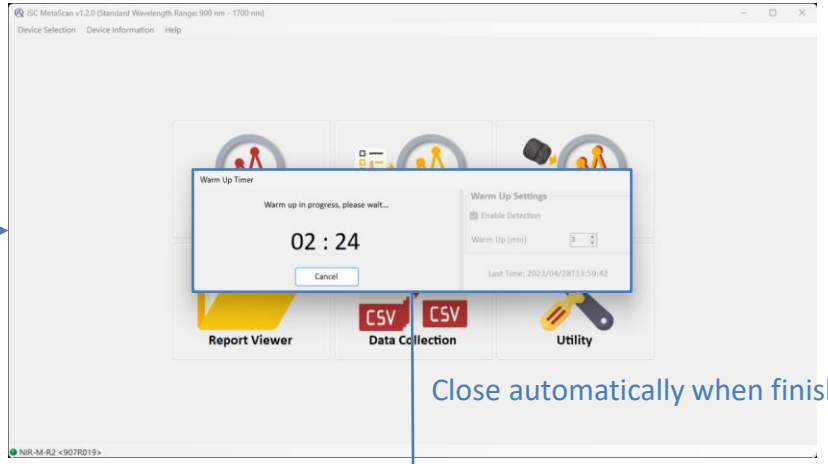
1. Input a scan count greater than 1 and a scan interval equal to 0 seconds.
2. Click “Scan” button to perform scans.
3. Click “Next” to start the next scan.
4. If the user would like to stop continuous scanning directly, click “Exit”.
5. The scan result will be plotted by one of the reflectance, absorbance, intensity or reference selection.
6. The system will calculate the average scan data based on the number of scans.
7. This function is provided in the scan pages.



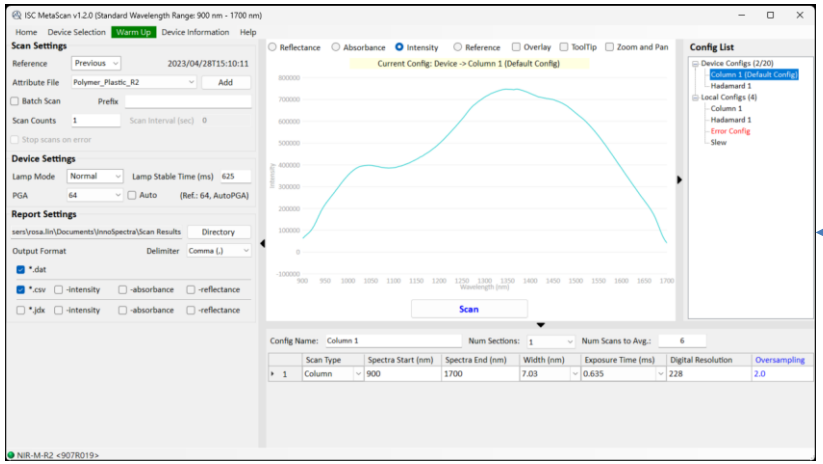
Device Button Scan

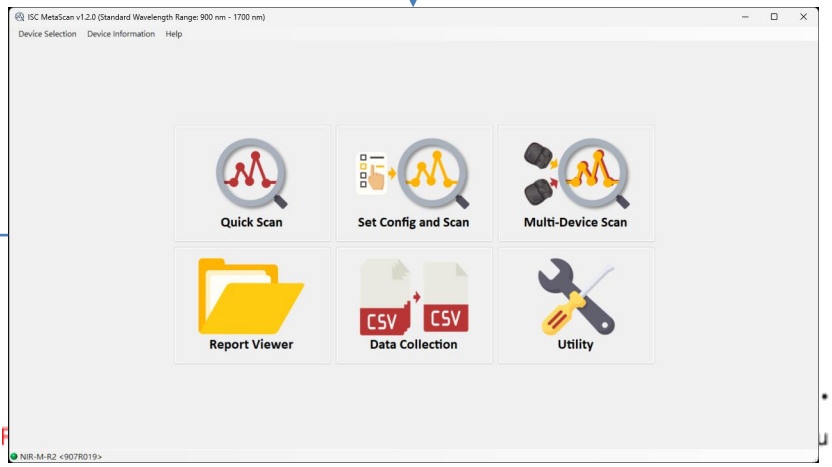
- This functions only supports devices with physical button.
- To perform a scan, the operation process is as follows:
    1. Press the device button will trigger the scan process.
    2. Check whether the warm up needs to be executed. If the device needs to warm up, a warning message will pop up to remind the user. After the warning message is confirmed, the warm up process will be performed automatically.
    3. After the warm-up is completed, the scan will be performed automatically.





Close automatically when finished

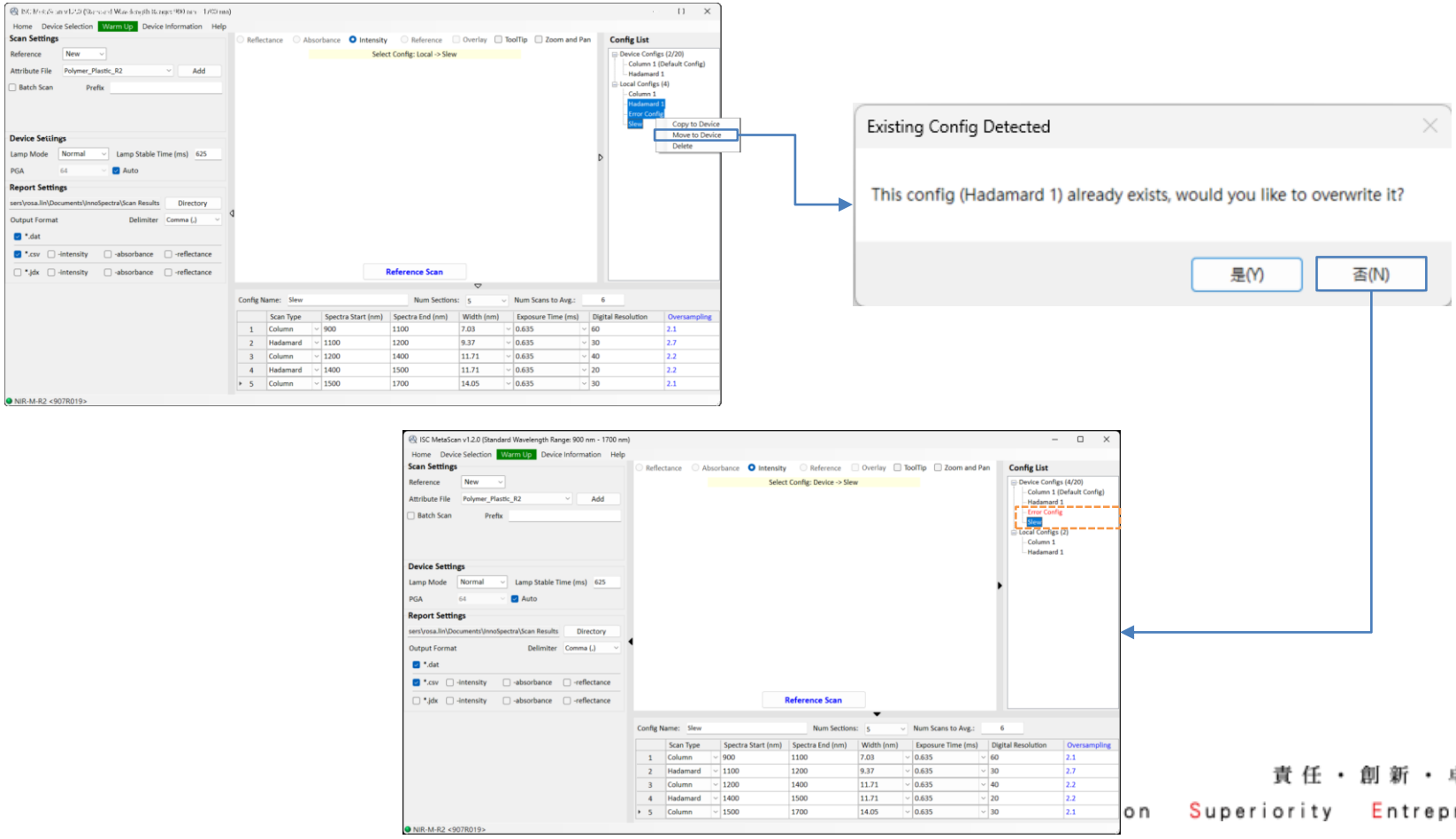




Configurations Operation

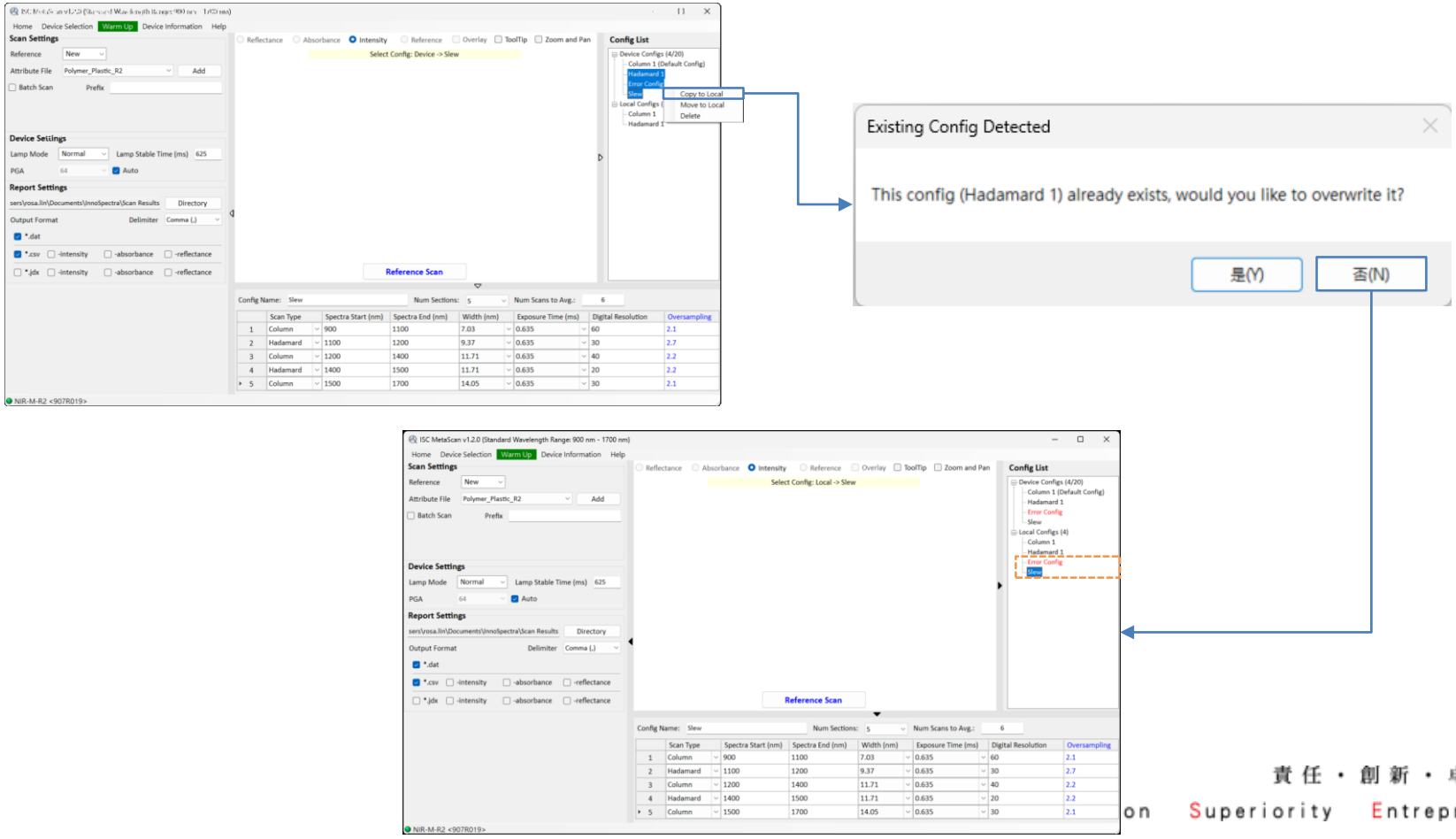
Move Configuration(s)

- This function is provided in the configuration list of the Quick Scan page.
- The capacity of device configurations is limited to 1~20 sets, and local configurations are unlimited.
- To move configuration(s), the operation process is as follows:
    1. Select one or more configurations in the configuration list.
    2. Click the right mouse button on the selected configuration(s), and select the “Move to Local” or “Move to Device” item.
    3. If the moved configurations contain the default configuration, the user can choose not to move it or change default configuration.
    4. If the name of the moving configuration is duplicated with one of the target lists, the name will be slightly modified.



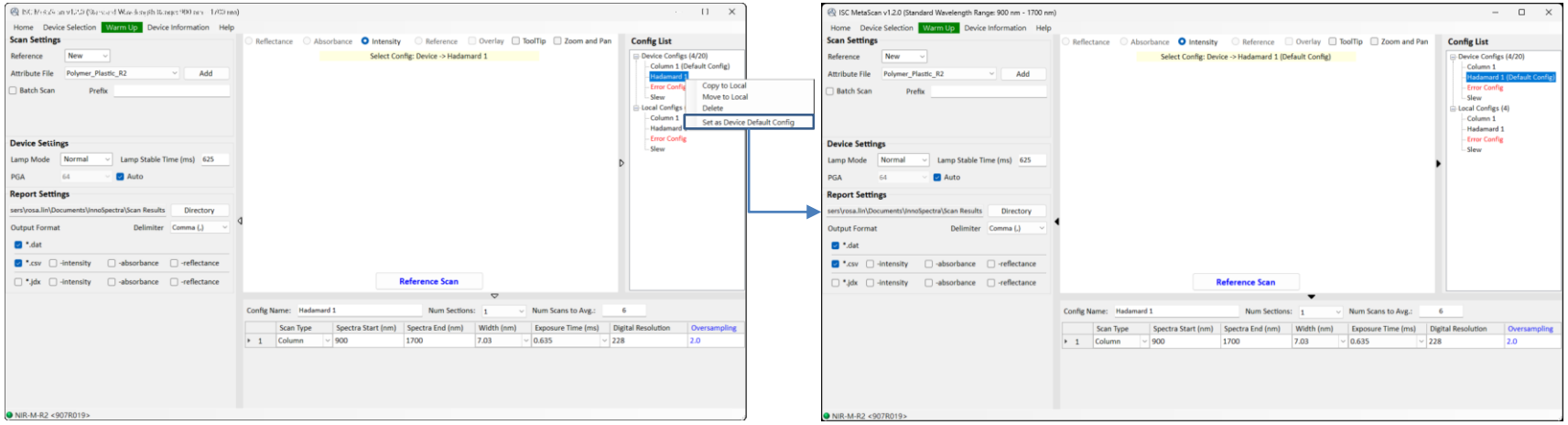
Copy Configuration(s)

- This function is provided in the configuration list of the Quick Scan page.
- The capacity of device configurations is limited to 1~20 sets, and local configurations are unlimited.
- To copy configuration(s), the operation process is as follows:
    1. Select one or more configurations in the configuration list.
    2. Click the right mouse button on the selected configuration(s), and select the “Copy to Local” or “Copy to Device” item.
    3. If the name of the copying configuration is duplicated with one of the target lists, the name will be slightly modified.



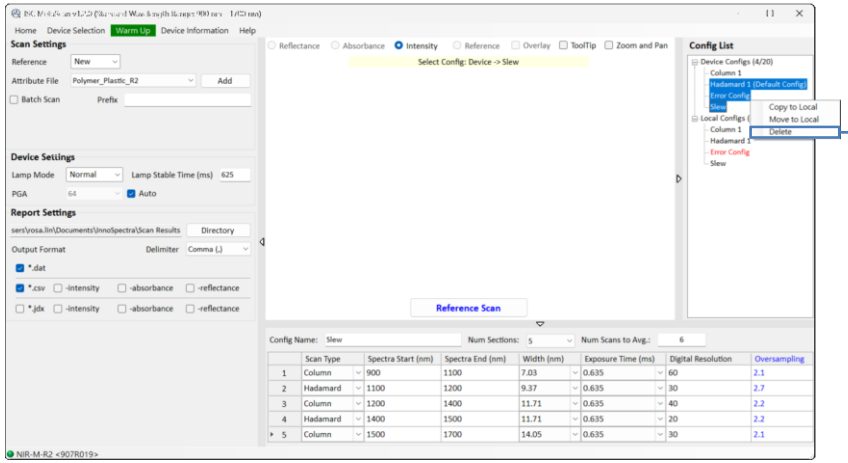
Set a Configuration as Device Default Config

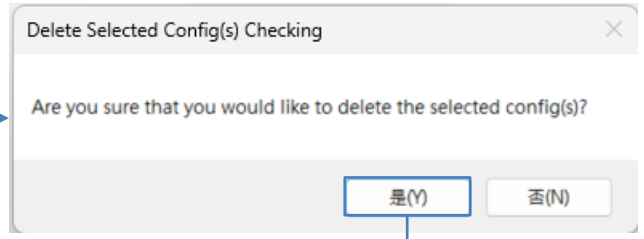
- This function is provided in the configuration list of the Quick Scan page.
- It is used to directly use the configuration to scan without selecting one.
- When entering the “Quick Scan” page, the system will set the device default configuration as the current configuration.
- To set the device default configuration, the operation process is as follows:
    1. Select a configuration in the configuration list.
    2. Click the right mouse button on the selected configuration, and select the “Set as Device Default Config” item.
    3. The configuration will be marked as the default configuration and ready for scan.

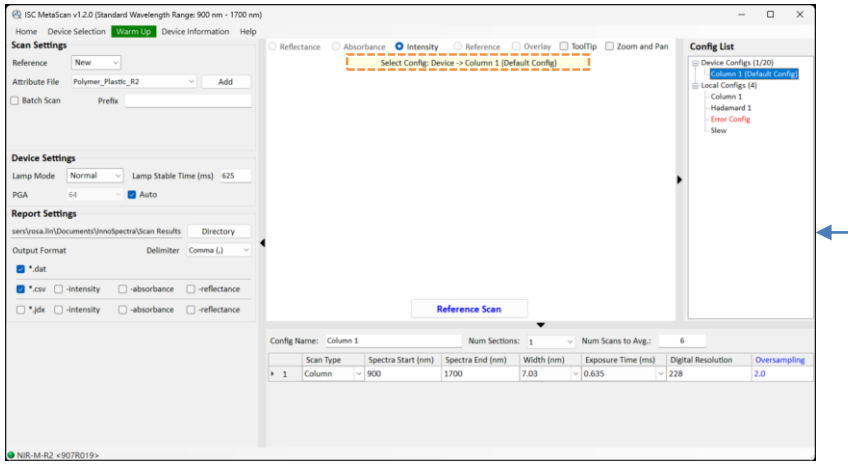


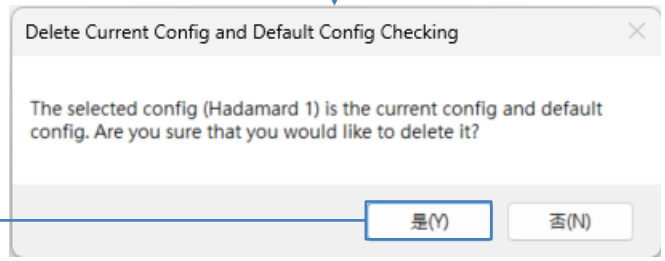
Delete Configuration(s)

- This function is provided in the configuration list of the Quick Scan page.
- Device configurations must retain at least one, and local configurations are unlimited.
- To delete configuration(s), the operation process is as follows:
    1. Select one or more configurations in the configuration list.
    2. Click the right mouse button on the selected configuration(s), and select the “Delete” item.
    3. If the deleted configurations contain the current configuration, the user can choose not to delete it or set default configuration as current configuration.
    4. If the deleted configurations contain the default configuration, the user can choose not to delete it or change default configuration.









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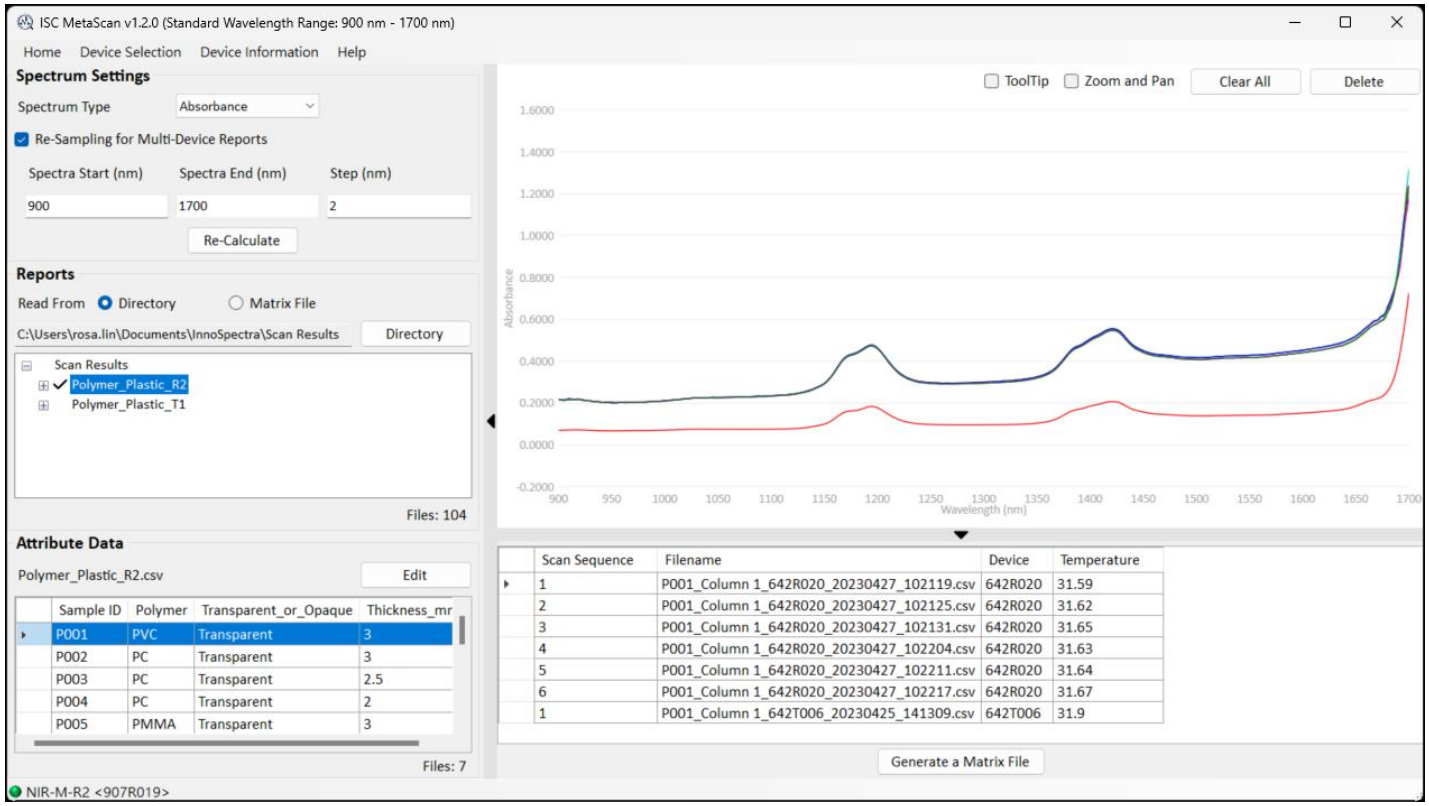
Collect Spectrum Data

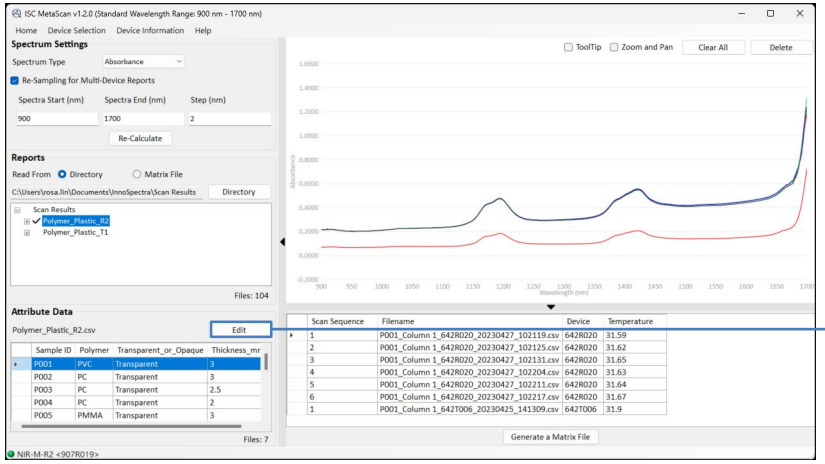
Load Spectrum Data

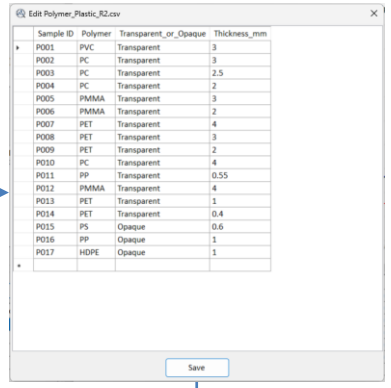
1. Set the spectrum settings for the data.
2. Select the directory, it will expand all the subdirectories below and count the number of all files that match the format.
3. Click a directory, if there is an attribute file with the same file name as the directory, its content will be displayed.
4. All files in the directory that match the format will be classified by sample id. If the sample id contains no files, it will be marked with a grey background.
5. If the spectrum data needs to be recalculated according to the settings, click “Re-Calculate” button to achieve it.



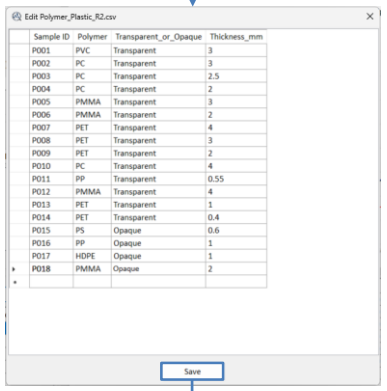
Edit Attribute File

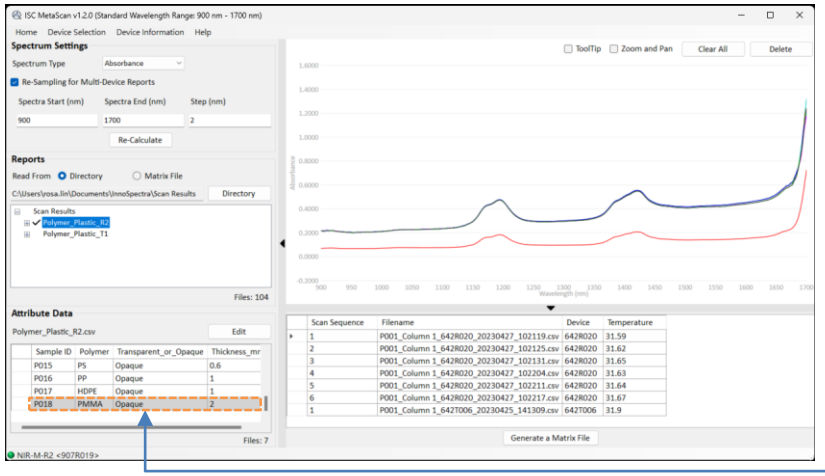
1. The edit attribute file function only supports the attribute file that exists.
2. Click “Edit” to open a dialog to edit contents.
3. Provide editing attribute name, new / delete row, edit contents.
4. The “Sample ID” is the fixed header name and cannot be modified.
5. The attribute data will update after the dialog closed.

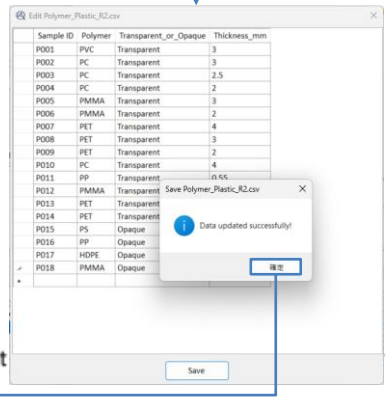




Example: Add a new row - P018

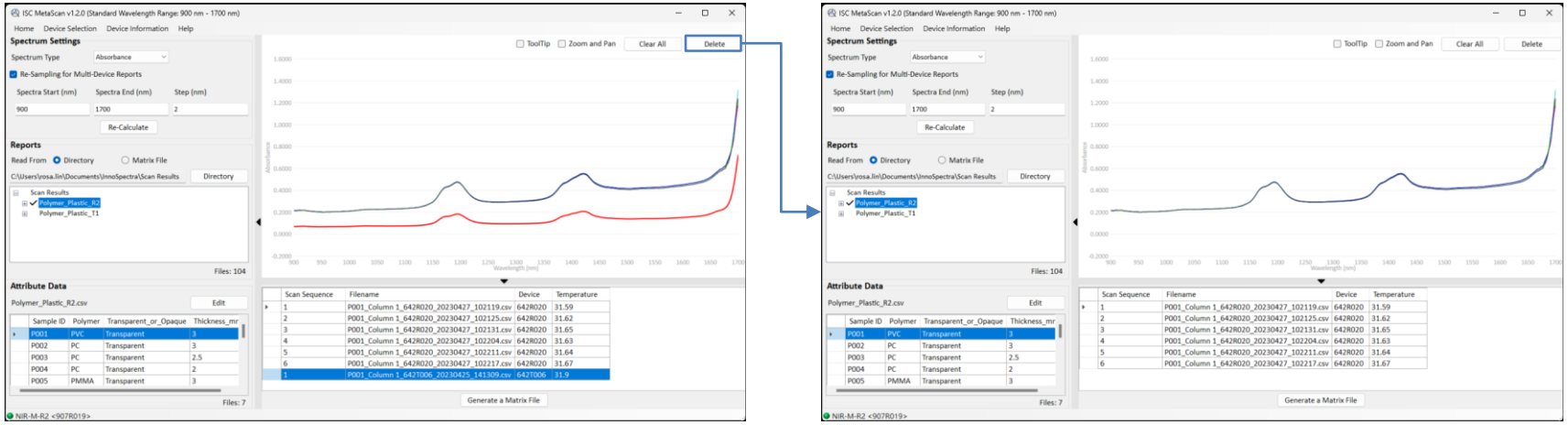






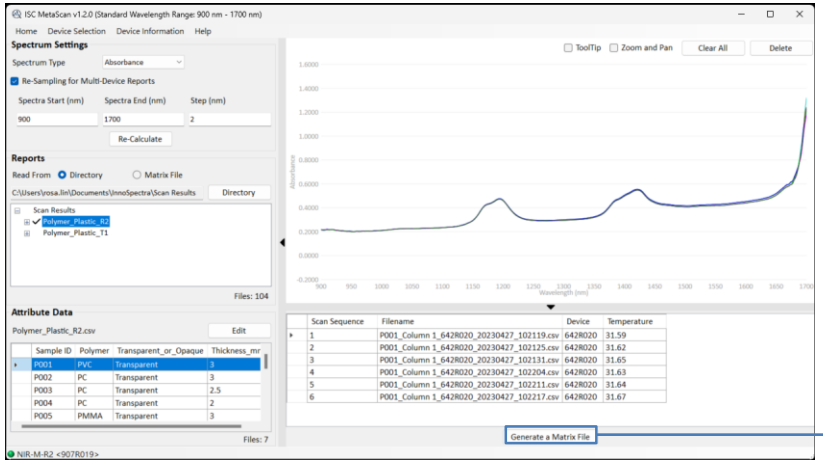
Delete Unnecessary Spectrum

1. Select the spectrum to delete.
2. The selected spectrum will be displayed as red bold line and highlighted in the table.
3. Click “Delete” button that can delete the selected spectrum.



Generate a Matrix File

1. Check the loaded spectrum data are correct.
2. Check the unnecessary spectrum data has been deleted.
3. Check the attribute file contents are correct.
4. Click “Generate a Matrix File” to generate the arranged spectrum data.
5. If the sample ID doesn’t contain any files, the sample ID will not be written the exported file.

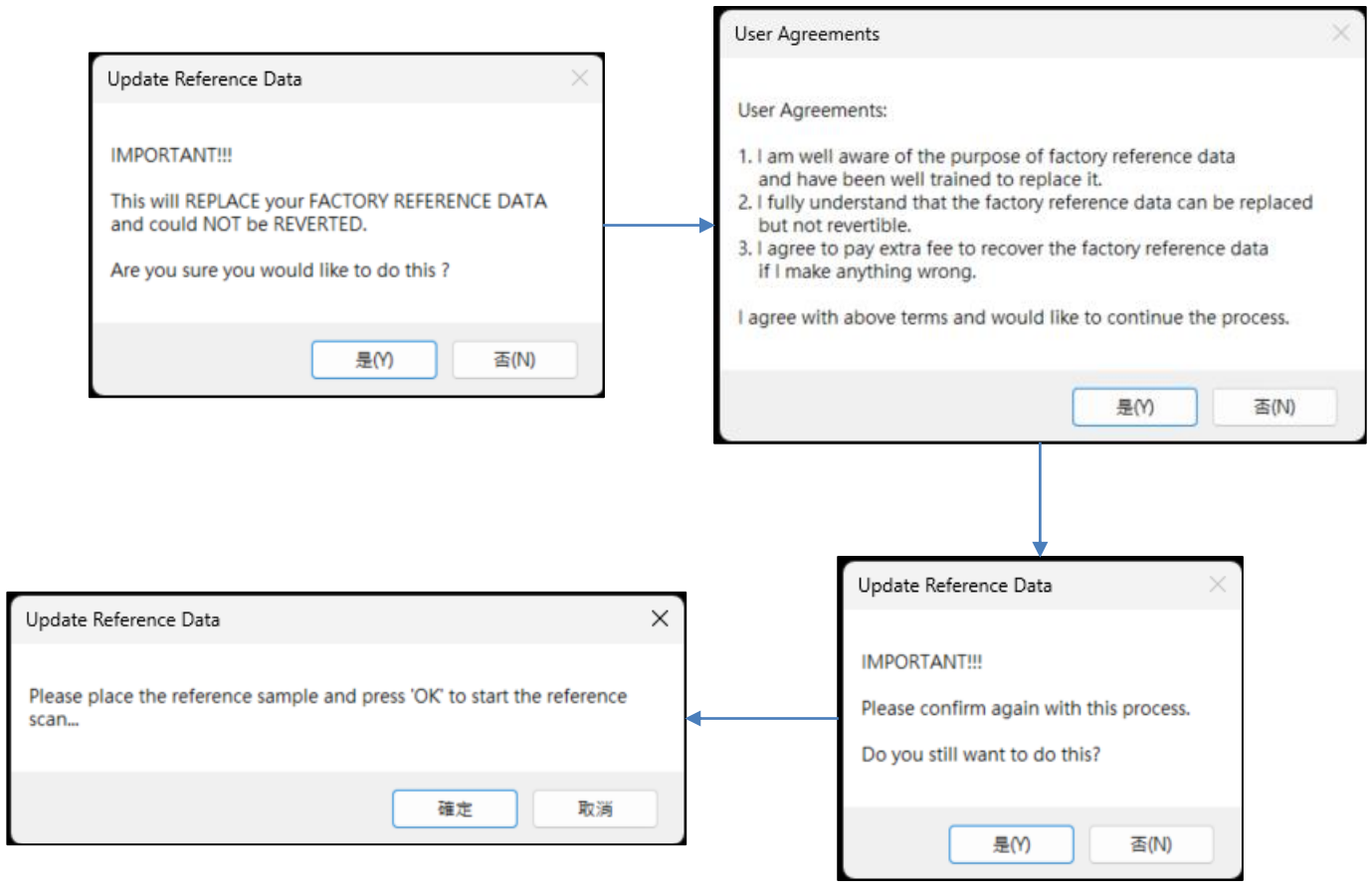


Scan Sequ	Sample ID	Polymer	Thickness	Filename	Device	Temperatu	900	902	904
1	P001	PVC	3	P001_Col	642T006	31.9	0.068833	0.069401	0.069943
2	P001	PVC	3	P001_Col	642T006	31.94	0.069941	0.070456	0.070947
3	P001	PVC	3	P001_Col	642T006	31.99	0.071208	0.071587	0.071974
4	P001	PVC	3	P001_Col	642T006	32.06	0.072363	0.072907	0.073428
5	P001	PVC	3	P001_Col	642T006	32.1	0.070309	0.070813	0.071318
1	P002	PC	3	P002_Col	642T006	32.16	0.207686	0.207872	0.208013
2	P002	PC	3	P002_Col	642T006	32.2	0.208691	0.208883	0.209027
3	P002	PC	3	P002_Col	642T006	32.25	0.209174	0.209266	0.209323
4	P002	PC	3	P002_Col	642T006	32.3	0.208522	0.20886	0.209133
5	P002	PC	3	P002_Col	642T006	32.35	0.210387	0.210529	0.210631
1	P003	PC	2.5	P003_Col	642T006	32.58	0.055994	0.056335	0.056653
2	P003	PC	2.5	P003_Col	642T006	32.62	0.055206	0.055691	0.056131
3	P003	PC	2.5	P003_Col	642T006	32.65	0.054909	0.055273	0.055615
4	P003	PC	2.5	P003_Col	642T006	32.7	0.054999	0.055343	0.055664
5	P003	PC	2.5	P003_Col	642T006	32.74	0.05432	0.054748	0.055144
1	P004	PC	2	P004_Col	642T006	32.73	0.050778	0.051288	0.051762
2	P004	PC	2	P004_Col	642T006	32.77	0.052468	0.053018	0.053525
3	P004	PC	2	P004_Col	642T006	32.82	0.055838	0.056415	0.056942
4	P004	PC	2	P004_Col	642T006	32.87	0.059141	0.059602	0.060031
5	P004	PC	2	P004_Col	642T006	32.91	0.066654	0.067062	0.067443
1	P005	PMMA	3	P005_Col	642T006	32.92	0.044095	0.043974	0.043778
2	P005	PMMA	3	P005_Col	642T006	32.95	0.044174	0.04397	0.043721
3	P005	PMMA	3	P005_Col	642T006	32.99	0.044419	0.044112	0.043774
4	P005	PMMA	3	P005_Col	642T006	33.03	0.044519	0.044261	0.043955
5	P005	PMMA	3	P005_Col	642T006	33.08	0.045055	0.044711	0.044336

Utility Functions Operation

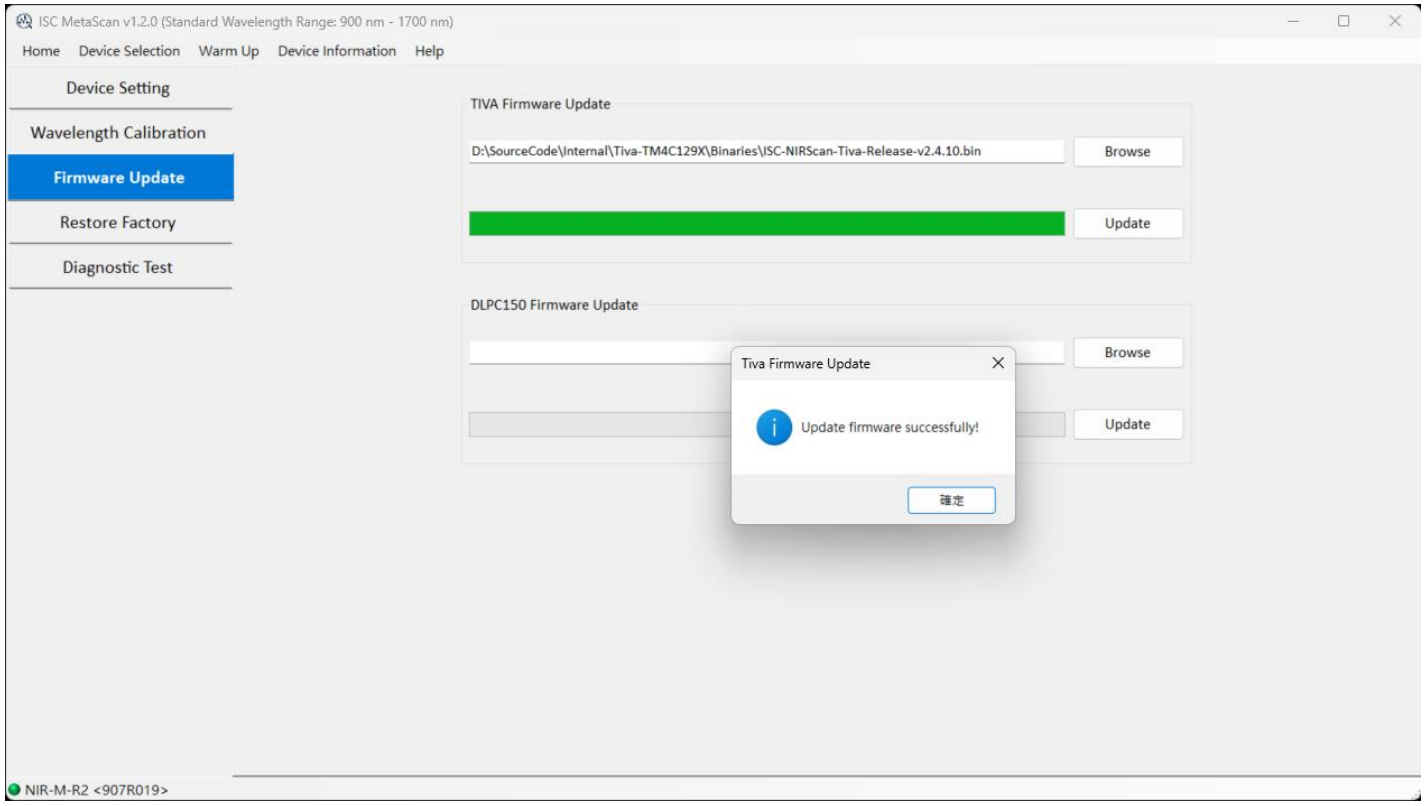
Update Reference Data

- Before replacing stored reference data, preparing a highly reflective material. A 99% reflective material can be created by coating a metal with Spectralon®.
- Before replacing stored reference data, user needs to read User Agreements to agree to bear the consequences as follows:



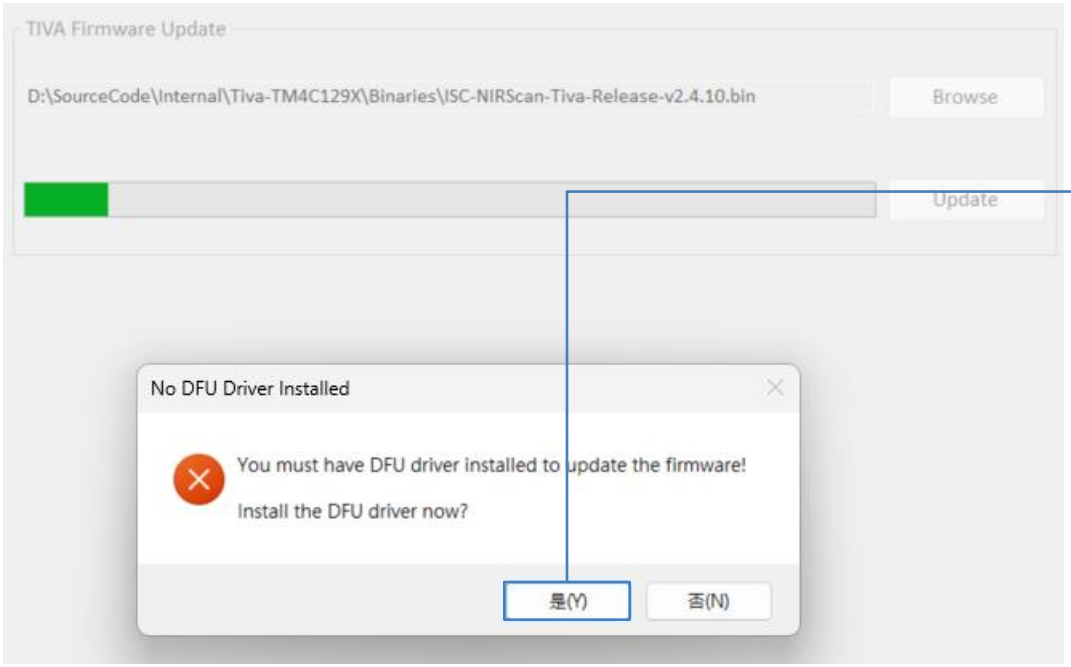
Update TIVA Firmware

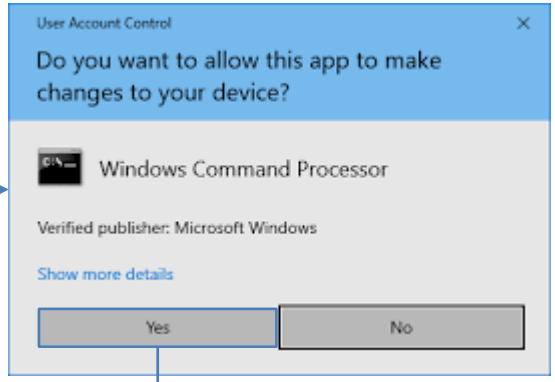
1. Click the “Browse” button to search for the TIVA FW file (for example, \\ISC-NIRScan-Tiva-Release-v2.4.10.bin).
2. Click the “Update” button. The firmware will be flashed on the TIVA internal Flash while the progress bar indicates the update process.
3. If the TIVA firmware update fails, it will display the corresponding error message.

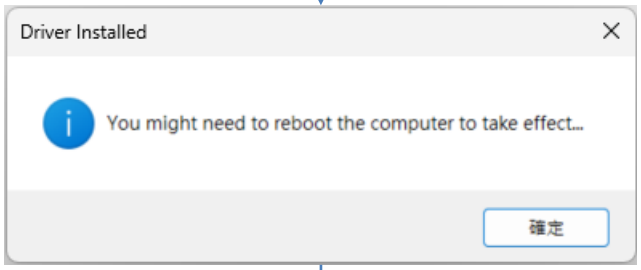


Update TIVA Firmware (Cont.)

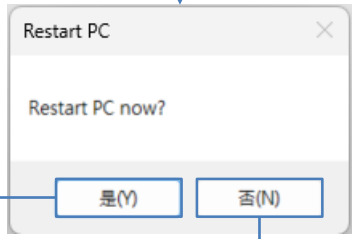
- If the system finds that the DFU driver is not installed, it will pop up the window before the firmware update.
- When the DFU driver installation is complete, please restart the PC.

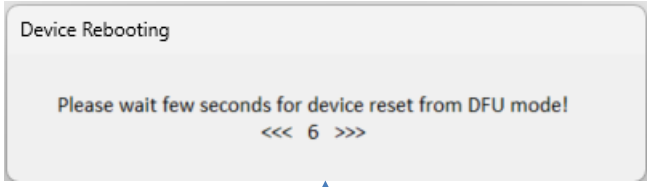






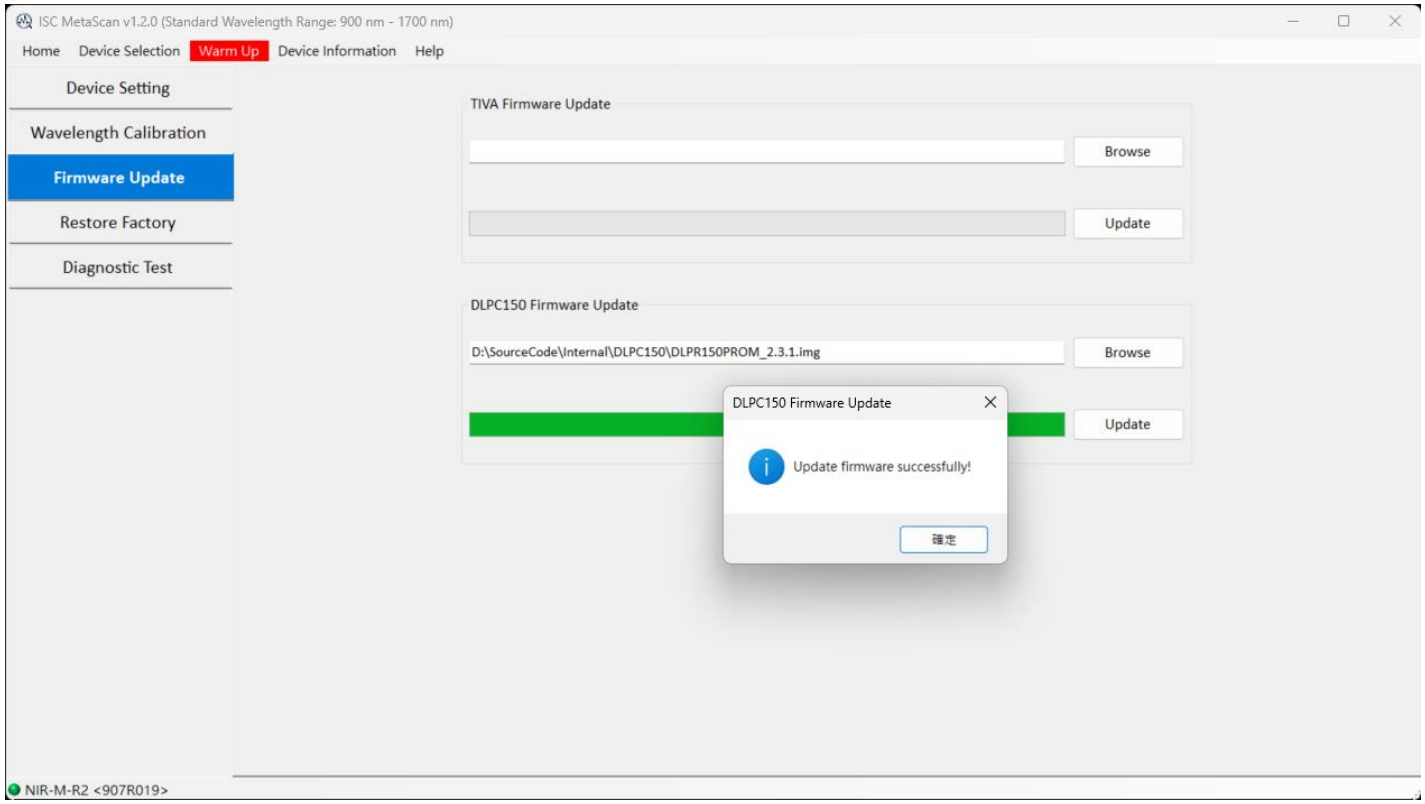
Restart PC





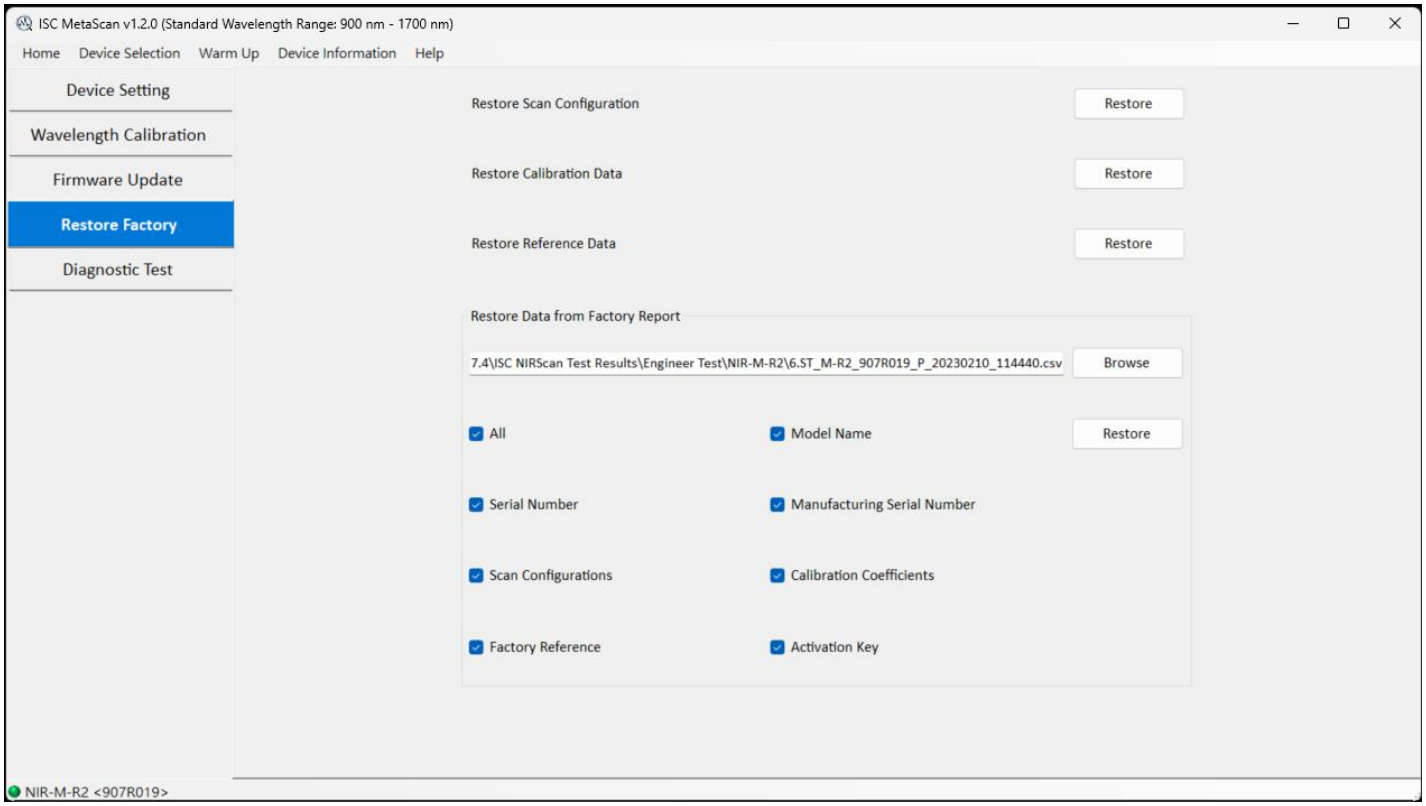
Update DLPC150 Firmware

1. Click the “Browse” button to search for the DLPC150 firmware file (for example, \\DLPR150PROM_2.3.1.img).
2. Click the “Update” button. The firmware will be flashed to the board while the progress bar indicates the update process.
3. If the DLPC150 firmware update fails, it will display the corresponding error message.



Restore Data from Factory Report

1. Click the “Browse” button to search for the factory report (for example, \\6.ST_M-R2_(serial number)_P_(date)_(time).csv).
2. Select items whose data the user wants to restore.
3. Click the “Restore” button. The device will restore the factory data.



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Thank You

責任・創新・卓越・開創

Responsibility Innovation Superiority Entrepreneurship