KLA - Automation User Guide

Global Support Services (GSS) Knowledge Services

9022549-000

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KLA Automation User Guide

KLA - Corporation

One Technology Drive,
Milpitas, CA. 95035

KLA Technical Publications

Original Instructions.

Send any comments to: *GSS.ECMSAdmin@KLA-Tencor.com*

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Table of Contents

Preface

Manual Purpose

This User Guide describes:

- Hardware components of the KLA Automation™ System for KLA instrumented test wafers
- Setting up the system for automatic missions
- Managing inventory
- Controlling the KLA Automation System
- Launching user missions using SensArray® Temperature Wafers and Automation Metrology™ Wafers

Manual Structure

This manual consists of this preface, 4 sections, and a glossary. Each section is briefly described below:

Preface

Introduces the manual.

Section 1: Introduction

This section provides an introduction to the KLA Automation System.

Section 2: KLA Automation System Hardware Components

This section describes the functions and controls of the KLA Automation System hardware components.

Section 3: KLA Automation System Web UI

This section describes how to use the Web UI of the KLA Automation System.

Glossary

Defines abbreviations and terms used in the manual.

Reference Documentation

The following table specifies documents referenced in this manual.

Document Number	Title
9022547-000	CPG KLA Automation System Safety Manual
9022552-000	KLA Automation System GEM/SECS Reference Manual

Conventions Used in this Guide

WARNING

Indicates danger to personnel.
Includes instructions needed to prevent any damage.

CAUTION

Indicates danger to Equipment.
Includes instructions needed to prevent any damage.

When either of the above symbols appear in this manual, follow the advice given. Failure to do so may endanger yourself or others, and can result in damage to the Equipment.

IMPORTANT

Indicates there is possibility for a failure.
Includes the instruction needed to prevent the failure.

NOTE

Indicates there is additional information connected with the current subject.
Includes that information.

Special terms

Special terms (dialog box names, button names and any other unique term) are in **bold**, as demonstrated in the example below:

File menu, **Start** button.

Hyperlinks

Hyperlinks to references in this document appear in blue (on screen).
Hyperlinks to web sites, or external documentation, are blue and underlined.

1. Introduction

1.1 KLA Automation System Overview

The KLA Automation System provided by KLA automates the use of instrumented wafers in a semiconductor wafer fab. The KLA Automation System is used with SensArray temperature wafers and Automation Metrology motion analysis wafers to enable real-time measurement and monitoring of parameters that are critical to fab yield and productivity.

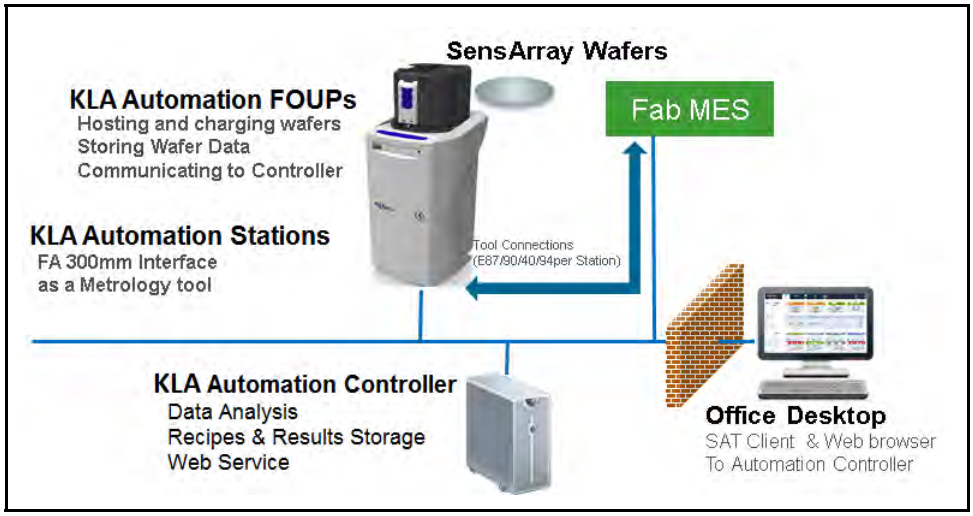
The KLA Automation hardware consists of the following components:

- Battery-powered, instrumented wafers that perform the actual measurements and reside in Automation FOUPs; examples are SensArray Temperature Wafers and Automation Metrology Wafers (to measure motion and humidity)
- Battery-powered Automation FOUPs to transport and store instrumented wafers, and to provide wafer charging and data communications (see Section 2.2 for information about KLA Automation FOUPs)
- KLA Automation Stations that charge Automation FOUPs and provide the communication between the FOUP and the fab host (see Section 2.1 for information about KLA Automation Stations)
- KLA Automation Controller to control the system

1.2 KLA Automation System Operation

The KLA Automation System provided by KLA is used to deploy and manage instrumented wafers in a semiconductor wafer fab to enable real-time measurement and monitoring of parameters that are critical to fab yield and productivity. Operation is completely automated (see Figure 1-1).

Figure 1-1: KLA Automation System Topology



Measurement “missions” are executed automatically under control of the fab manufacturing execution system (MES). The instrumented wafers are transported by the fab OHT and automated material handling system (AMHS) to and from the tool under test. Tests are executed on process tools without removing them from full automated mode. Mission results are communicated directly to the MES, plus results can be automatically available to engineers inside and outside the fab through a web-based GUI and desKLAop analysis software system.

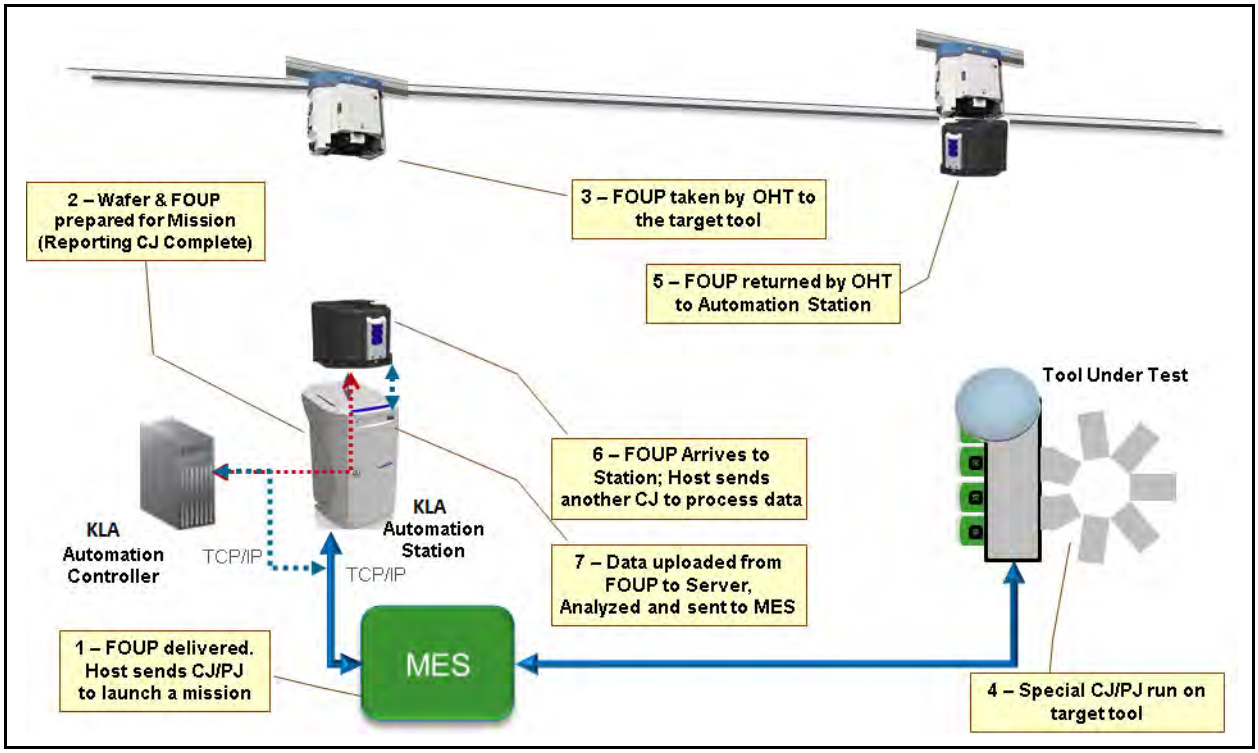
Measurements are easy to accomplish without removing the process tools from production use and without manual handling or recipe execution in the fab. This enables KLA metrology wafers to be used for in-line monitoring of process and mechanical system parameters, preventing excursions that can cause yield loss, and improving tool matching performance.

Examples of instrumented metrology wafers from KLA that are supported by this system are: the SensArray EtchTemp Wafer for monitoring etch temperature; and the KLA Automation Metrology Wafer for monitoring AMHS FOUP and equipment front end wafer handling.

To create and launch a new mission (see Figure 1-2), the MES system sends the instrumented wafer(s) in a KLA Automation FOUP to the KLA Automation Station (1). The MES communicates with the KLA Automation Station to initiate the mission with a Control Job/Process Job (CJ/PC). If the correct wafers for the mission are present in the FOUP with sufficient charge, the CJ/PJ is completed (2). The FOUP is transported to the target tool under test by the standard fab AMHS (3). The MES host system initiates the correct test recipe on the target tool in full auto mode. When the test is complete, the Automation FOUP is returned to the Automation Station (5). When the Automation FOUP

arrives at the Automation Station, the host executes another CJ/PJ to process the data (6). The mission results are uploaded to the KLA Automation Controller and the Go/No Go results are reported to the host from the Station, per the metrology recipe in effect (7).

Figure 1-2: KLA Automation System Mission Sequence



1.3 KLA Automation Missions

There are 3 ways to launch and control KLA Automation missions:

1. **Automatic missions:** controlled by fab MES via Factory Automation (as described above); results are reported back to the MES (see ***9022552-000, KLA Automation System GEM/SECS Reference Manual***)

2. **User missions:** initiated by an operator via the KLA Automation Web UI; the Automation FOUP is carried manually to the target tool and back to the station

3. **Manual missions:** initiated through the SA Tools software installed on a laptop that is directly connected to the Automation FOUP and provides all the required parameters for starting a mission; the Automation FOUP is carried manually to the target tool and the mission is manually executed on that tool

1.4 Regulatory Compliance Statements

1.4.1 Prohibitions on Modifications

Changes or modifications not expressly approved by KLA could void the user's authority to operate the equipment.

1.4.2 Class A Digital Device

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

1.4.3 Special Accessory Installation: Manual Use Laptop/FOUP cable

1. Verify SensArray Tools software is installed before connecting cable to ensure appropriate communication settings.

2. Connect power supply to barrel connector in middle of manual use case cable.

3. Connect manual use case RJ (Ethernet) connector to Ethernet port on laptop.

4. Connect manual use case cable to FOUP magnetic connector on the back of the FOUP to the left of the power switch. The factory provided ferrite must be installed on the magnetic connector side of the manual use case cable.

1.4.4 Singapore Regulatory Statement

COMPLIANCE LABEL

Complies with
IMDA Standards
DB123456

1.4.5 Israel Regulatory Statement

1.4.6 Input Power for Battery Charging

1. **For 12V DC:** The device is powered through listed AC/DC power adapter with Limited Power Source (LPS) at minimum rate of 3.75A.

2. **For 24V DC:** The device is powered through listed AC/DC power adapter with Limited Power Source (LPS) at minimum rate of 4A.

NOTE

The power option through the Control Electronics Box (CEB) of the Automation System within the AM station.

DANGER

Use only batteries with built-in protection, and not intended to replace by an operator.

3. Input power rating for AF120 and AMW Wafer is mentioned in below table.

Table 1-1: Equipment input rating

AF120		AMW Wafer
12V DC	24V DC	5V DC
3.3A Maximum	1.8A Maximum	1A Maximum

4. Refer to the below mentioned table for equipment manufacturers and supplier.

Table 1-2: Equipment supplier and manufacturers

Equipment Supplier	Equipment manufacturing sites
SA Division	FOUP, Wafers - Milpitas, USA
	Wafer - FLEX, Migdal HaEmek, ISRAEL
	AM Station - Singapore

5. For the equipment charging input and output port, refer to the below mentioned table.

Table 1-3: Equipment charging input/output port

Equipment	Input port	Output port
AF120	12V	LAN Communication
	24V	
	8.3V (internal battery)	
AM Wafer	3.7V (from battery)	-

1.4.7 Environmental conditions for the equipment

Table 1-4: Environmental conditions

Wafer	Temperature	Pressure
AF120	0 - 85 °C	-
AM Wafer	0 - 85 °C (unlimited), < 120 °C (for one minute)	$1E^{-9}$ Torr - 760 Torr (Air, CDA, N_2 or Ar) *Note: Clean the wafer only with dampened lint free cloth with deionized H_2O (IPA ratio 10:1)*

1.4.8 Critical component list

DANGER

Use only batteries with built-in protection, and not intended to replace by an operator.

User can see the below mark on the battery;

14	 **DANGER**	**ISO 7000-0434B (2004-1)**

FOUP - Rechargeable batteries pack (Shenzhen Bak, MN: 1850CA-2P-3J).

2.

KLA Automation System Hardware Components

2.1 KLA Automation Station

2.1.1 KLA Automation Station Function

The KLA Automation Station communicates with the KLA Automation FOUP to start missions and to extract the results after the missions are completed. The KLA Automation Station also recharges the KLA Automation FOUP between missions.

Figure 2-1 shows the KLA Automation Station (including the optional signal tower), with and without a KLA Automation FOUP loaded on the station.

Figure 2-1: KLA Automation Station

NOTE

If your system uses the optional signal tower, the signal tower is installed and configured at the time the rest of the system is installed.

2.1.2 KLA Automation Station Indicator Panel LEDs

The indicator panel at the front of the top cover (see Figure 2-2) contains all the Automation Station LEDs, as well as the Manual/Auto control button.

Figure 2-2: KLA Automation Station Indicator Panel

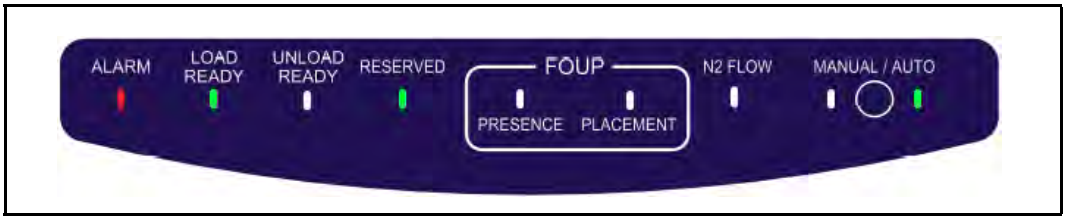


Table 2-1: KLA Automation Station Indicator Panel LEDs

LED Name	Color	Description
ALARM	Red	Indicates a critical error (for example, application has stopped working) that requires the operator to recover the Automation Station
LOAD READY	Green	Indicates the Automation Station is ready to receive a FOUP (there is currently no FOUP on the Automation Station)
UNLOAD READY	Green	Indicates the FOUP can be unloaded from the Automation Station (there is currently a FOUP loaded on the Automation Station)
RESERVED	Green	Indicates the Automation Station is reserved by the fab Host for a mission
FOUP PRESENCE	Green	Indicates a FOUP is present on the Automation Station
FOUP PLACEMENT	Green	Indicates a FOUP is fully placed on the Automation Station
Important: When a FOUP is seated properly, both the FOUP PRESENCE and the FOUP PLACEMENT LEDs are on.		
N2 FLOW		Indicates N2 is flowing from the Automation Station to the FOUP (in systems that include the N2 option)
MANUAL		*Blinking MANUAL LED* Indicates the Automation Station is in the process of initializing and is not yet ready for use *Steady MANUAL LED* Indicates the Automation Station is in Manual mode (user can manually place or remove a FOUP)
AUTO	Green	Indicates the Automation Station is in Auto mode (controlled by the fab Host and the OHT delivery system)

2.1.3 KLA Automation Station Indicator Panel Manual/Auto Button

The Manual/Auto control button is located between the MANUAL and the AUTO LEDs on the KLA Automation Station Indicator Panel (see Figure 2-2).

The button has two functions:

1. **Toggles between Auto mode and Manual mode**
   Press and hold the Manual/Auto control button for 5 seconds to toggle the Automation Station between Auto mode and Manual mode, indicated by the AUTO and MANUAL LEDs.

2. **Operates the Automation Station** (when the Automation station is in Manual mode)

   - When the FOUP is present on the Automation Station, press and release the button to unclamp the FOUP and switch it to the UNLOAD READY state (UNLOAD READY LED is green), which allows you to pick it up manually.

   - When the Automation Station is in the LOAD READY state (LOAD READY LED is green):

     - Manually place the FOUP on the Automation Station.

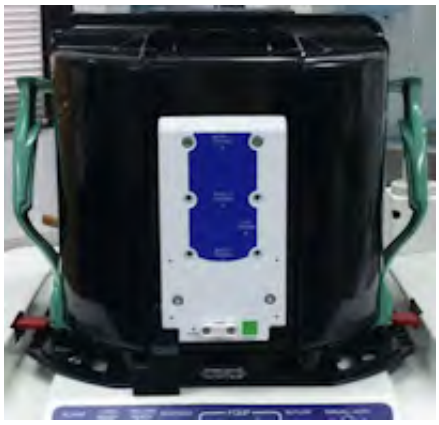
     - Press and release the Manual/Auto control button to lock the FOUP and connect it to the Automation Station.

2.2 KLA Automation FOUP

2.2.1 KLA Automation FOUP Function

The KLA Automation FOUP transports the instrumented wafer to the equipment during missions. It also charges the wafer, stores the wafer data, and communicates the wafer data to the Automation Controller.

Figure 2-3: KLA Automation FOUP



NOTE

The KLA Automation FOUP configuration must be updated when:
** The CID pill is written or replaced, or*
** The network configuration or server IP address has changed.*

2.2.2 KLA Automation FOUP Indicators and Controls

All FOUP indicators and controls are on the rear of the KLA Automation FOUP (see Figure 2-4).

Figure 2-4: KLA Automation FOUP Indicators and Controls

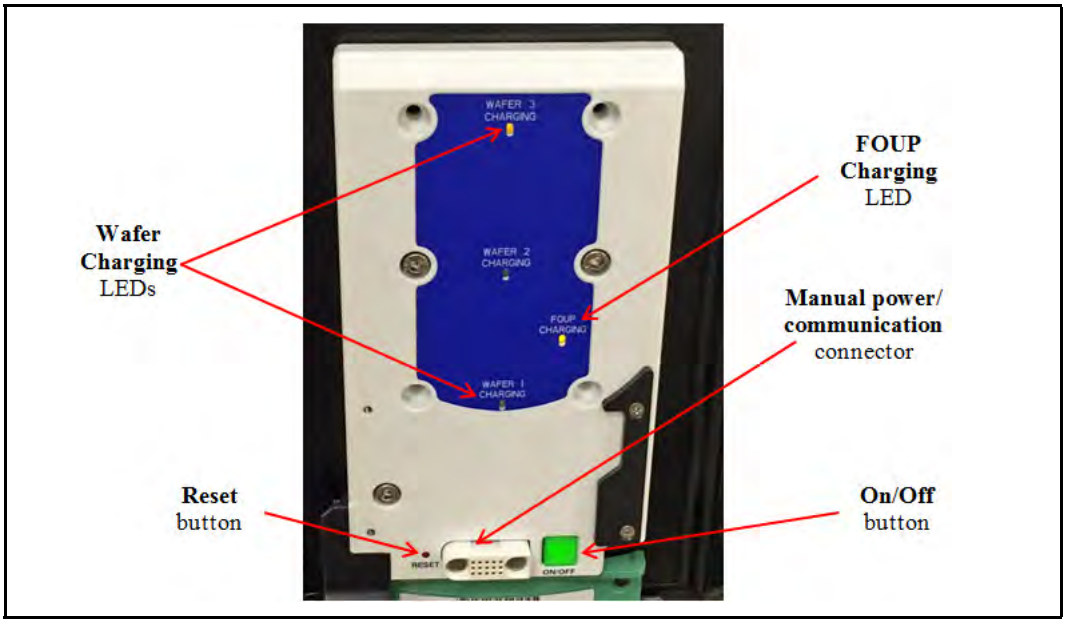


Table 2-2: KLA Automation FOUP Indicators and Controls

Control or Indicator	Color	Comments
Wafer Charging LED	Green	Blinks when the applicable Wafer is charging Steady when the applicable Wafer is present but not charging (Wafer is fully charged)
	Orange	Steady when the applicable Wafer is absent
FOUP Charging LED	Green	Blinks when the FOUP is charging Steady when the FOUP is powered On and at the Station but not charging (FOUP is fully charged)
	Orange	Steady when the FOUP is powered On but is not at the Station
Reset button	n/a	To press the Reset button, insert a thin stylus or pen tip into the hole
Important: If the FOUP is in an error state, reset it using the FOUP software (see Section 2.2.6 for details). If the software reset does not clear the error, then use the Reset button to perform a physical reset. Reset the FOUP **only** if it is an error state.		
Manual power/ communication connector	n/a	Used to connect a laptop to the FOUP in order to perform manual missions, or provide power to a FOUP that has not been at the Station for a long time
ON/OFF button	n/a	To power down the FOUP, press and hold the ON/OFF button until the **FOUP Charging LED** turns off

2.2.3 KLA Automation FOUP Data Storage and Transfer

- When the Wafer is back in the Automation FOUP, it automatically transmits the data it collected during the mission to the Automation FOUP.
- When the Automation FOUP is placed on the Automation Station, the Automation FOUP automatically transmits the data to the Automation Controller to be stored in the centralized database.
- An Automation FOUP can store up to 10 hours of data.

2.2.4 KLA Automation FOUP Battery

- When an Automation FOUP's charge level goes down to 35%, an alarm is sent to the host.
- The Automation FOUP goes into power-save mode:
  - When the charge level goes down to 20%
  - If it is not on a mission and has not been charged for 30 minutes
- When in power-save mode, the Automation FOUP can maintain its charge for 6 months.
- To charge an Automation FOUP, place it on the FOUP Station and make sure it is **clamped (not in LOAD READY state)**, or use the manual power/communication cable to connect it to a laptop.

NOTE

If the Automation FOUP was powered off, placing it on the Automation Station and clamping it will power it on automatically.

- When powered off, the Automation FOUP can maintain its charge for 12 months.

DANGER

Use only batteries with built-in protection, and not intended to replace by an operator.

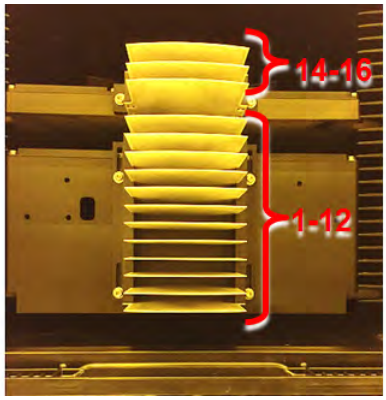
NOTE

If the Automation FOUP loses its charge completely, please ask your KLA service representative to change the battery.

2.2.5 Option: Emulating Occupied KLA Automation FOUP Slots

An available KLA Automation FOUP option is a set of emulation fins for slots that contain any electronics boxes. The fins cause load port wafer mappers to identify those slots as occupied.

Figure 2-5: KLA Automation System Topology



2.2.6 Reset the KLA Automation FOUP (software restart)

IMPORTANT

Reset the KLA Automation FOUP ***only when it is in an error state****.*

1. Connect an external touch screen to a USB port on the FEC of the Automation Station.

Figure 2-6: USB Ports on the FEC

NOTE

If you prefer, you can remote-connect to the FEC instead of using an external touch screen, or use the AM Server web UI/Administration page to connect to the station.

2. Open a browser window in Chrome or Firefox.
3. Go to URL:

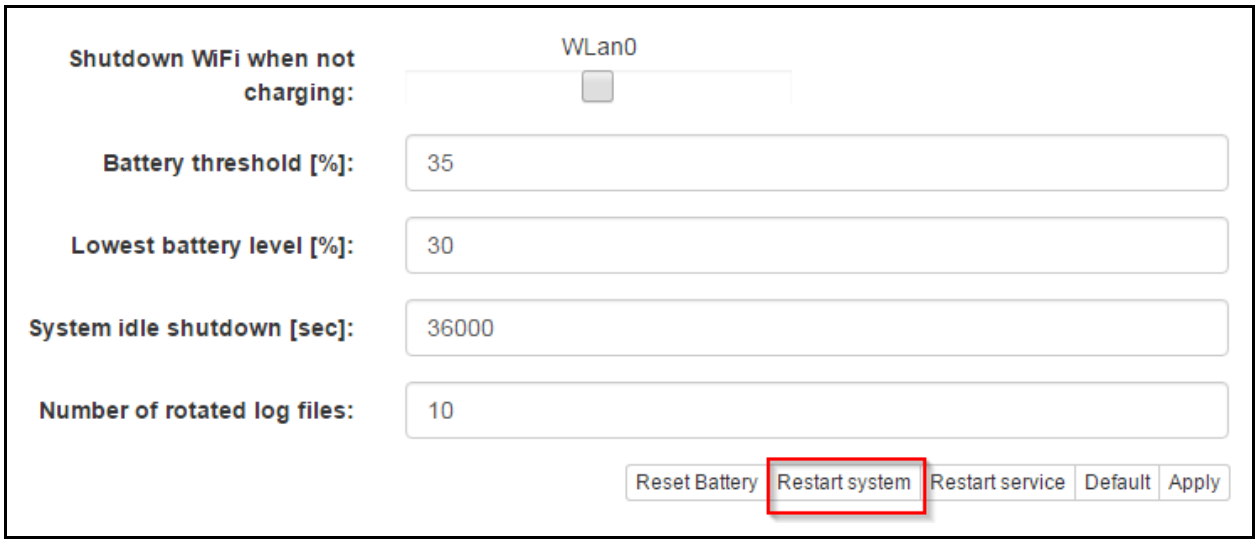
   `http://192.168.10.100:5000` (the FOUP's static IP address)

4. Log in to the FOUP using the following ID and Password:
   - **User ID** = **admin**
   - **Password** = **admin**
5. In the FOUP Configuration page, click **Advanced**.

Figure 2-7: FOUP Configuration Page

6. In the Advanced page, click **Restart system**.

Figure 2-8: FOUP Restart



7. Wait until the system restarts.

NOTE

The system takes approximately 3 minutes to restart.

3.

KLA AM Station Application UI

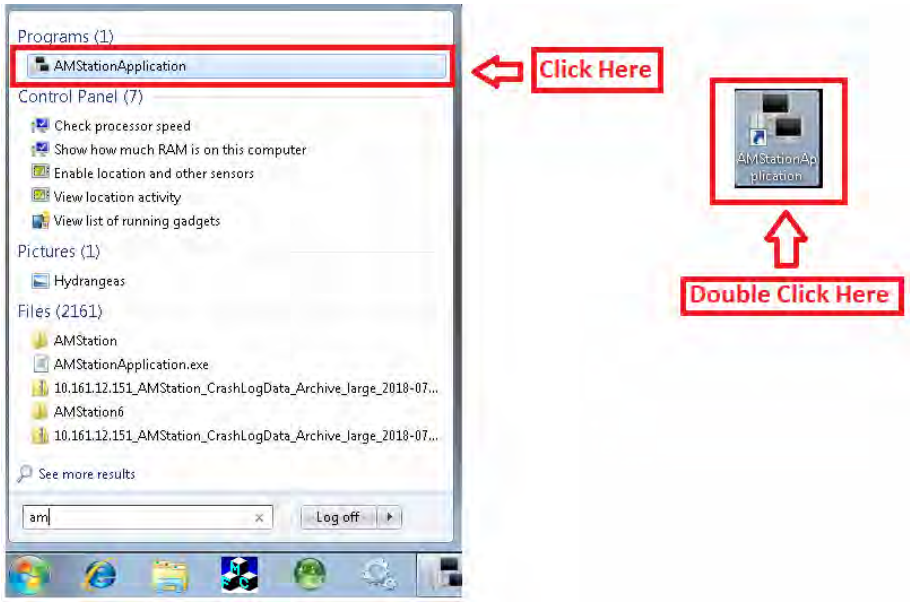
3.1 Access to UI

1. This User Interface is developed by WPF forms using MVVM architecture pattern.

2. User must go to the required build path and copy the required installer to the station/system.

3. User shall double click on the installer as shown in the below figure.

4. After the successful installation, User can start the application through window key or click on the icon which is created over the desKLAop.



5. The display of the KLA AM Station Application will be as shown below after the double click on the Icon.

6. From the above figure User shall observe the below mentioned Navigation Tabs displayed in the application.

- Home
- Test
- Configuration
- Diagnostics
- FA UI
- Maintenance
- Help About

3.2 Features in the Application

3.2.1 Home Page

1. Use must click on the tab "**Home Page**" to see the over view of the home page tab.

2. The display of Home Page will be shown as mentioned below.

3. The Home Page is a default page that should open whenever User try to access the KLA AM Station application.

4. The Home is divided into two parts;

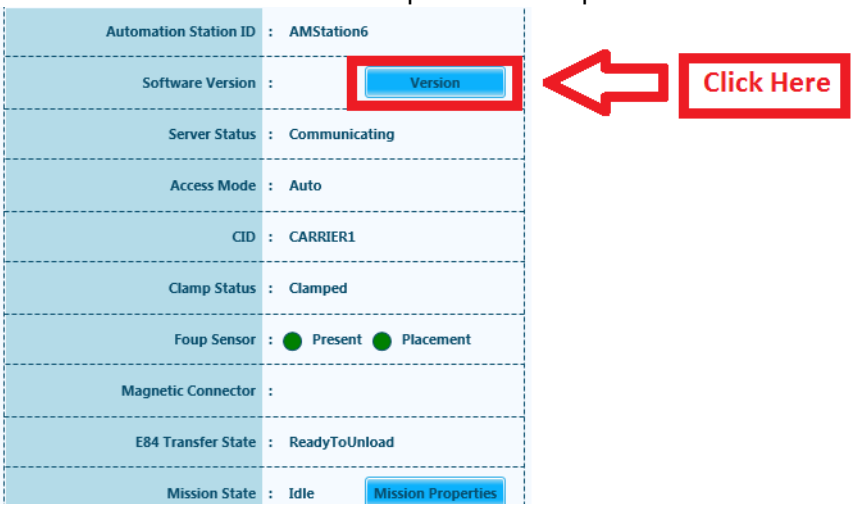
   - Automation Station ID and its subsequent data related to Software Version and Status.

   - Carrier ID and its subsequent data related to Wafer and Charging.

5. The Automation Station ID section contains the below mentioned data.

- Software Version

- As shown in the below Figure, User must click on "**Version**" to know the Software Version details, Then a pop up window is displayed with station version and its dependent component version.



- After clicking on the "Version", User will observe the below mentioned pop up related to information about "**Server**", "**Station**", "**Foup**" and "**Wafer**".

AM Version	AM HF Version	SA Version	ClientPatches
1.3.0.12700	NA	4.1.5.12	+

Station

Station Name	Version	HF Version	Client Patches
Station1	1.3.0.12700	1.3.0.12701	+

Client Name	Version
Phoenix	12.6.0.20401
	12.6.0.20403
Nexus	7.3.0.204
	7.3.0.205

Station2	1.3.0.12700	NA	+

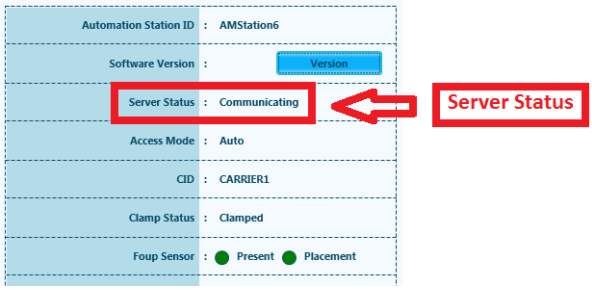
Foup

FOUP CID	AM Version	SA Version
00111113	1.3.0.12700	1.5.105
00111112	1.3.0.12700	1.5.106

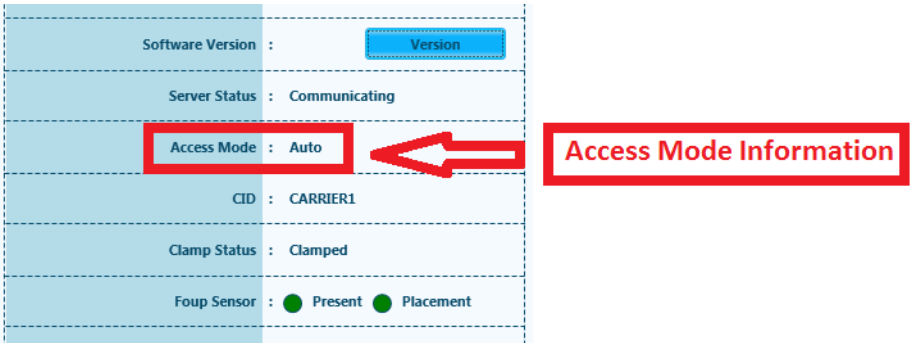
Wafer

WAFER ID	WAFER Type	Version
D62911	SA	4.0.99
Am-123	AM	1.2.0.122

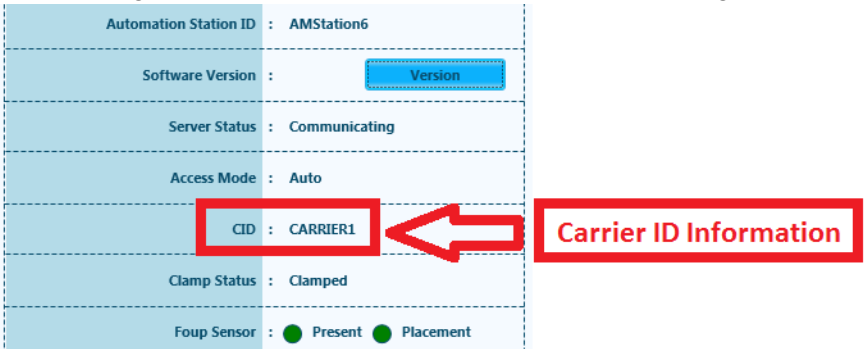
- Server status also is displayed in the Home Page which tells about the Station whether in communication with the server or in any error condition.



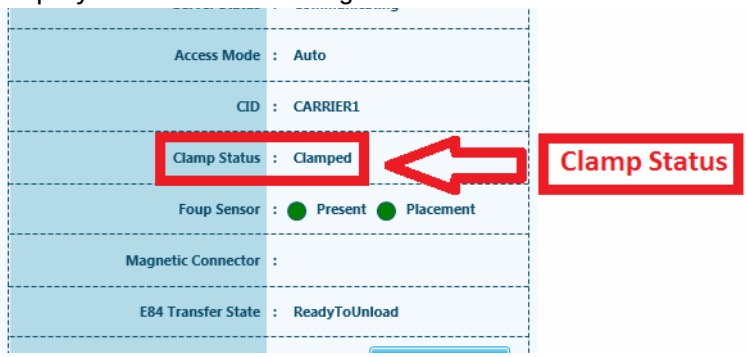
- Station access mode information also be displayed in the Home Page.



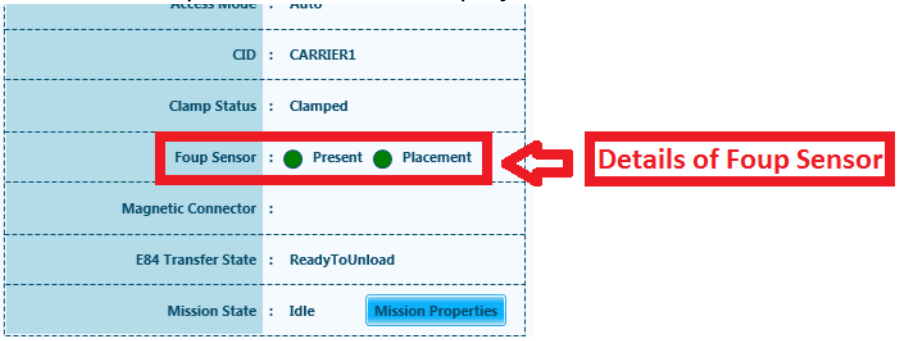
- User shall get the details of Carrier ID in the Home Page.



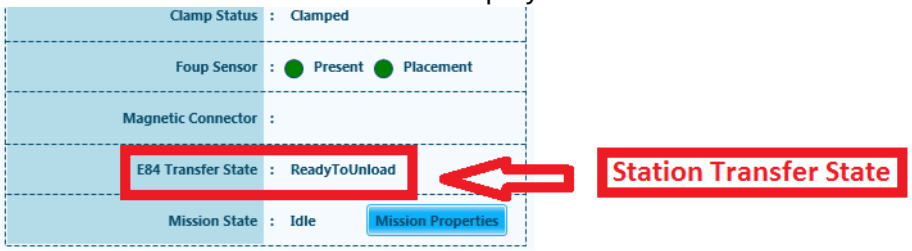
- Status of Foup Clamping (Clamped or Unclamped) shall be displayed in the Home Page.



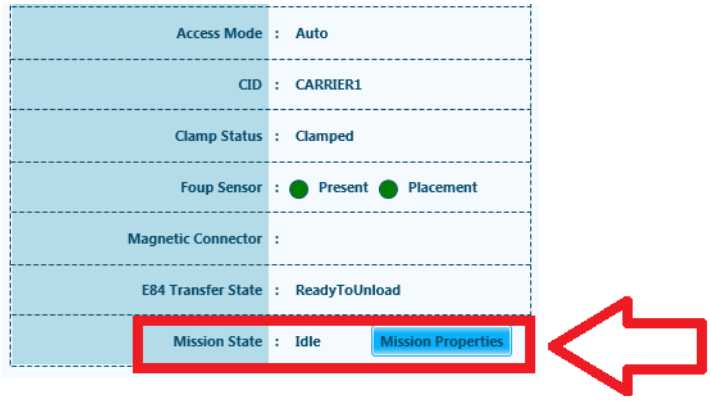
- Details of Foup sensor shall be displayed as shown below.



- Station Transfer state shall be displayed as shown below.



- User can identify the the label "**Mission State**" to know the Mission State status.



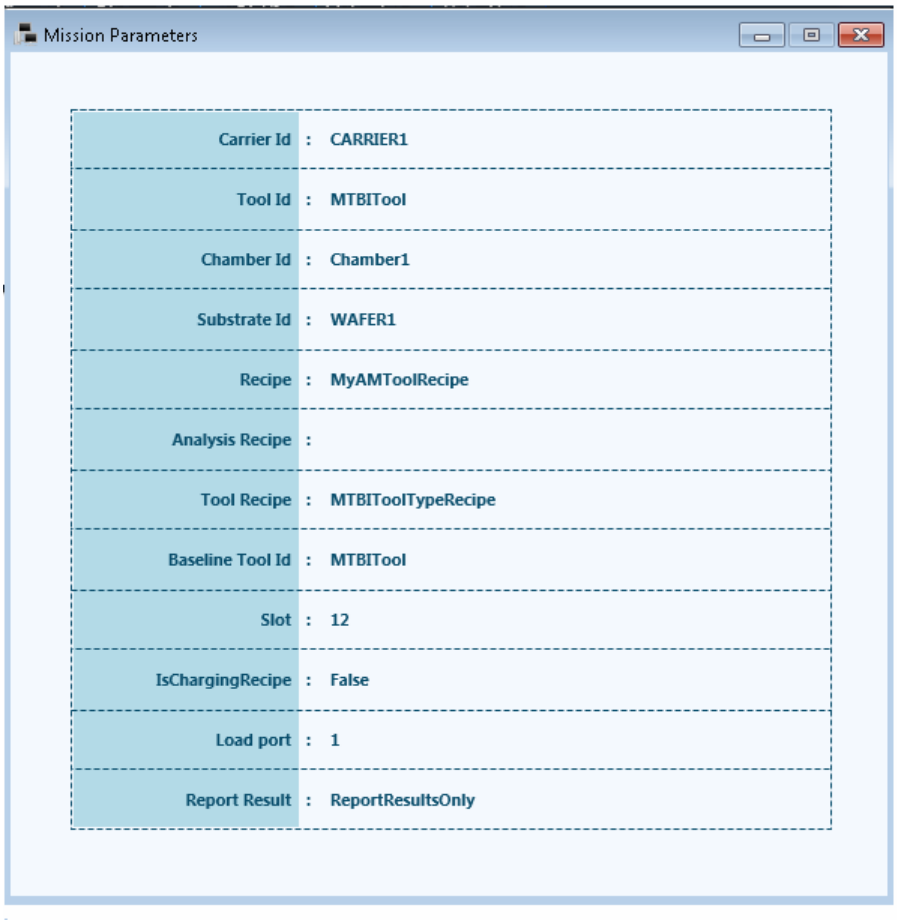
- Right side label shall be texted with one of the following state “CJ1” or “CJ2” or “**IDLE**”.

- Also User shall see the button “**Mission Parameters**” to know the details of the Mission Parameters.

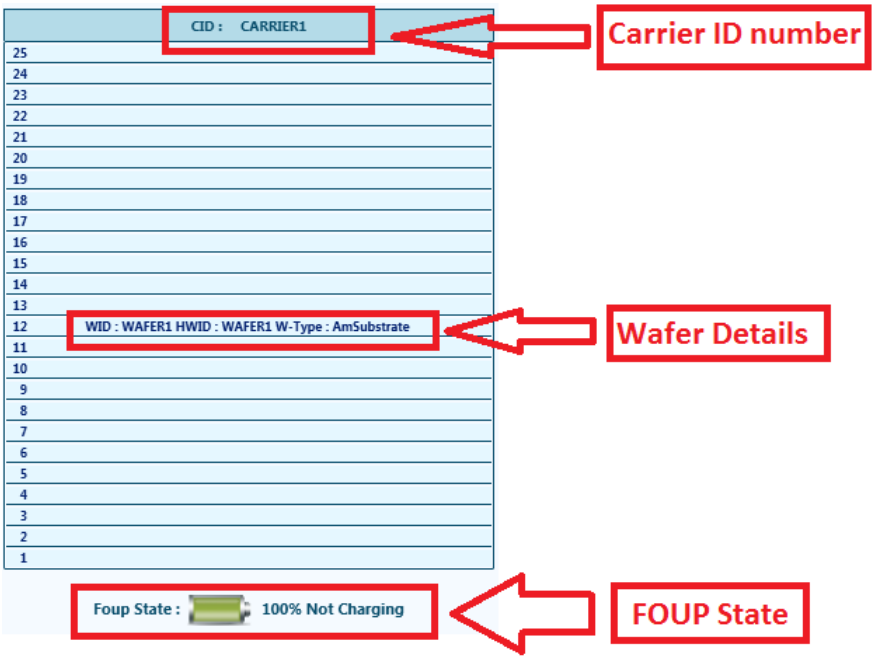
  - This button shall text as “**Mission Parameters**” if state is CJ1 or CJ2.

  - This button shall text as “Last **Mission Parameters**” if state is IDLE.

- If the mission is in "CJ1" or "CJ2", then user shall able to see current mission parameter.
- If the mission is in "IDLE", then user shall able to see current mission parameter.



- Carrier ID (CID)
  - This section displays information about CID number and the wafer slots information.
  - Also User shall know the wafer details in which slot the wafer existing and other related information.
  - Also this section displays the information about FOUP state.



NOTE

FOUP State displays the information about whether the FOUP is charging or not. Also Displays the percentage of total charge of the FOUP.

3.2.2 Test

1. The display of "**Test**" shall be shown as mentioned below.

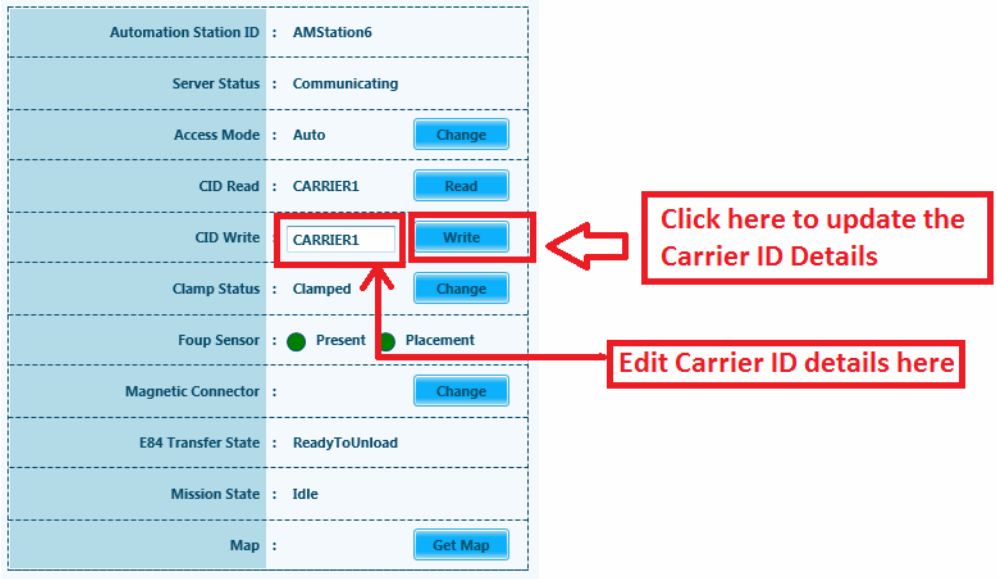
2. This Feature shall allow the user to view the below mentioned features

- AM Station ID
- Server Status (Refer to page 3-23)
- Access Mode (Refer to page 3-23)
- CID Read
- CID Write
- Clamp Status
- Foup Sensor
- Magnetic Connector
- E84 Transfer State
- Mission State

3. User shall get details of the AM Station ID in the "**AM Station ID**" row.

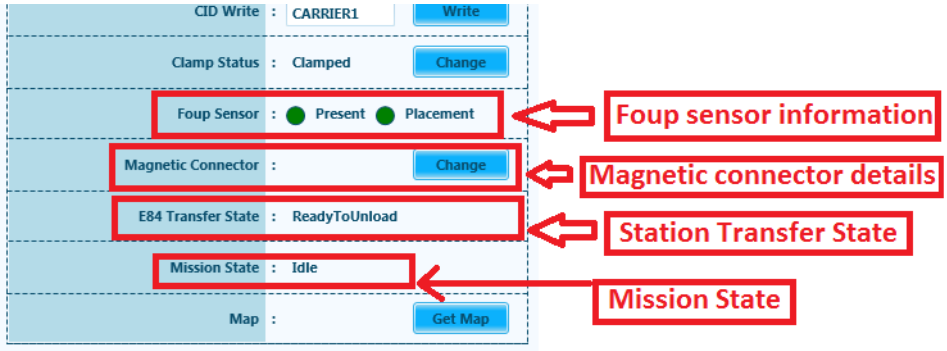
4. User shall test the Carrier ID read option in CID Read by clicking on "**Read**".

5. User shall also edit details of Carrier ID in "**CID Write**" by clicking on "**Write**".

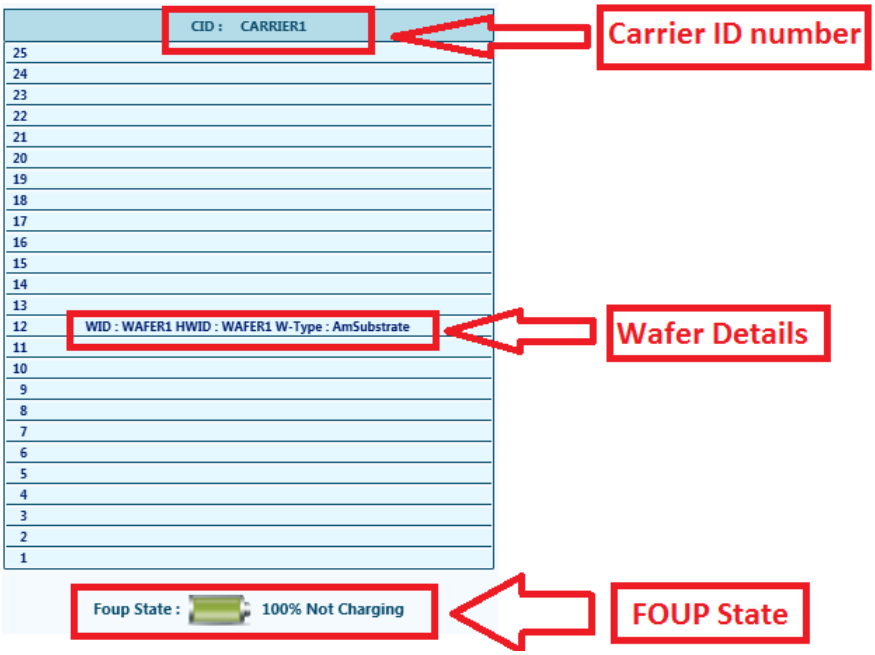


6. User shall get the clamiping information as shown in the below figure, Also User shall able to change clamping status by clicking on "**Change**".

7. Also User shall know the details of "**FOUP SENSOR**", "**Magnetic Connector**", Station transfer state and "**Mission State**".

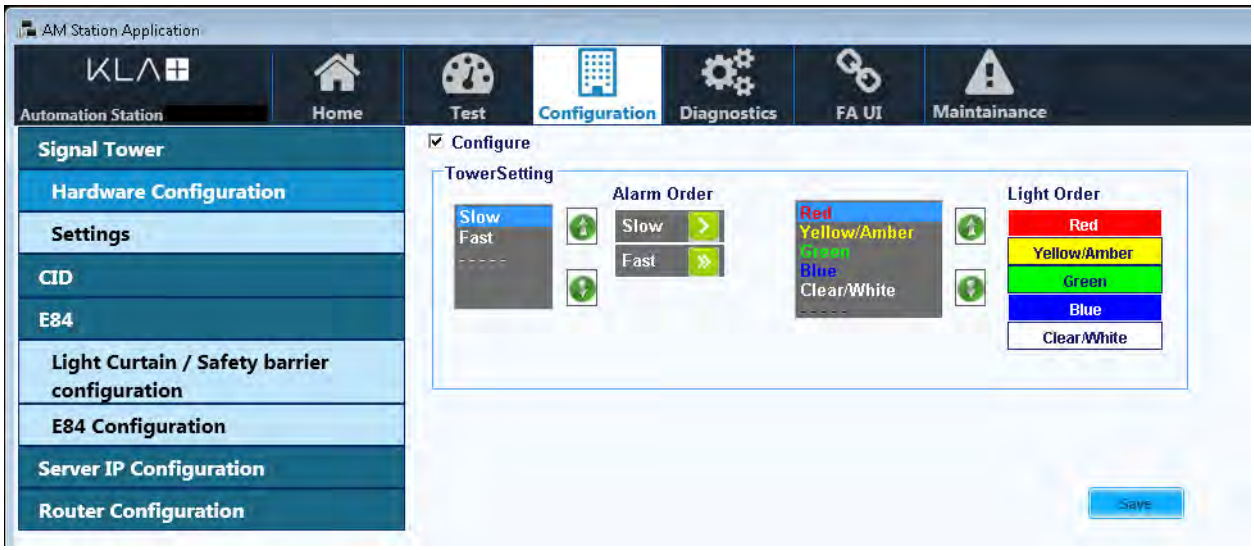


8. Refer to page 3-26 for CID display information.



3.2.3 Configuration

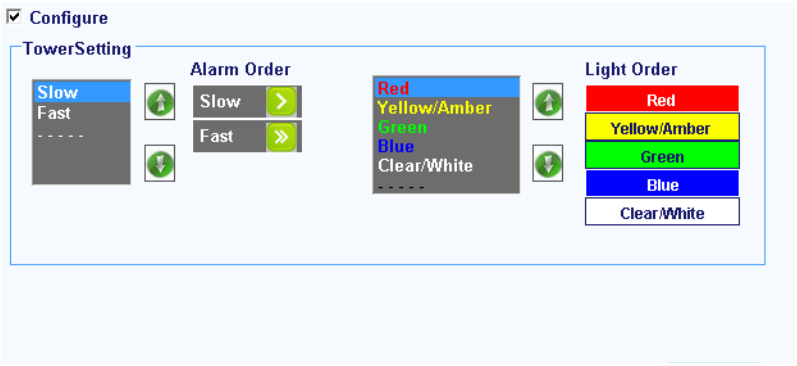
1. Configuration window used to configure the station and its components. The display of Configuration window shall be seen as shown below.



2. In this User controls shall be used to display in UI as third party UI components shall be populated in AM Station application UI.

3. HW Configuration

   - On Click of configuration icon in the banner, the sub menu shall be populated, by default Hardware Configuration sub menu shall be selected.

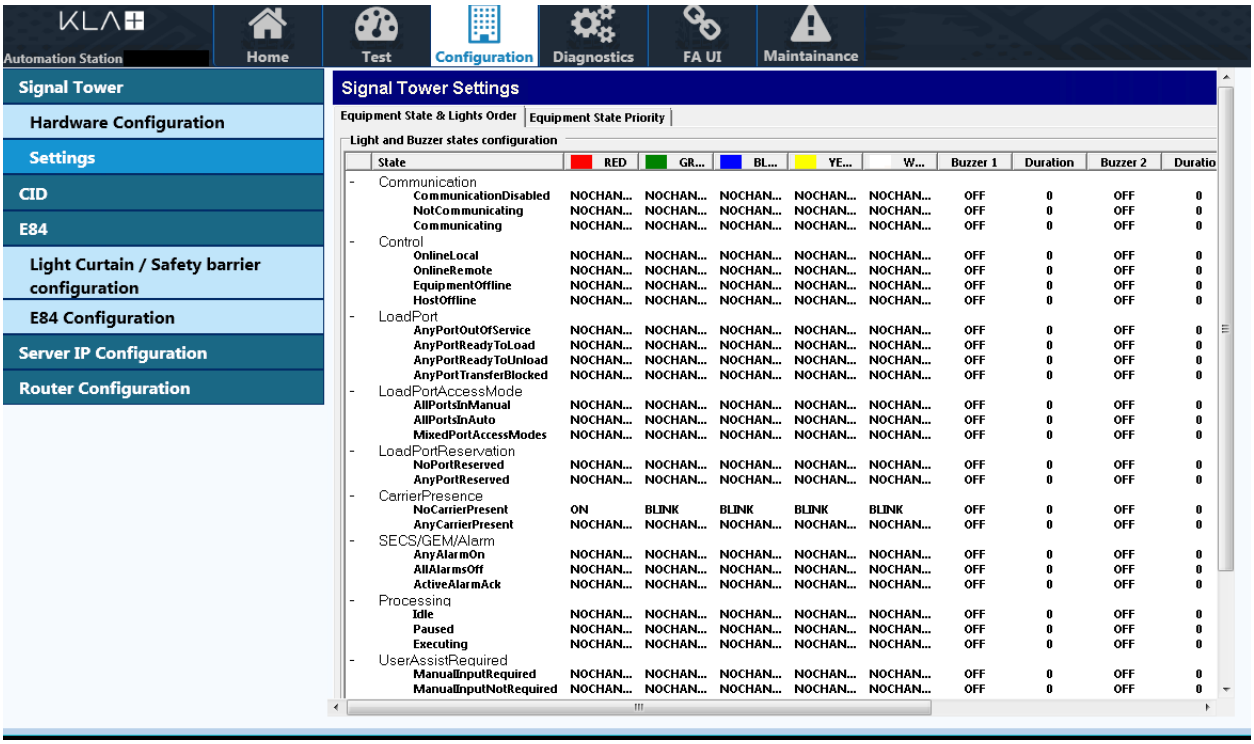


   - The above figures shows the details about the Tower settings UI component which shall be populated in user control.

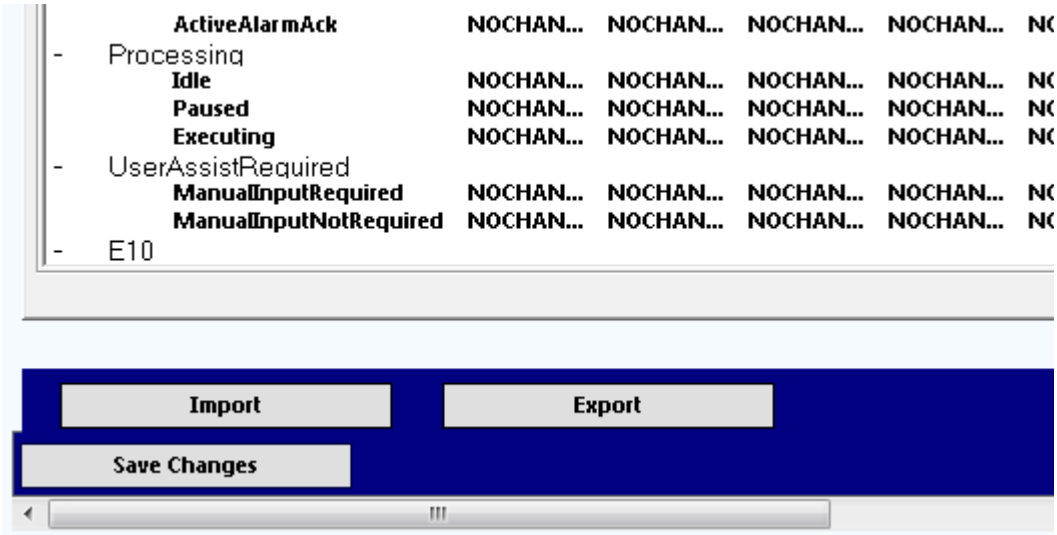
   - User shall select the required fields in this window to set the Tower Settings.

4. Settings

- User must click on "**Settings**" and the display of "**Settings**" shall be seen as shown below

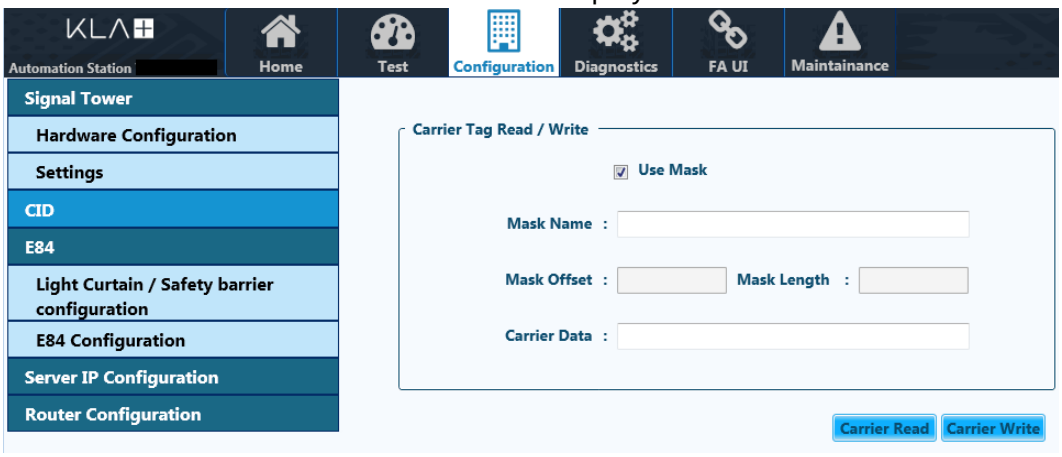


- Tho above figure shows the signal tower setting details.
- User shall modify the settings and save the changes.
- Also User can able to Import/Export the settings.

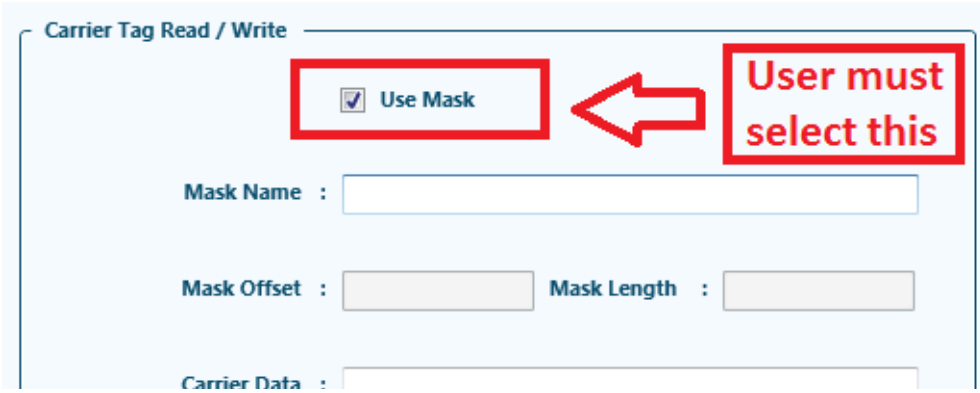


5. CID

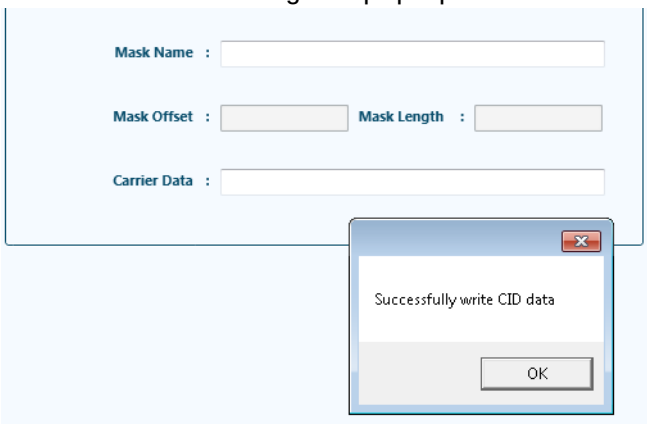
- User must click on "**CID**" and the display shall be seen as shown below.



- Carrier ID (CID) tab is used to enter the details of Mask Name, For this User must select the "**Use Mask**" option.

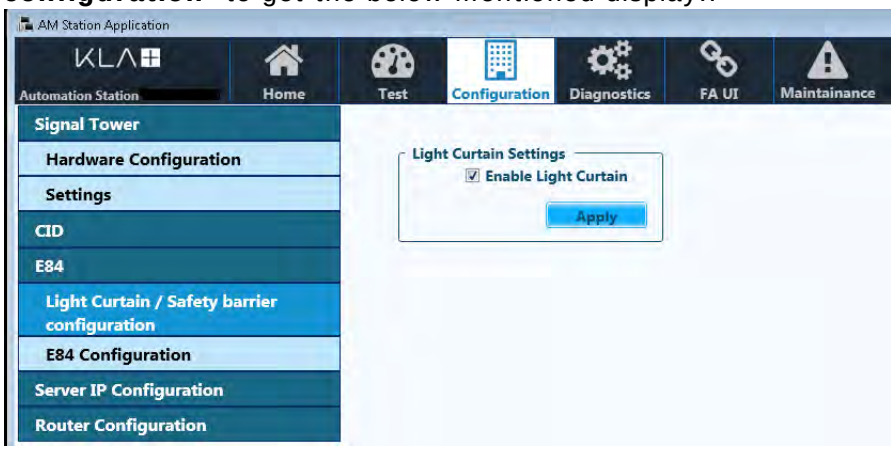


- Also User shall set the details of offset / mask length
- Click on "**Carrier Read**" to read the carrier ID details.
- Click on "**Carrier Write**" to update the Carrier ID details. asfter clicking on "Carrier Write" User shall get a pop up as shown below.



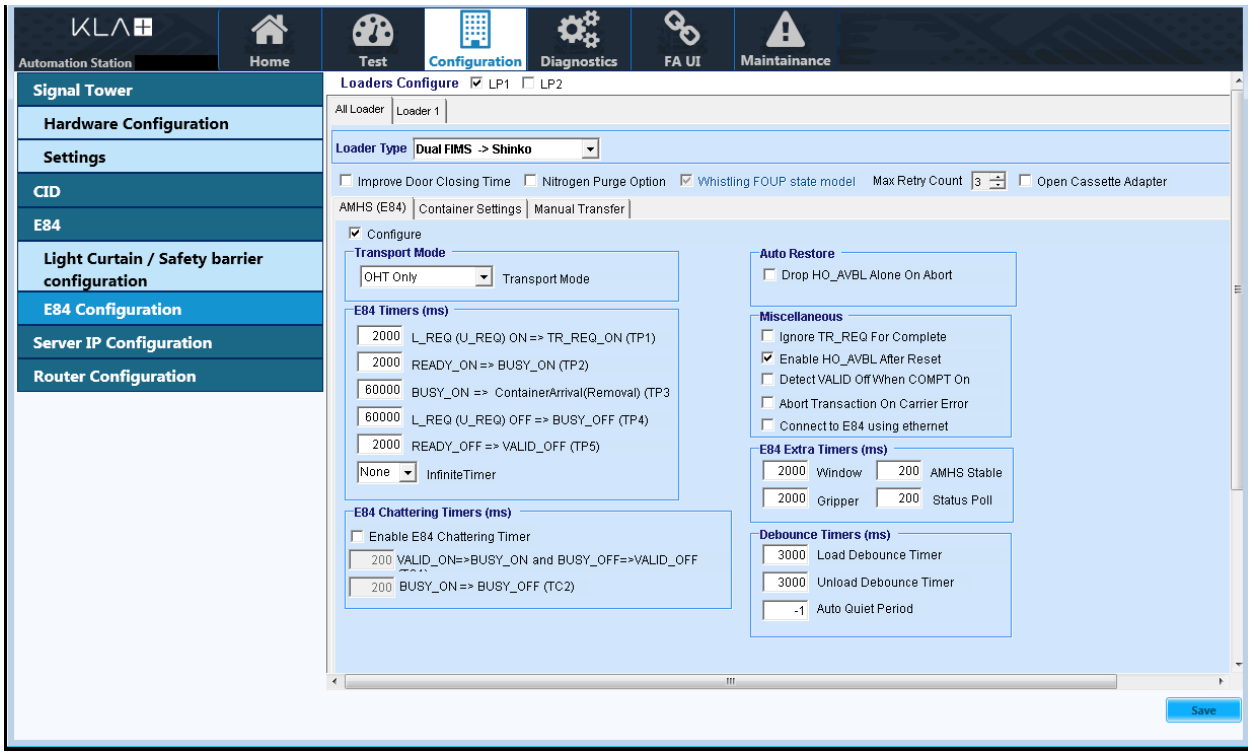
6. E84

- Light Curtain/Safety barrier configuration
  - User has to click on "**Light Curtain / Safety barrier configuration**" to get the below mentioned display..



  - A check box shall be displayed (Refer to above figure) which shall allow the User to enable or disable the Light Curtain Option.

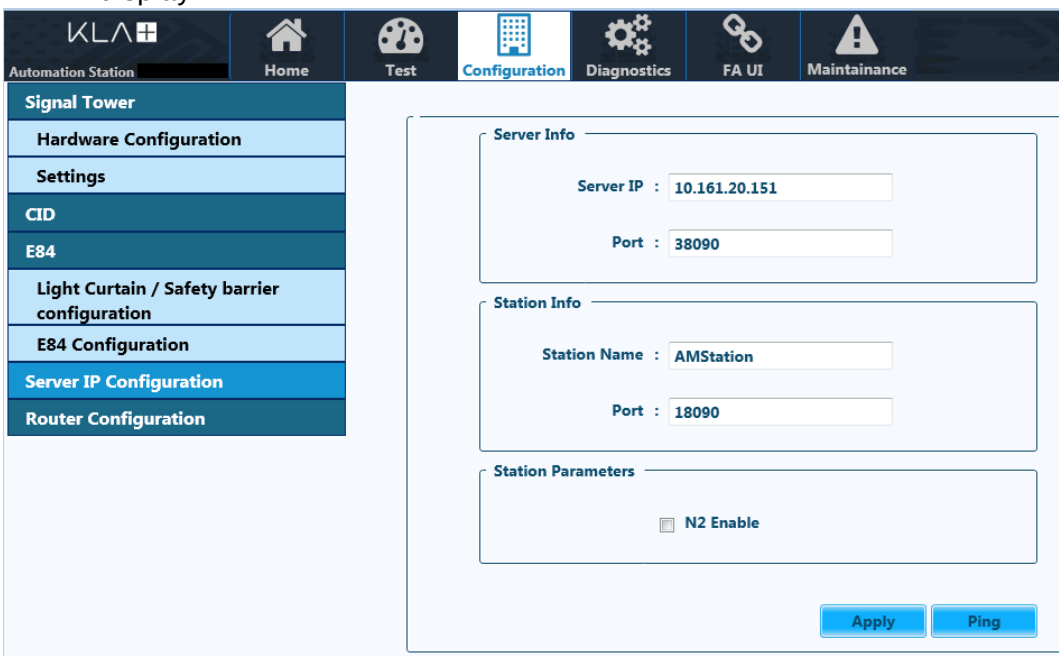
- E84 Configuration
  - User must click on "**E84 Configuration**" to get the below mentioned display.



  - This UI (Refer to above figure) displays the E84 configuration component in user control.

7. Server IP Configuration

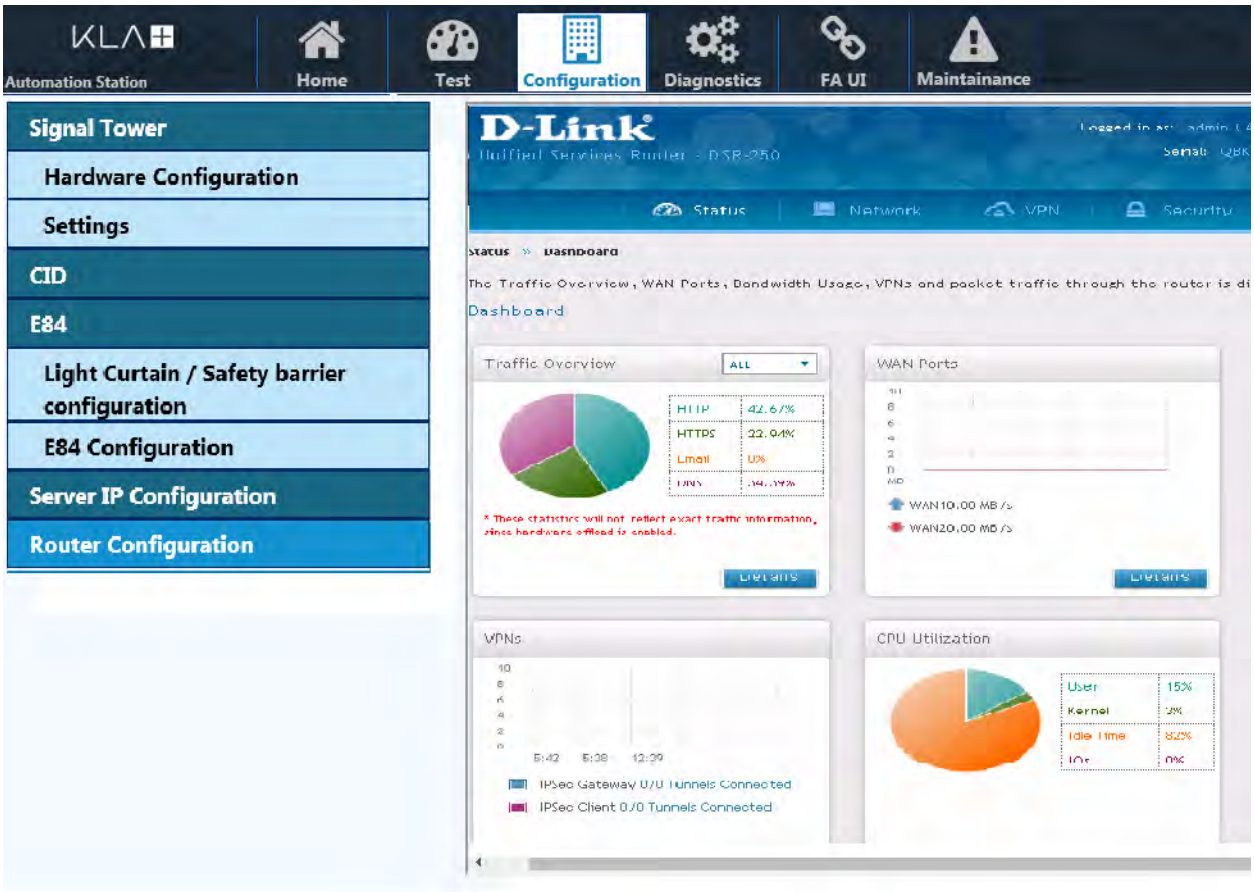
- User must click on "**Server IP Configuration**" to get below mentioned display.



- User shall know the details of Server Info, Station Info details which are populated in the right side (Refer to above figure).
- Server IP: This can be edited as per the requirement. Validate the IP in correct format while clicking apply button.
- Port : This displays the Port number to the User and this cannot be edited by User.
- Station Name: User can edit this and validate the data before clicking on "Apply".
- Port : This displays the Station Port number to the User and this cannot be edited by User.
- "**N2 enable**": User shall allow to enable or disable N2.
- User has to click on "**Apply**" to update the information Station Configuration file.

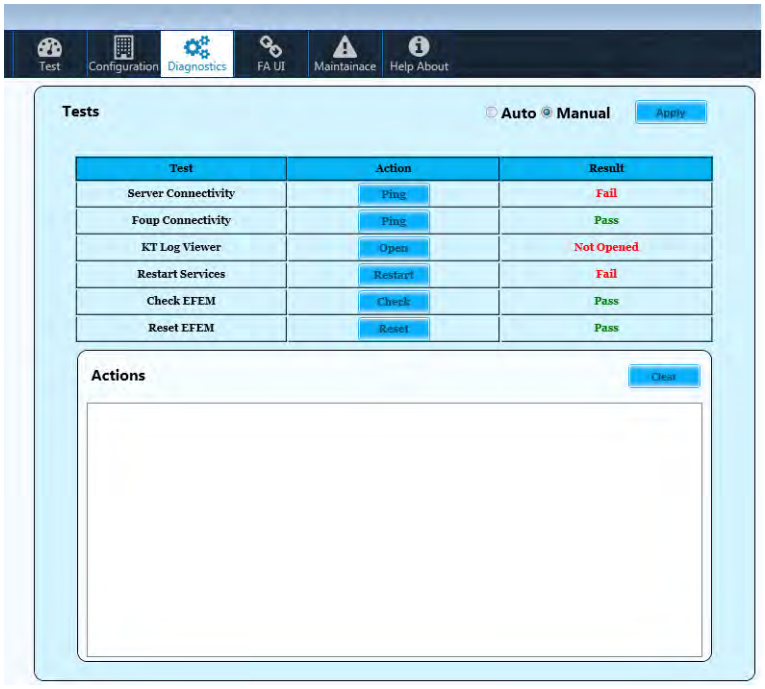
8. Router Configuration

- Click on "**Router Configuration**", Then User shall have the following display as shown below.



3.2.4 Diagnostics

1. User has to click on "**Diagnostics**" icon and the display will be seen as shown below.



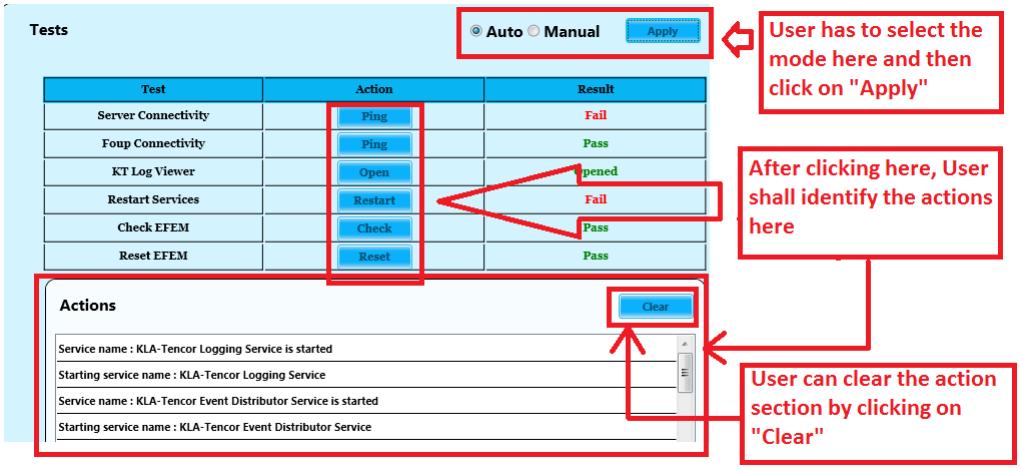
2. User shall able to see the three columns from the above figure which are

   - Test: This column shall give the details of different kinds of tests
   - Action: This column shall give the details of Action. Here User need to click on respective button to start the action.
   - Result: This column shall give the details of the result of particular test.

3. Also User can able to set the mode to "**Auto**" or "**Manual**" and then click on "**Apply**" (Refer to below Figure).

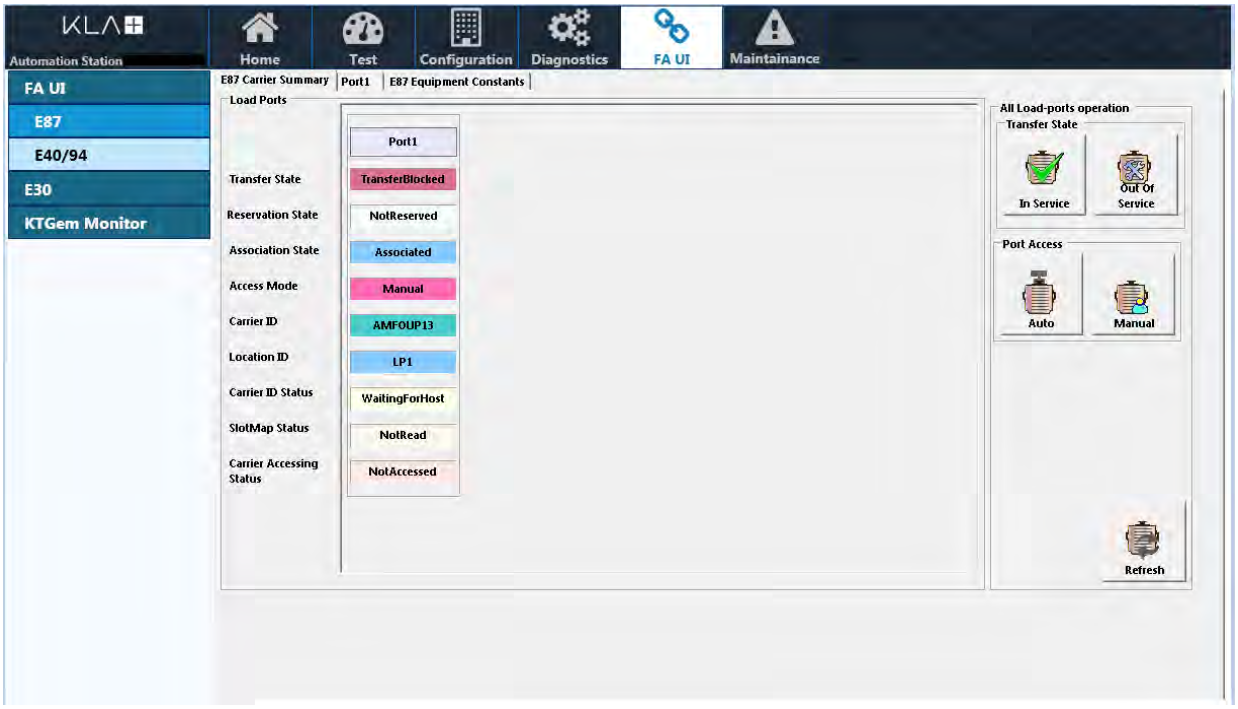
4. Also User shall see the relevant details of "**Actions**" after clicking on any action (Refer to below Figure).

5. User shall clear the deatils action by clicking "**Clear**" (Refer to below Figure).



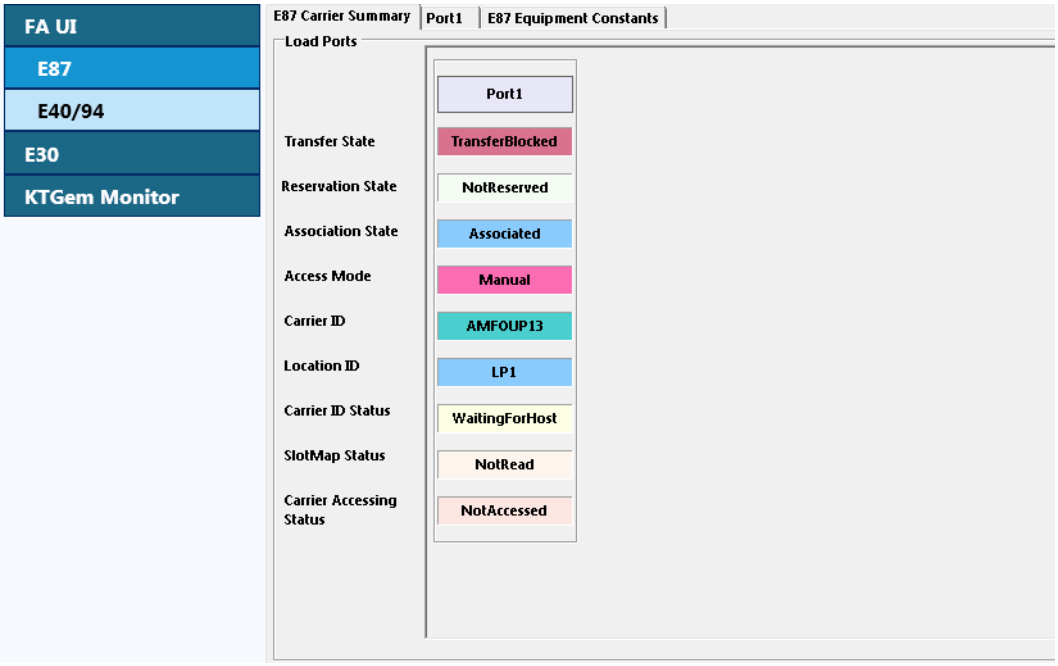
3.2.5 FA UI (Factory Automation User Interface)

1. User must click on "**FA UI**" and the display will be seen as shown below.



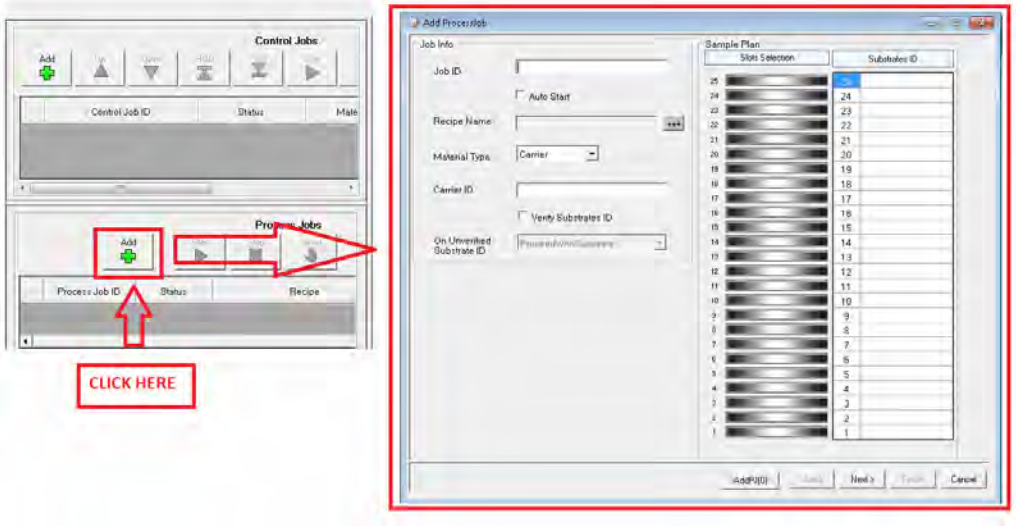
2. Here User can see the the current running jobs which are "**E87**", **"E40/90"**, "**E30**" and "**KTGem Monitor**".

3. Click on "**E87**" and the display will be seen as shown below.

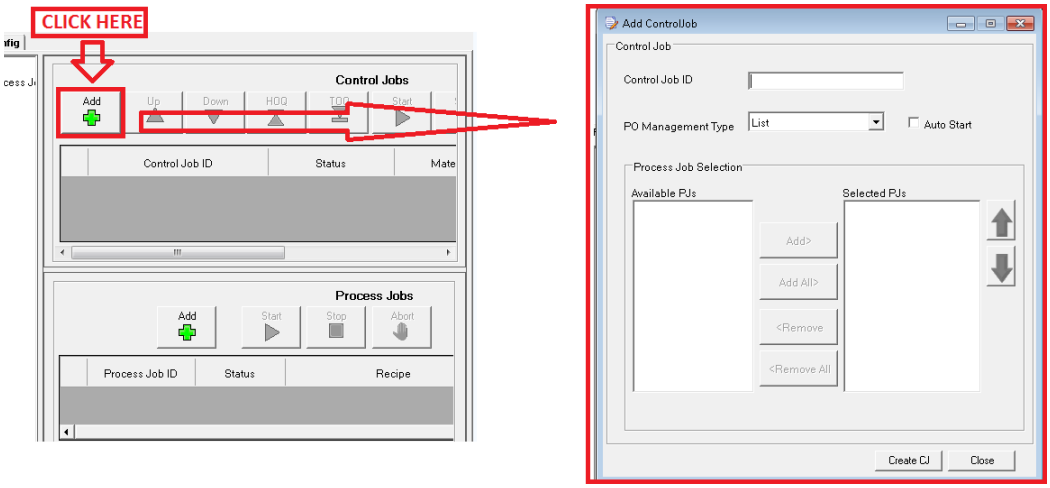


4. Click on "**E40/90**" and User shall able to see the below mentioned window.

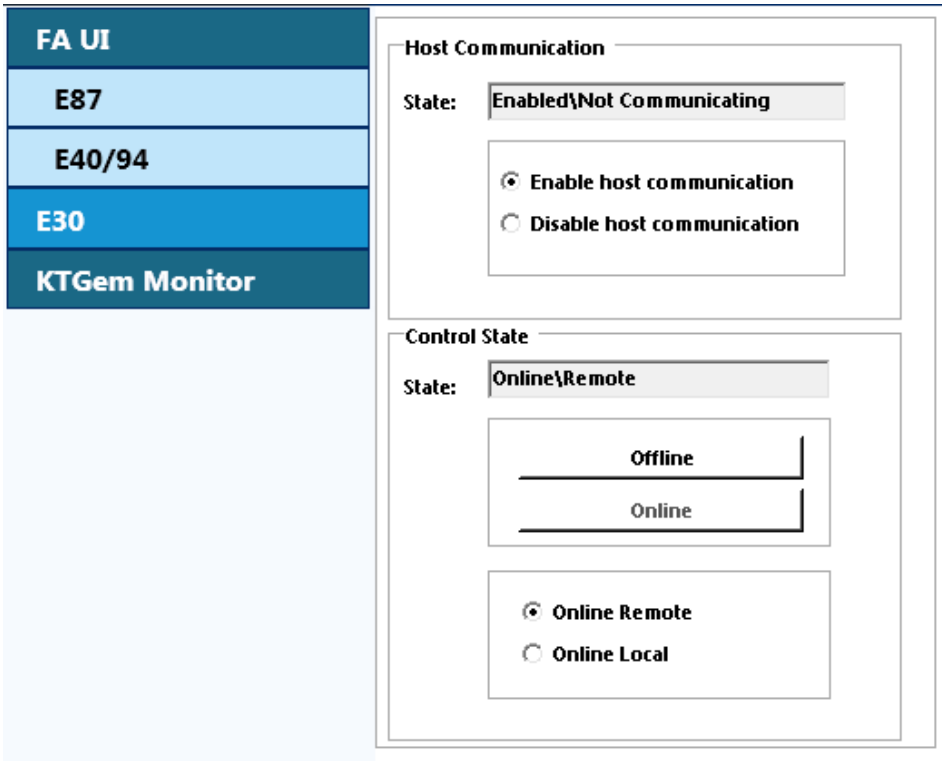
- Also User can able to add new Process Job by clicking on "**Add**" in Process Jobs section.



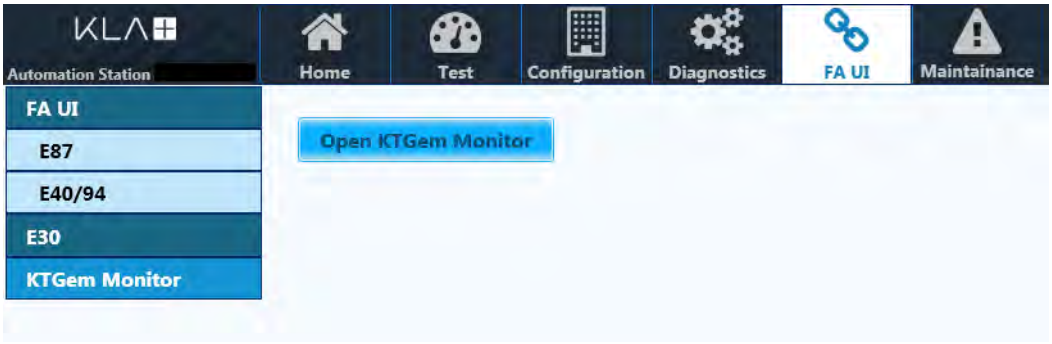
- Also User can able to add the new Control jobs a in the "**E40/90**" window by clicking on "**Add**" in Control Jobs section.



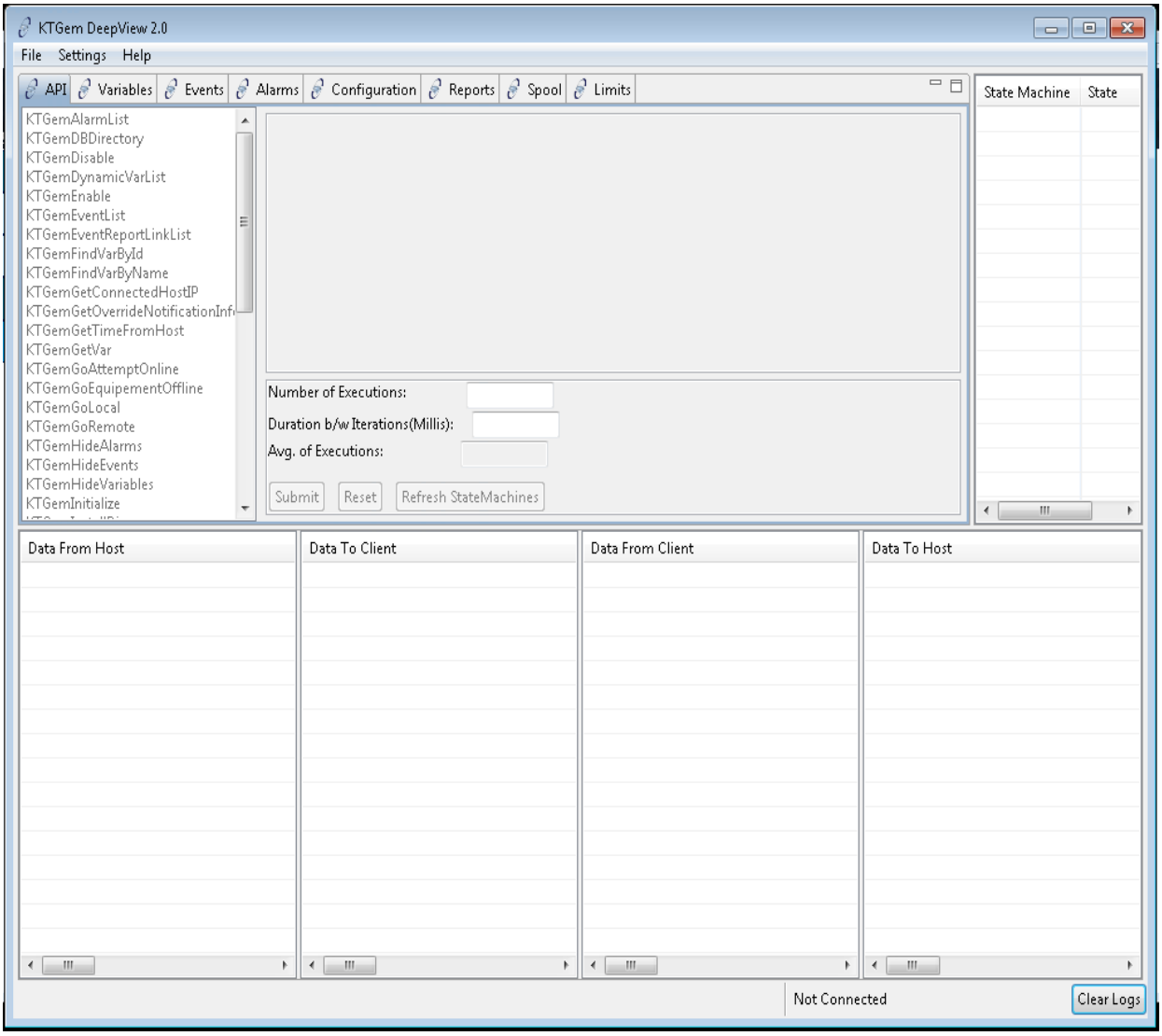
5. Click on "**E30**" and User shall able to see the below mentioned window.



6. Click on "**KTGem Monitor**" and User shall able to see the below mentioned window.



- Click on "**Open KTGem Monitor**" to open KTGem Deep View 2.0 Application.

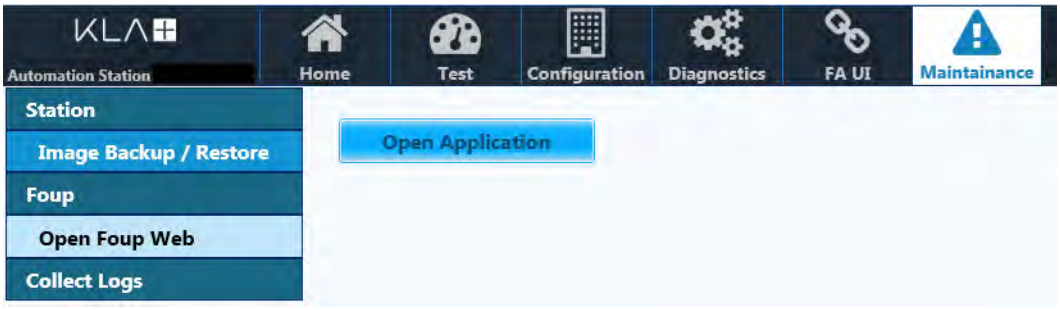


- From the above figure User can able to view the all tabs and click on respective tab to know detailed information.

- User must click on "**Clear Logs**" to clear the log files for the selected tab.

3.2.6 Maintenance

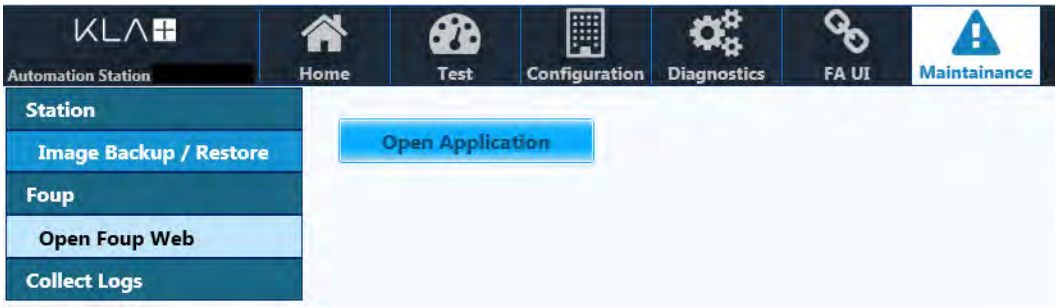
1. User must click on "**Maintenance**" tab to get the below mentioned display.



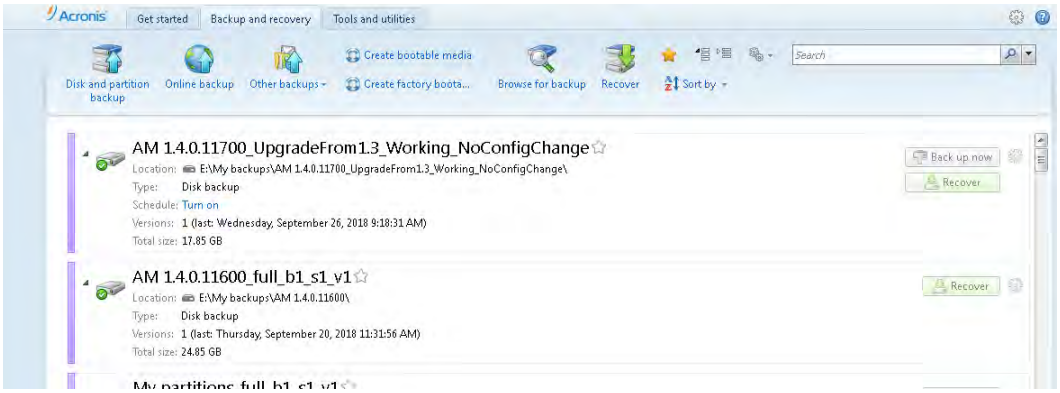
2. This window will give User the below mentioned features

   - Image Back up/Restore.
   - Open Foup Web.

3. User must click on "**Image Back Up / Restore**" to open the FOUP Web UI.

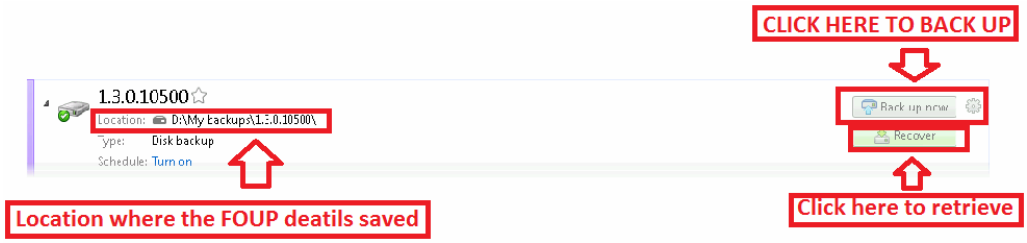


   - User must click on "**Open Application**" and the display shall be seen as mentioned below



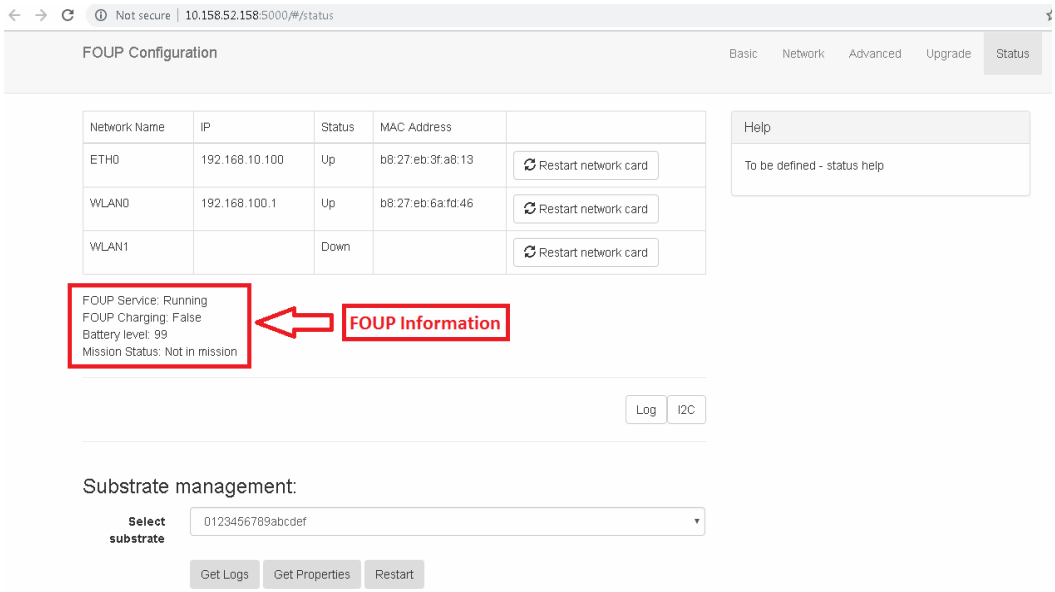
   - User must click on "**Back up now**", then the AM Station details will be saved in the in the respective location.

- User must click on "**Recover**" to retrieve the FOUP data when ever required.



4. User must click on "**Open Foup Web**" to open the Open Foup Web UI.

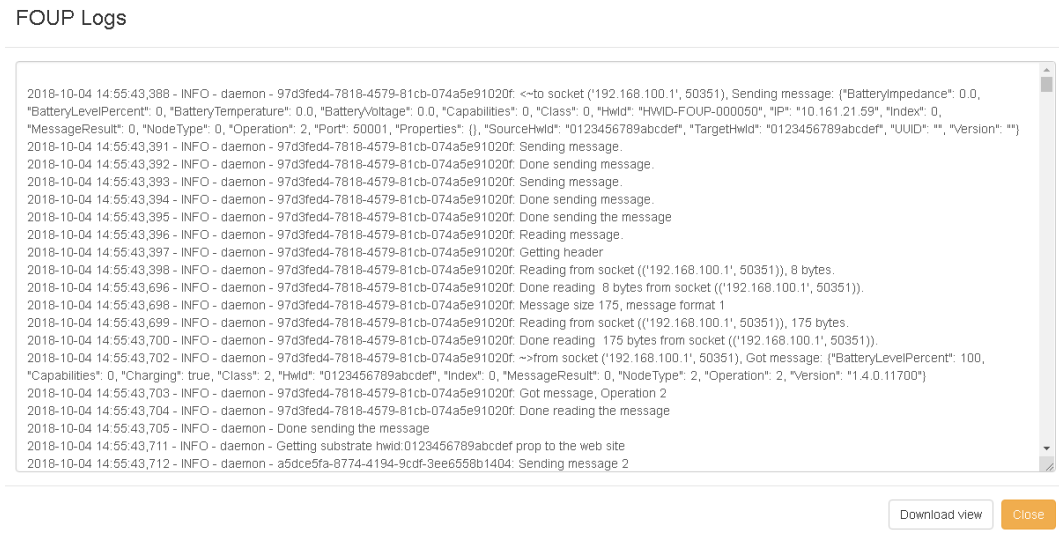
- User must click on "**Open Foup Web UI**" and the display shall be seen as mentioned below.



- From the above figure User shall see the details of Foup Service, Foup Charging, Battery Level and Mission status.

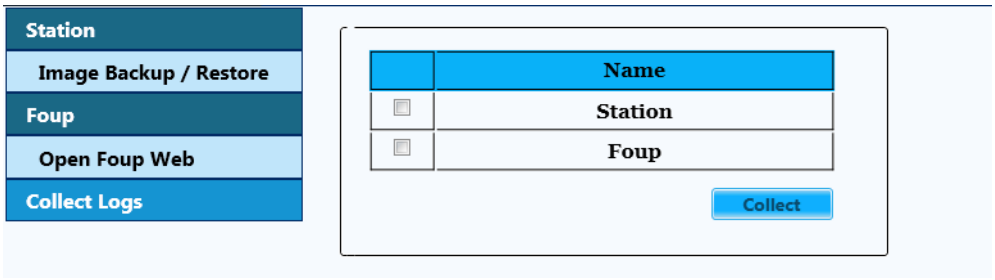
- Also User shall able to see the Network details from the above Figure.

- Click on "**Log**" to display Foup logs.

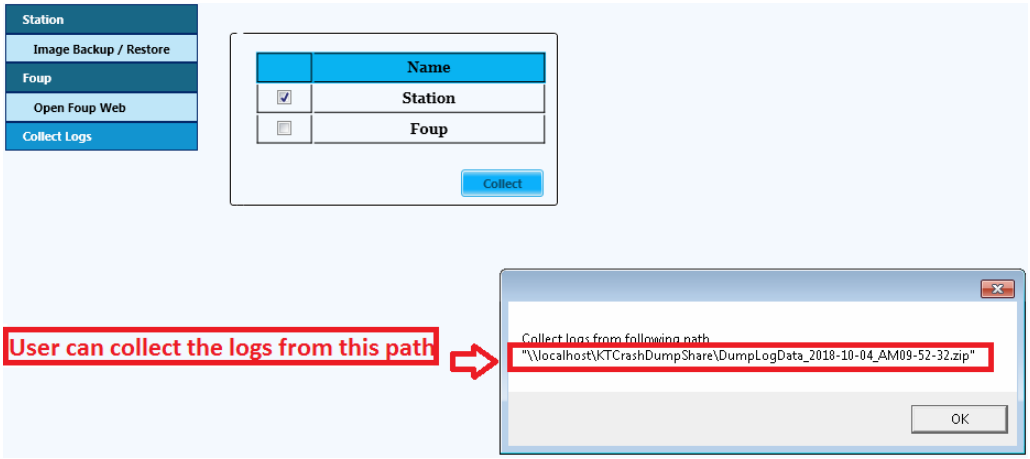


- Click on "**I2C**" to see the I2C debugging information.

5. User must click on "**Collect Logs**" and the display shall be seen as shown below.



- User must select "**Station**" or "**Foup**" to collect respective Logs.
- Click on "**Collect**" to see the display of Foup Log.



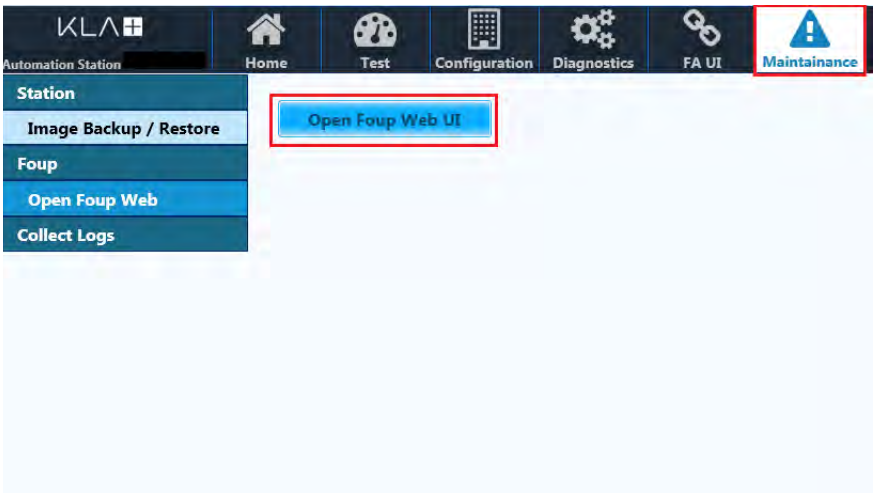
- From the above figure User shall observe the location for collecting logs.

3.3 Software Upgrade for FOUP and Wafer

1. Launch AM Station Application.

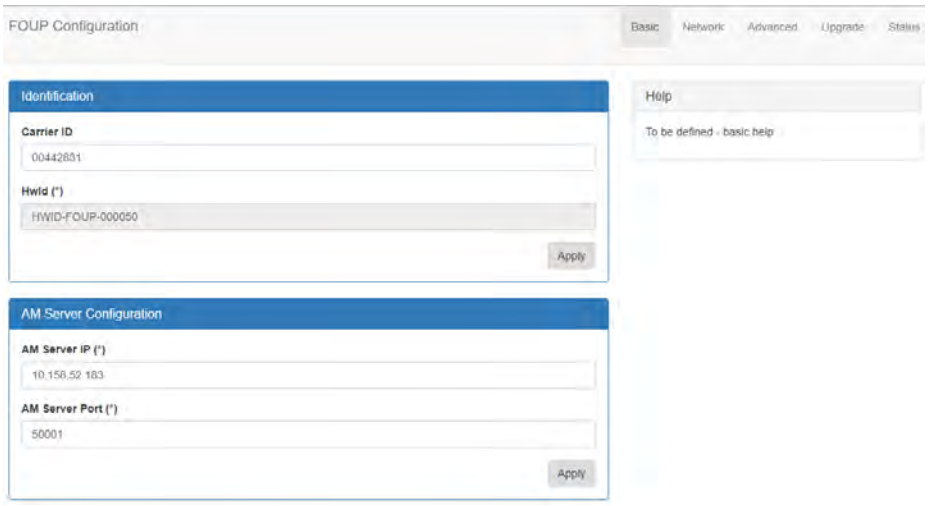
2. Click on **Maintenance**, to open the maintenance page.

3. Click on **Open FOUP Web UI**.

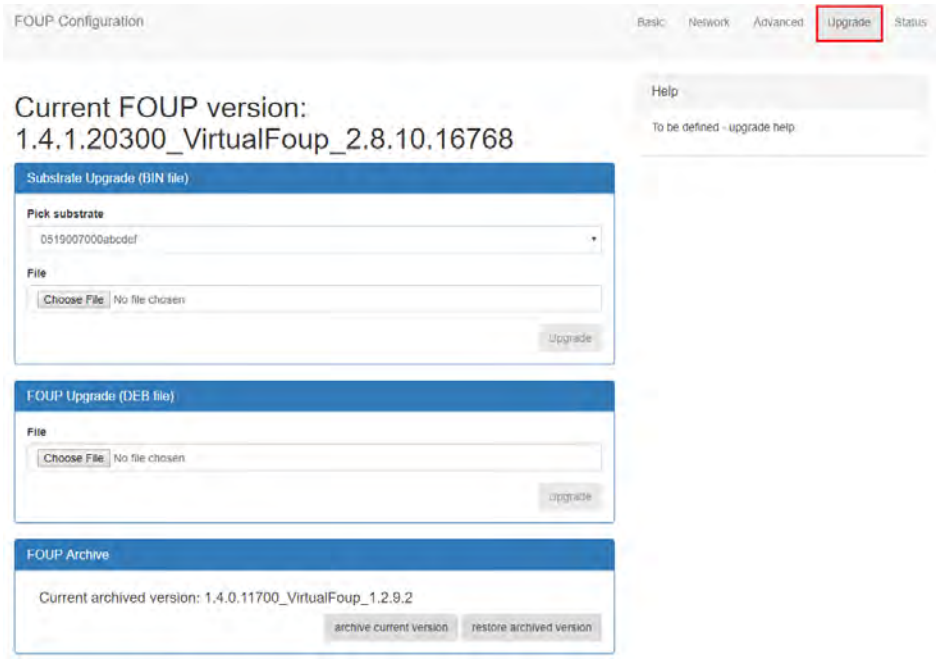


4. FOUP configuration login page will open.

5. Enter **Username, Password** and click login to view FOUP configuration page.

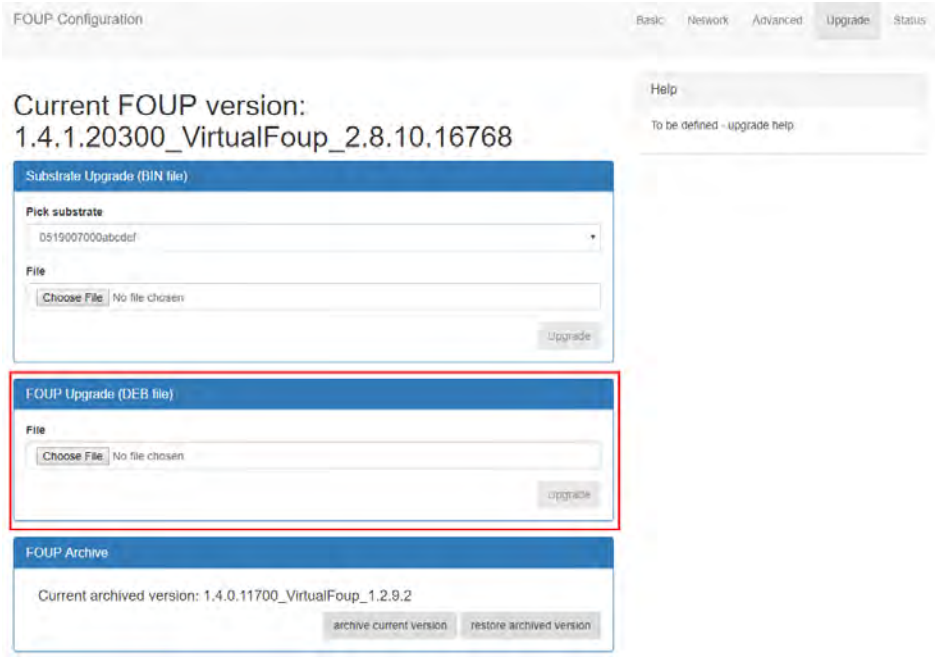


6. Click on **Upgrade**, to view FOUP upgrade page.



3.3.1 To Upgrade FOUP

1. To upgrade FOUP, click on **Choose File** and select **Foup.deb** file from bin folder.

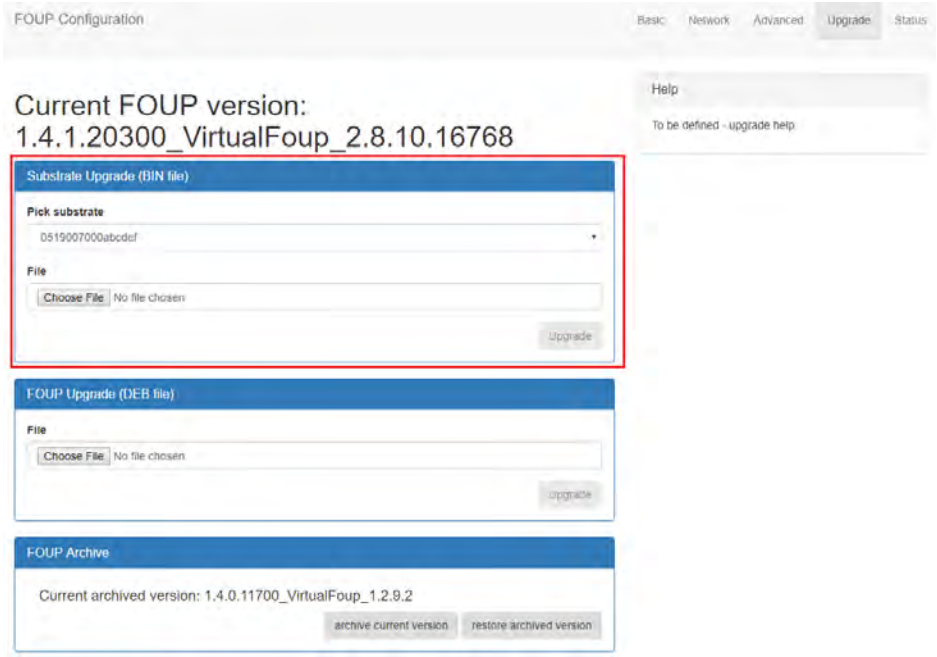


2. Click on **Upgrade** to upgrade the FOUP.

3. Refresh UI after 5 minutes to view the upgraded FOUP version in the UI.

3.3.2 To Upgrade Wafer

1. To upgrade **Wafer**, click on **Choose File** and select **Wafer.bin** file from bin folder.



2. Click on **Upgrade** to upgrade the Wafer.

3. Refresh UI after 5 minutes to view the upgraded Wafer version in the UI.

4.

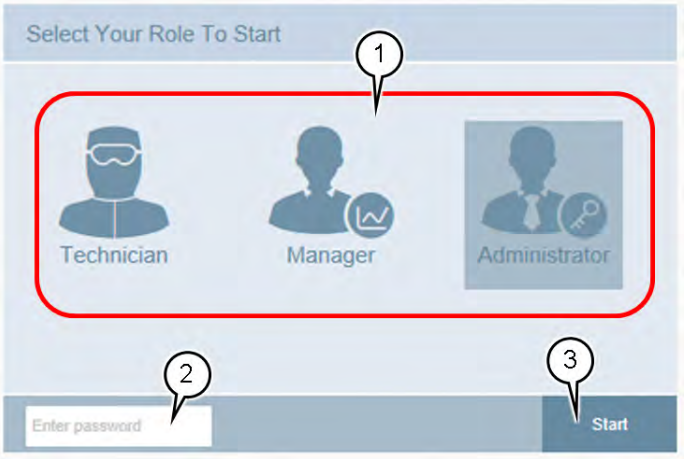
KLA Automation Web UI

4.1 Logging In

1. At the KLA Automation login page, select your role (in this example, **Administrator** is selected).

2. Enter your password.

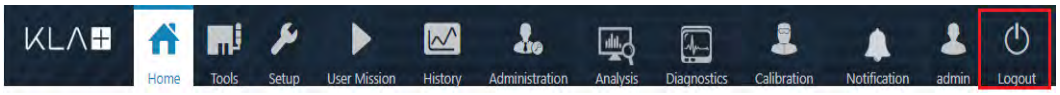
3. Click **Start** to log in and go to the Home page (see Section 4.3).



4.2 Logging Out

1. From any page in the KLA Automation Web UI, click **Logout**.

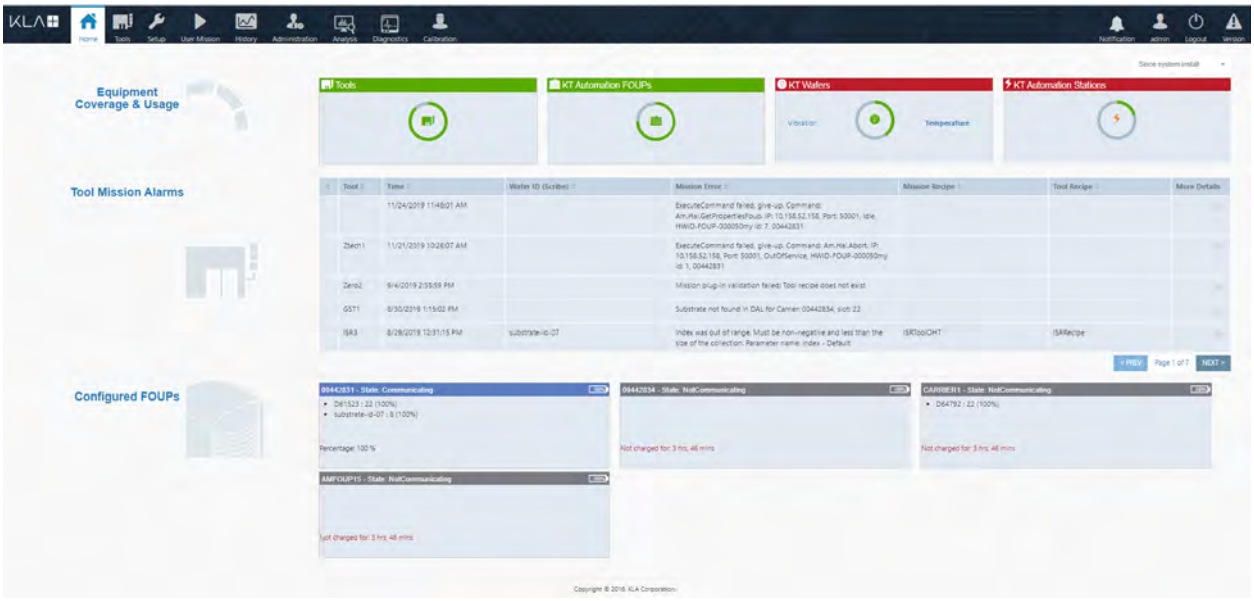
   The display returns to the KLA Automation login page.



4.3 KLA Automation Home Page

The **Home** page summarizes the current status of all KLA Automation System components, usage, and recent mission alerts. It is the first page that you see after you log on.

1. To return to the **Home** page from any other KLA Automation page, click **Home**.



4.3.1 Equipment Coverage and Usage

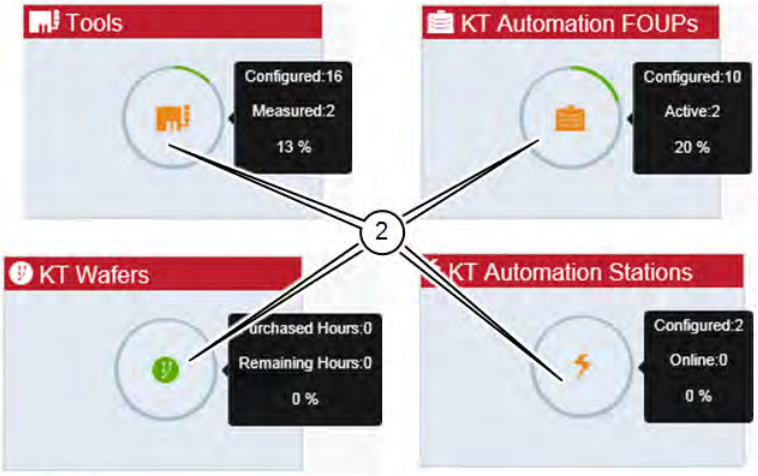
The **Equipment Coverage & Usage** area allows you to view information about the Tools, KLA Automation FOUPs, KLA Wafers, and KLA Automation Stations in the system.

The color of the header for each equipment type shows the extent of usage:

- Green:High usage (>80%)
- Orange:Low usage
- Red:Not used

3. To select the time period for which you want to see coverage and usage information, select the time period from the drop-down list in the top right-hand corner.

4. To view the statistics for the equipment type, hover the cursor over the image.

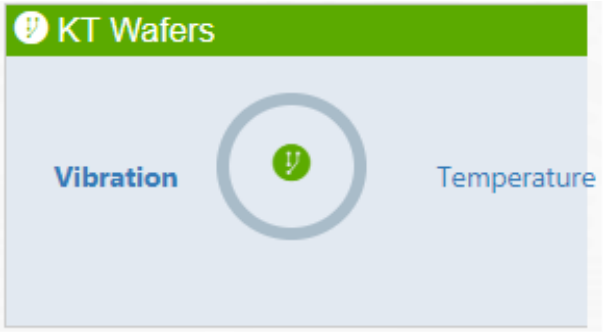


Equipment	Statistics Provided
Tools	• How many configured • How many online (as number) • How many online (as percentage)
KLA Automation FOUPs	
KLA Automation Stations	
KLA Wafers	• How many hours purchased • How many hours used (as number) • How many hours used (as percentage)

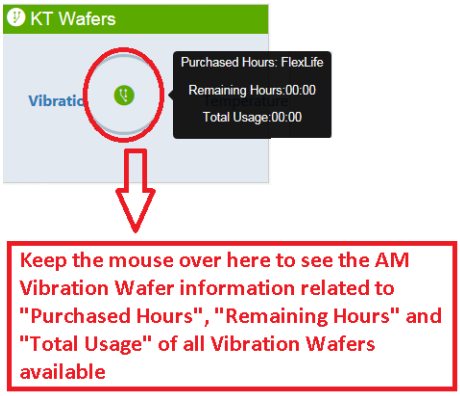
KLA Wafers:

- KLA Wafers section consists the below mentioned Wafers
  - Vibration - AM Wafer

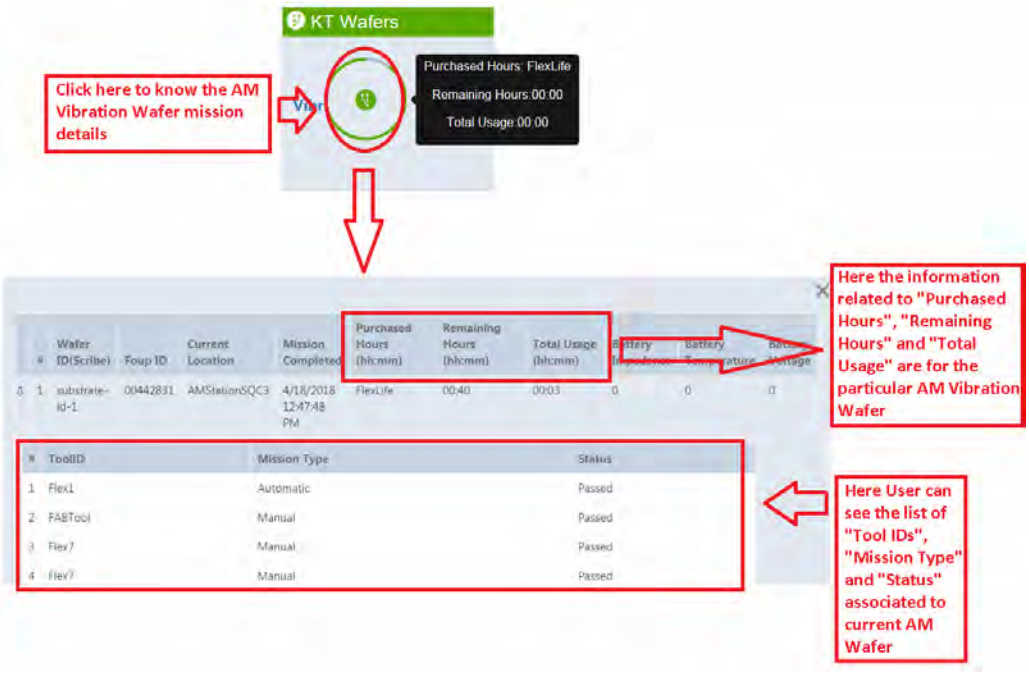
- Temperature Wafer



5. Click on "**Vibration**" and keep the mouse as shown in the below figure to see the data



6. Click on "**Vibration**" to know the AM Vibration Wafer information.



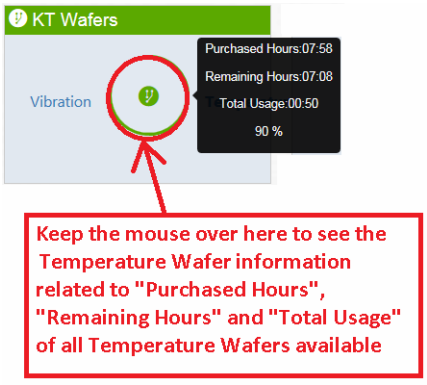
7. From the above figure, User can see the AM Vibration Wafer mission details related to

- Wafer ID

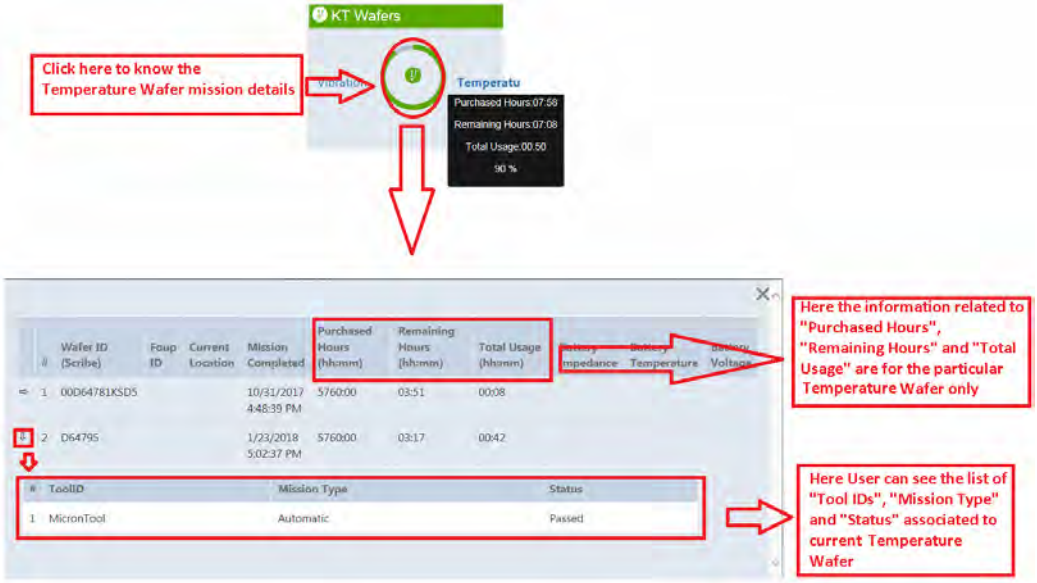
- Foup ID
- Current Location
- Mission Completed
- Purchased Hours (hh:mm)
- Remaining Hours (hh:mm)
- Total Usage (hh:mm)

- Also User can view the list of "**Tool IDs**", "**Mission Type**" and "**Status**" associated to the current AM Wafer.
- Battery details are yet to be mentioned in the AM Vibration Wafer mission details.

8. Click on "**Temperature**" and keep the mouse as shown in the below figure to see the data



9. Click on "**Temperature**" to know the Temperature Wafer information.



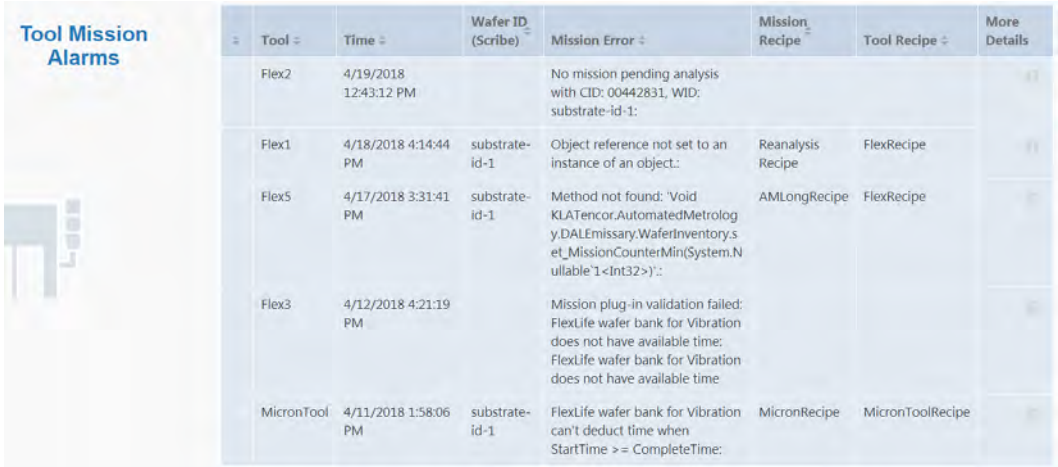
10. From the above figure, User can see the Temperature Wafer mission details related to

    - Wafer ID
    - Foup ID
    - Current Location
    - Mission Completed
    - Purchased Hours (hh:mm)
    - Remaining Hours (hh:mm)
    - Total Usage (hh:mm)

- Also User can view the list of "**Tool IDs**", "**Mission Type**" and "**Status**" associated to the current Wafer.
- Battery details are yet to be mentioned in the Temperature Wafer mission details.

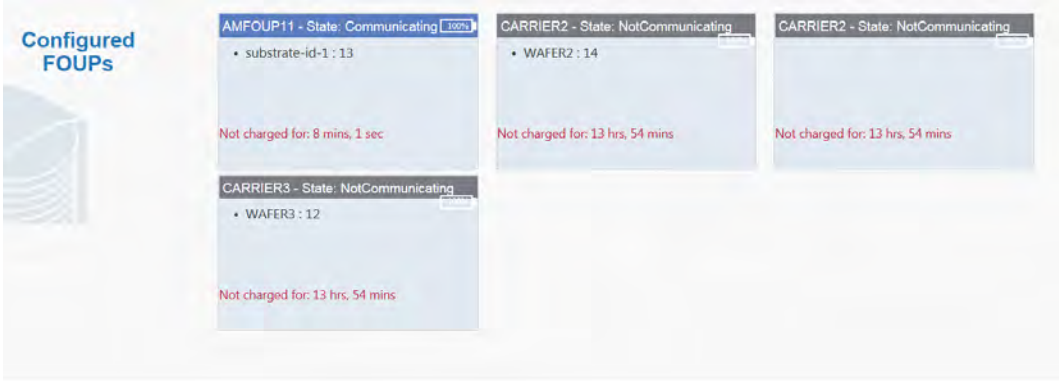
4.3.2 Tool Mission Alarms

The **Tool Mission Alarms** area lists error messages and alerts received during recent missions.



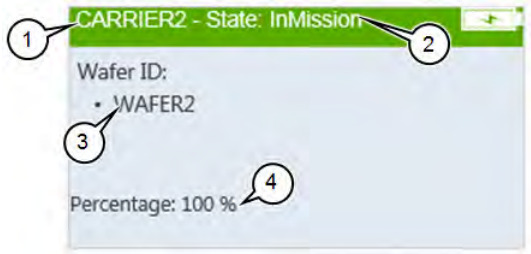
4.3.3 Connected FOUPs

The **Connected FOUPs** area displays all KLA Automation FOUPs (carriers) in the system and their statuses.



For each FOUP, the following information is displayed:

1. Carrier ID
2. Carrier status
3. Wafer IDs
4. Battery level of KLA Automation FOUP



4.4 Tools Page

The **Tools** page displays information about all the tools that were set up in the system (as described in Section 4.5.1 through Section 4.5.4).

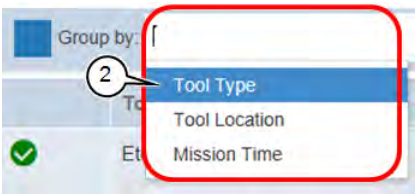
To view the **Tools** page, click **Tools**.

NOTE

- *shows that the last mission that ran on this tool was successful*
- *shows that the last mission that ran on this tool indicated a problem*

1. You can group tools by:

- Tool Type
- Tool Location
- Mission Time (mission run date and time)



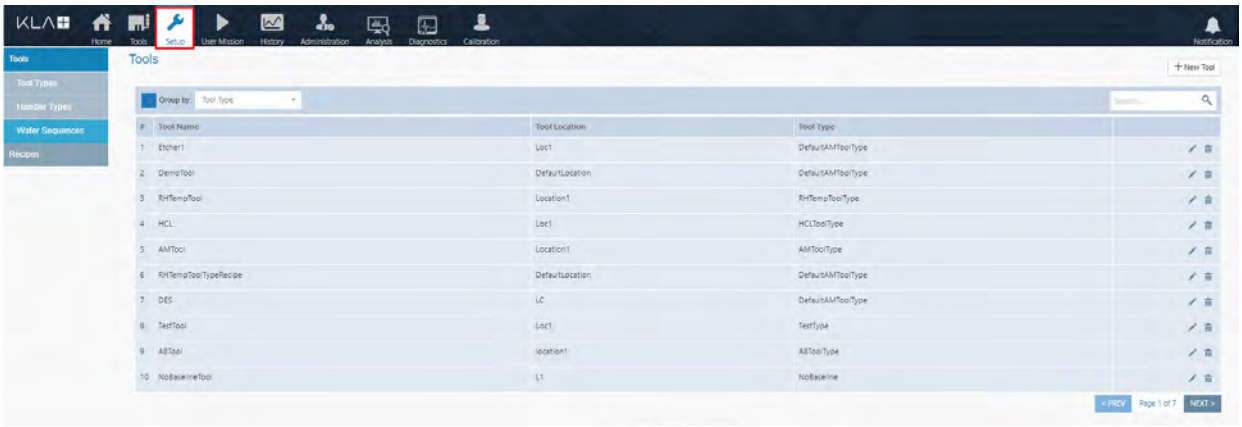
4.5 Setup Page

Use the **Setup** page to add new or edit existing tools and mission recipes.

IMPORTANT

Mission recipes are added or edited for Automation Metrology Wafers only. See Section 4.11.4 for details of adding or editing recipes.

1. To view the **Setup** page, click **Setup**.



4.5.1 Edit or Add Tool

IMPORTANT

Before you can add a new tool, the applicable tool type and handler type must have been defined in the system (see Section 4.5.2 and Section 4.5.3).

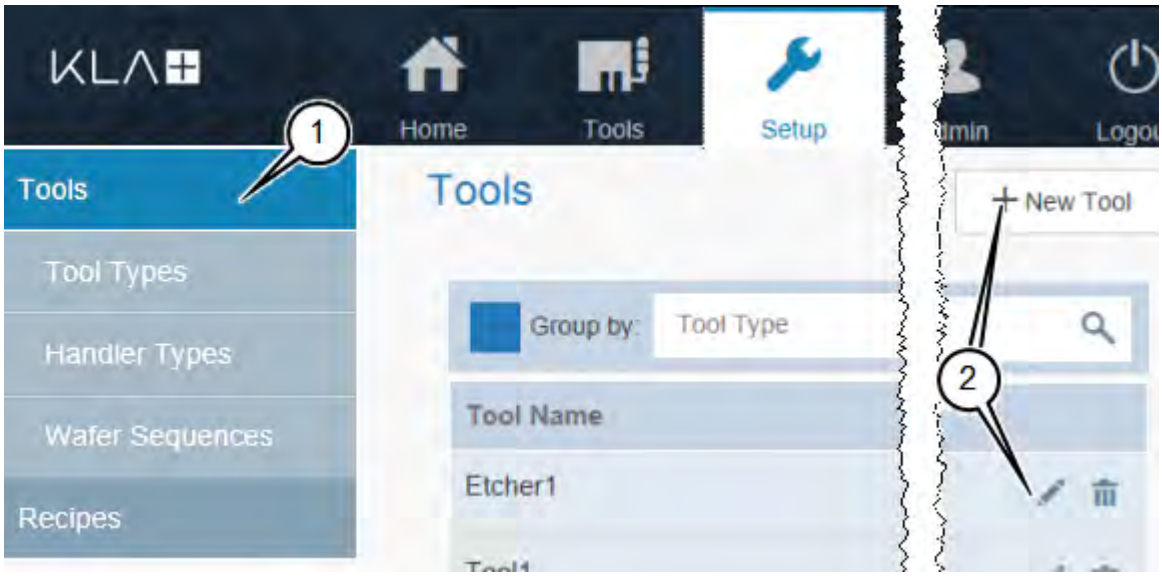
1. In the **Setup** page, make sure **Tools** is selected (the default selection when the **Setup** page opens).

2. Continue as follows:

   - To edit an existing tool, click the Edit icon for the tool.

   - To add a new tool, click **+ New Tool**.

In either case, the **Edit Tool** window opens.



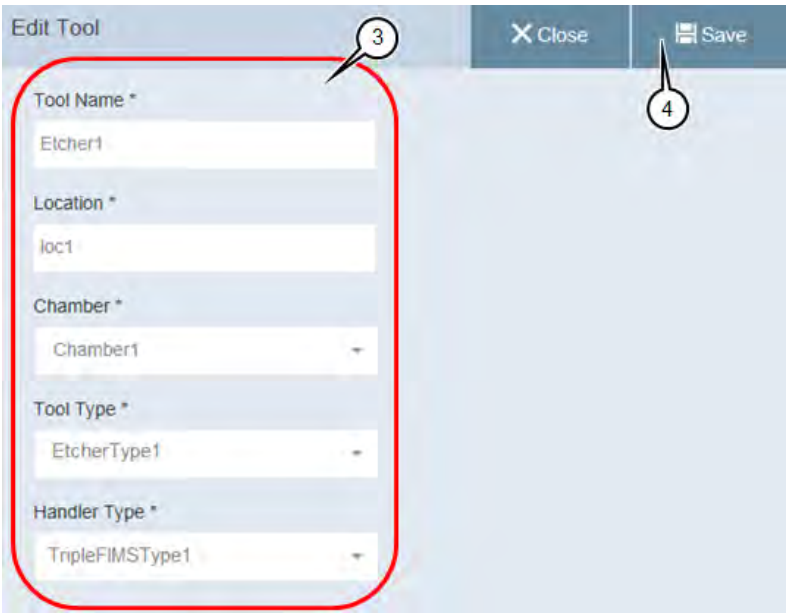
3. In the **Edit Tool** window, enter or select a value for every field.

3

NOTE

If you are editing an existing tool, enter or select new values only for those fields that you need to update.

4. Click **Save** to save the values and close the **Edit Tool** window.



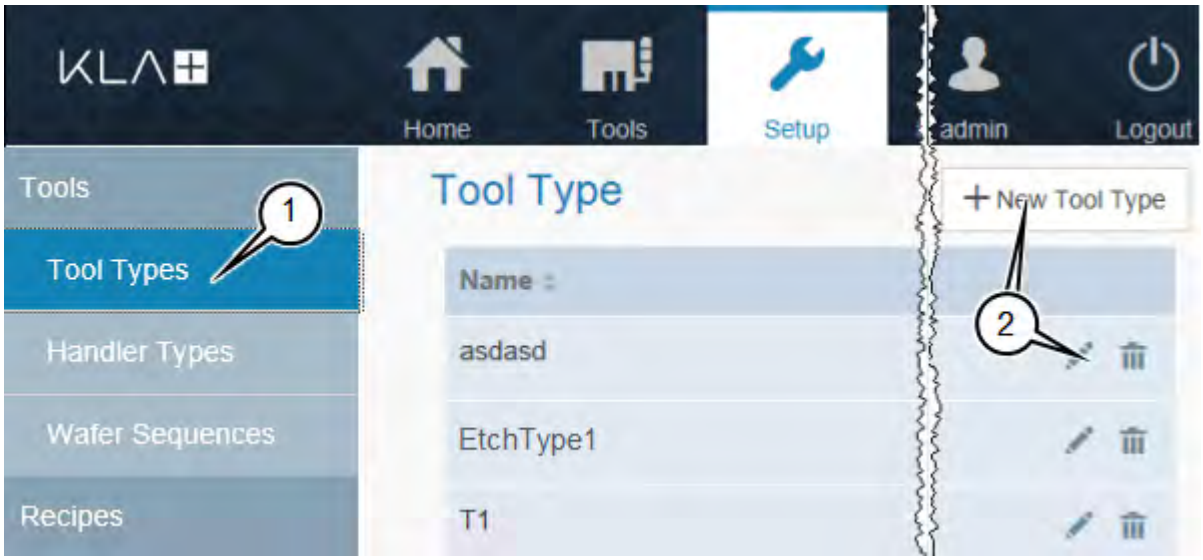
4.5.2 Edit or Add Tool Type

1. In the **Setup** page, click **Tool Types**.

2. Continue as follows:

   - To edit an existing tool type, click the Edit icon for the tool type.
   - To add a new tool, click **+ New Tool Type**.

   In either case, the **Edit Tool Type** window opens.



NOTE

If you are editing an existing tool type, enter or select new values only for those fields that you need to update.

3. In the **Tool Type Edit** window, type a **Tool Type Name**.

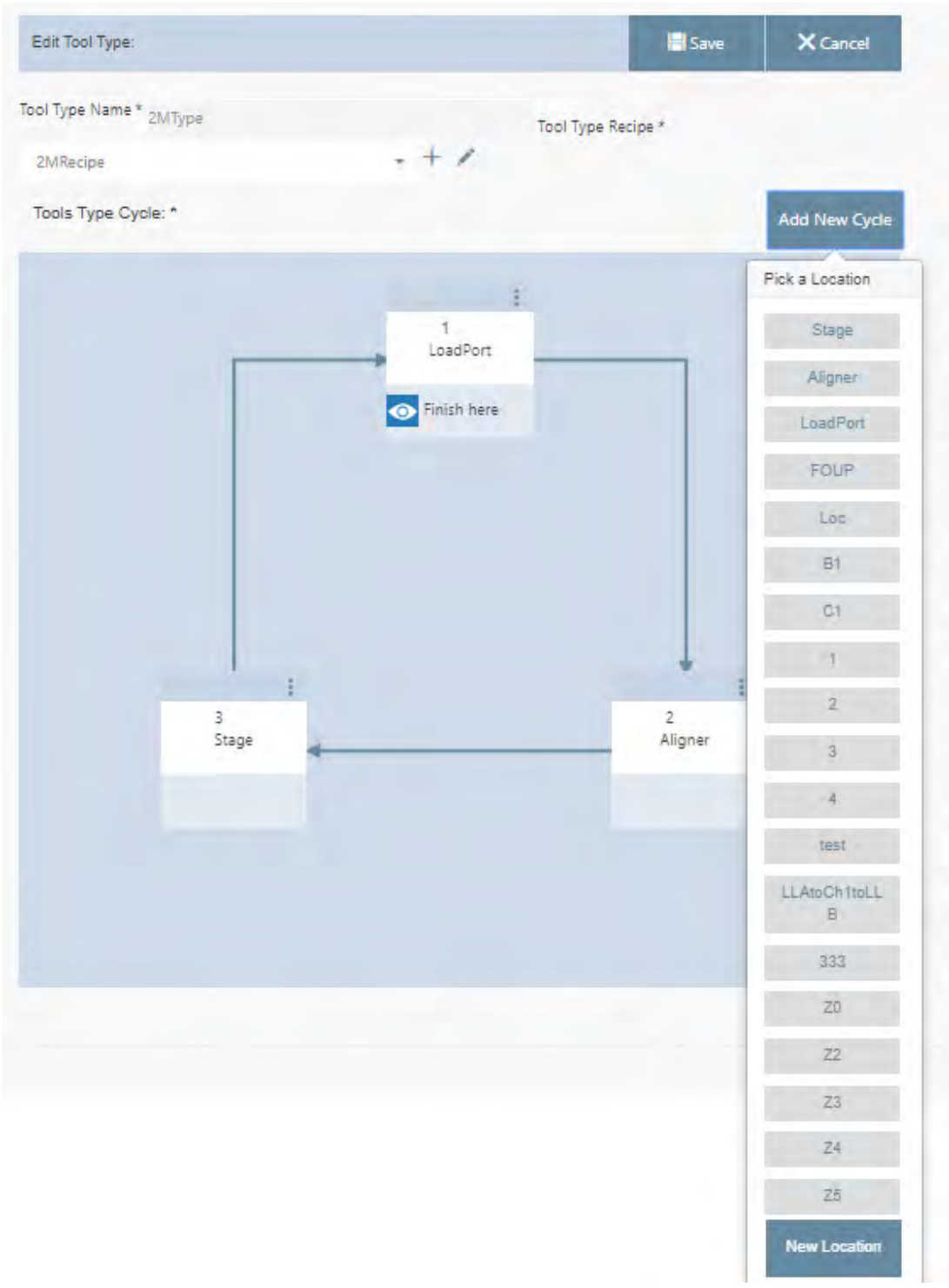
IMPORTANT

Use an informative name that includes information that will be important for operators to know about the tool.

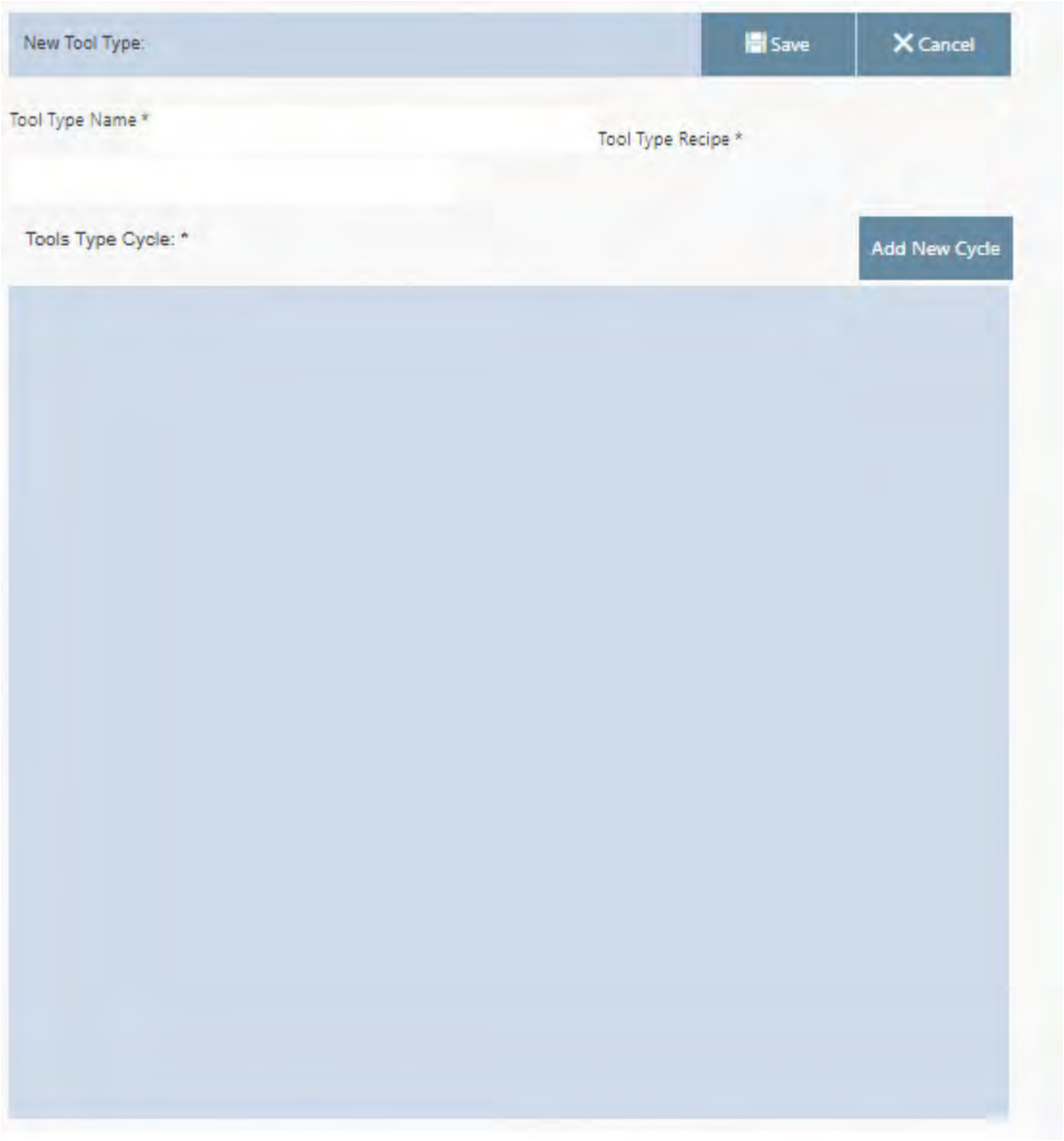
4. Select the **Tool Type Recipe**.

5. Continue as follows:

If you want to...	Then continue with...
Create a new **Tool Type Sequence**	step 6
Modify an existing **Tool Type Sequence**	step 11



6. To create a new **Tool Type Sequence** from scratch, click **Add New Cycle.**

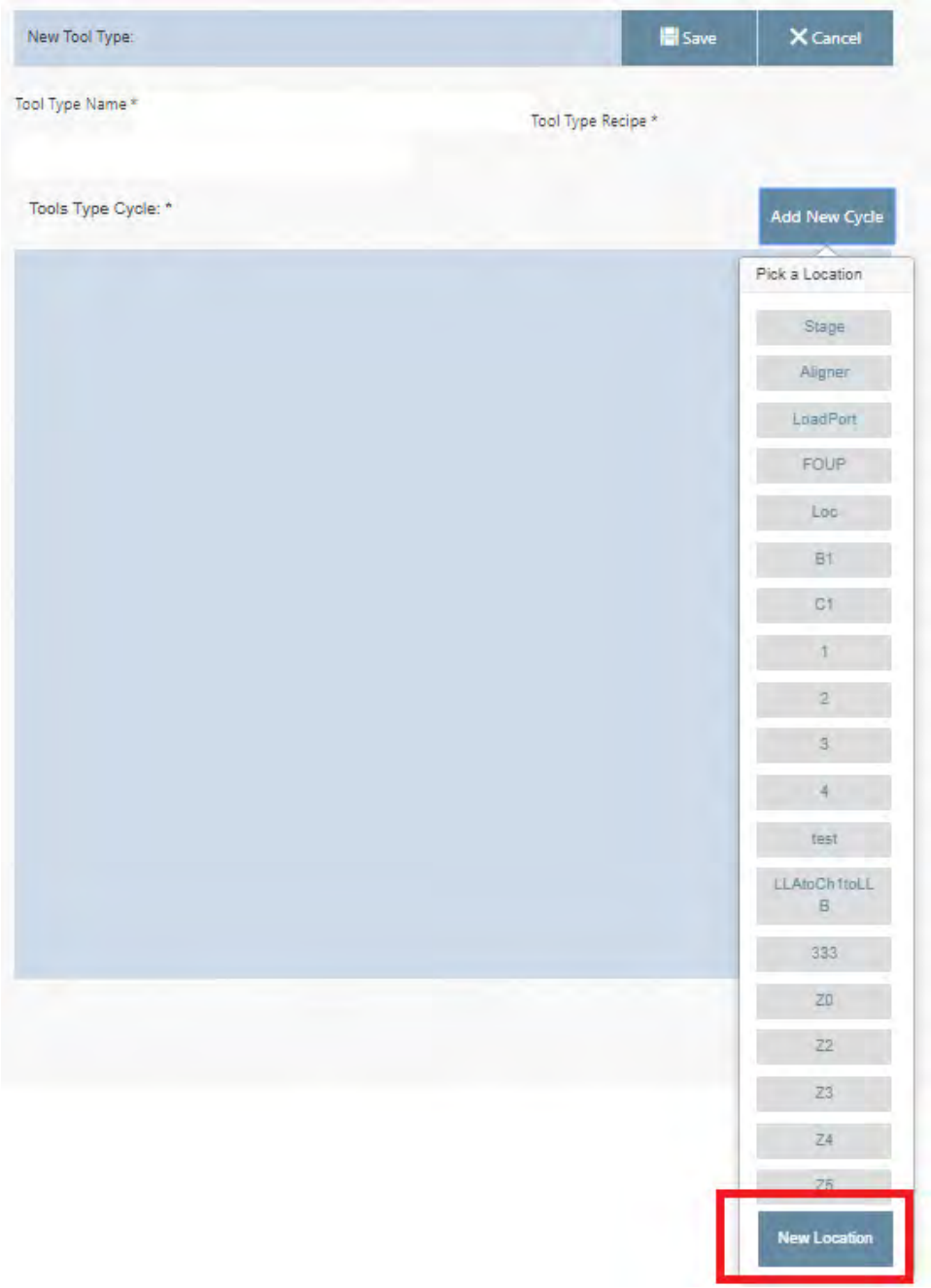


NOTE

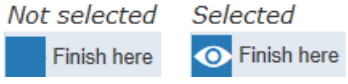
Each location that wafers visit within a tool is called a tool station.

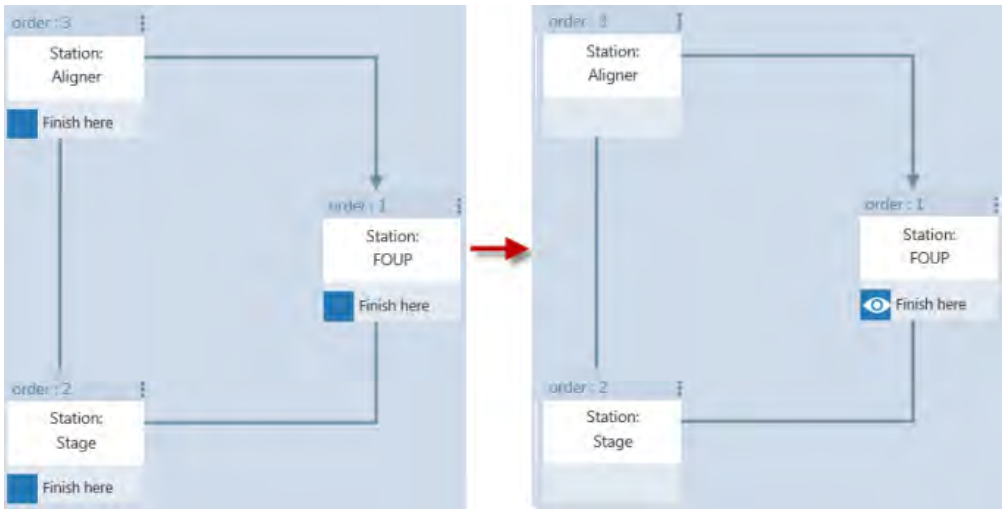
7. From the list of available stations, select the first station in the sequence.

8. Continue clicking **New location** and selecting stations until you have selected every station in the sequence.



9. For the last station in the sequence (in this example, **FOUP**), click **Finish here** to select that station and remove the option to select from the other stations.



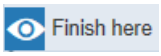


10. Click **Save** to save the new tool type and close the **Edit Tool Type** window.

11. You can modify an existing **Tool Type Sequence** in any of the following ways:

    - Swap the station where the sequence finishes
    - Delete a station from the sequence or replace it with a different station
    - Add another station to the sequence

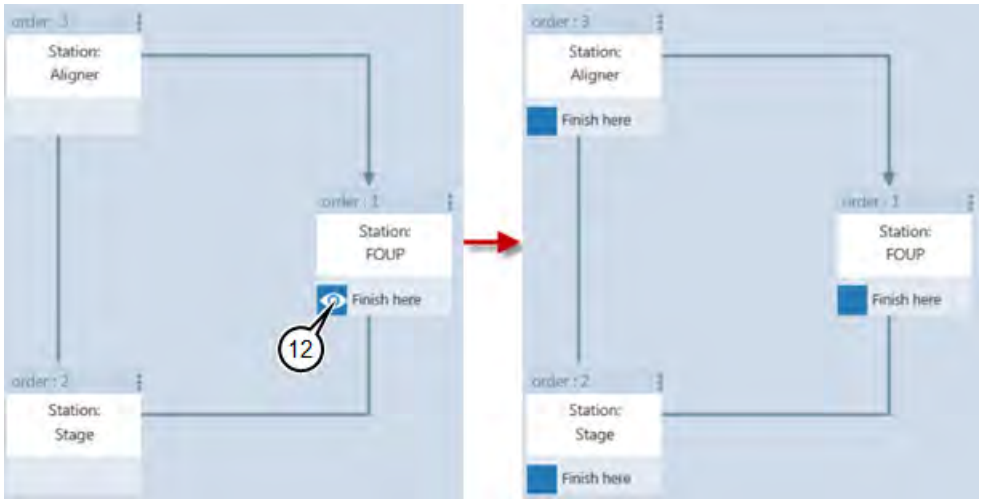
12. To change the station where the sequence finishes:

    - Click 

to deselect the station.

      Every station in the sequence then displays the option to select it.

    - Click **Finish here** to select the new station where the sequence finishes.

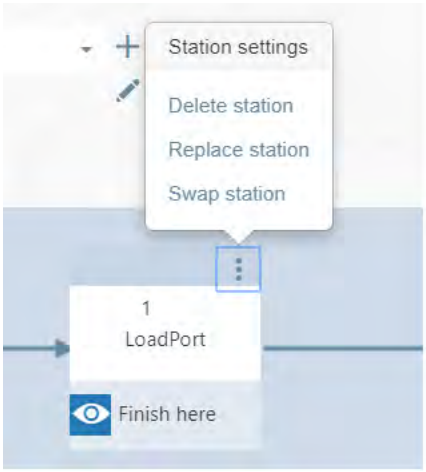


13. To delete a station or Replace or to swap a station, from the sequence:

    - Click ⋮ for that station.
    - To delete the station, click **Delete station**.
    - Click **Replace station**.
    - To **Swap** the station, click the **Swap station**.

NOTE

The list contains those stations that are set up in the KLA Automation System but are not currently used in this Tool Type Sequence.



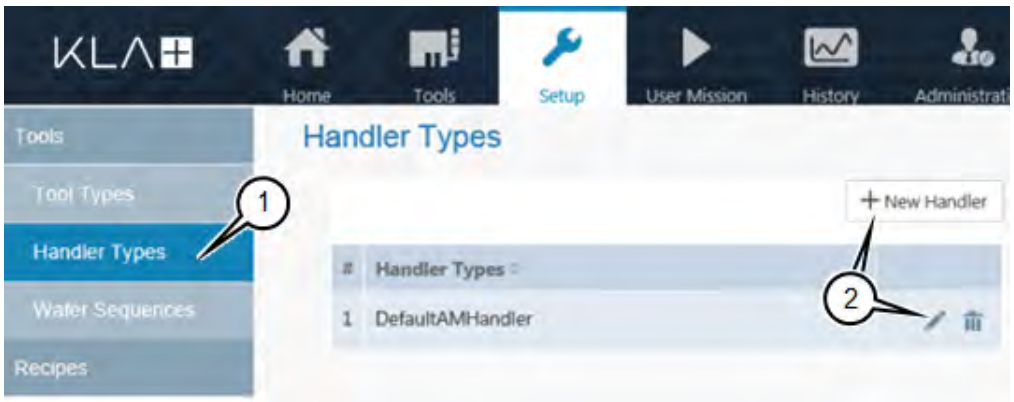
14. When you have made all the required changes to the **Tool Type Sequence**, click **Save** to save the changes and close the **Tool Type Edit** window.

4.5.3 Edit or Add Handler Type

NOTE

*The only parameter that is entered for a **Handler Type** is the **Name**.*

1. In the **Setup** page, click **Handler Types**.
2. Continue as follows:
   - To edit an existing handler type, click the Edit icon for the handler type.
   - To add a new handler type, click **+ New**.

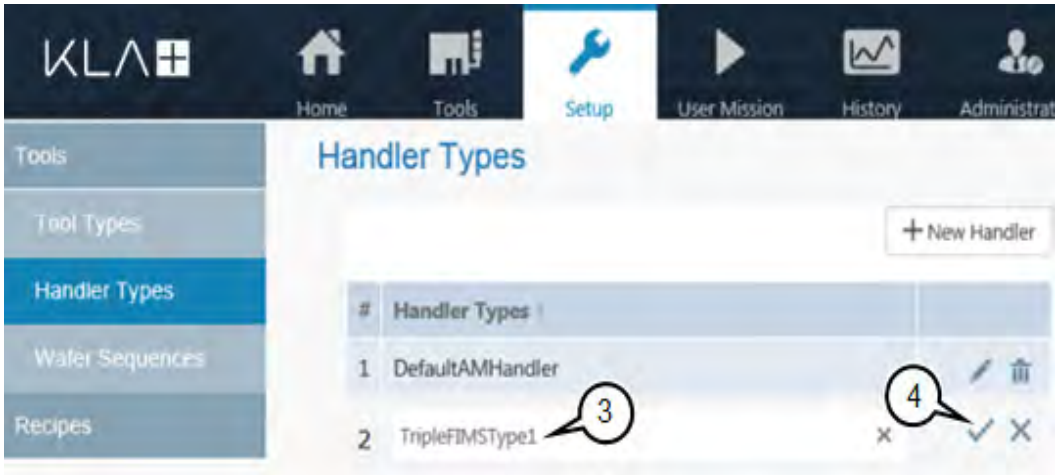


3. Type the **Name** for the handler type.

IMPORTANT

Use an informative name that shows the robot type, the number of load ports, and any other information that will be important for operators to know about the handler type.

4. Click ✓ to save.

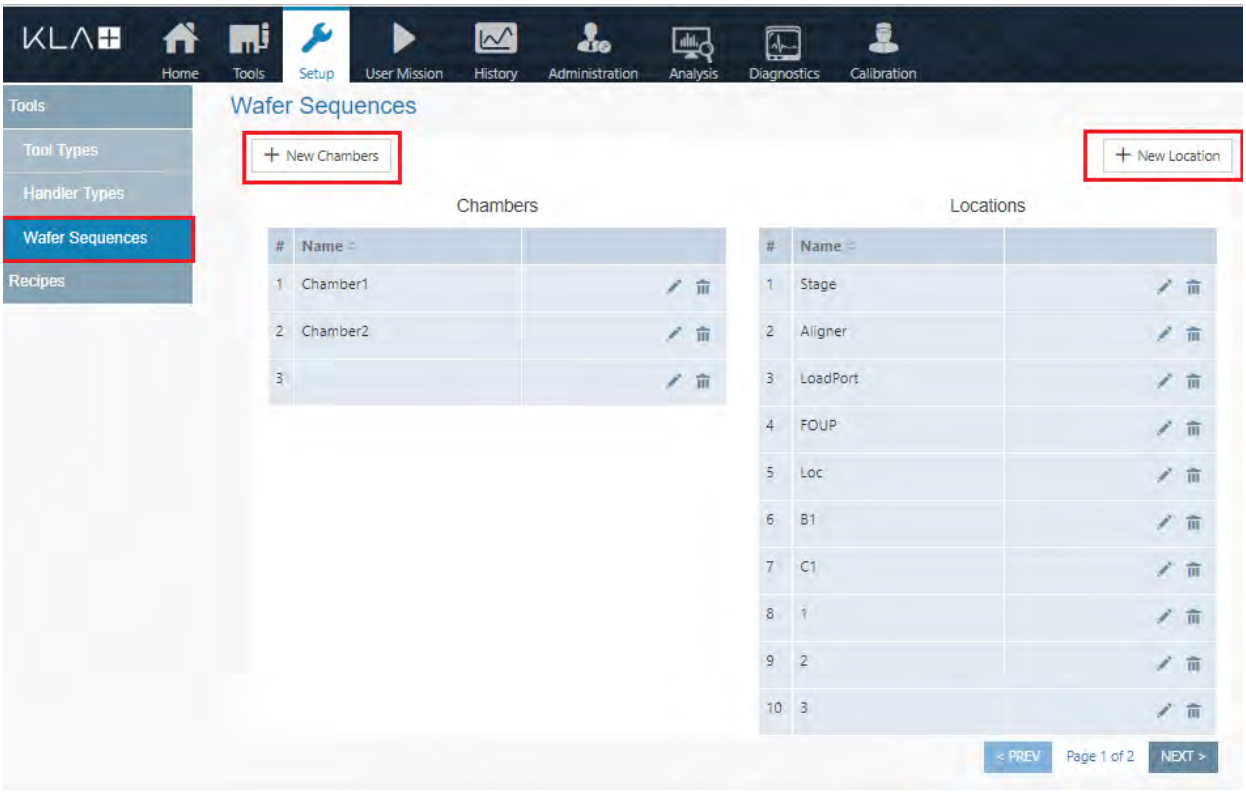


4.5.4 Edit or Add Wafer Sequence

NOTE

*The only parameter that is entered for a **Chamber** or **Station** is the **Name**.*

1. In the **Setup** page, click **Wafer Sequence**.
2. Continue as follows:
   - To edit an existing chamber or station, click the Edit icon for the chamber or station.
   - To add a new chamber, click **+ New Chamber**s.
   - To add a new location, click **+ New Location**.

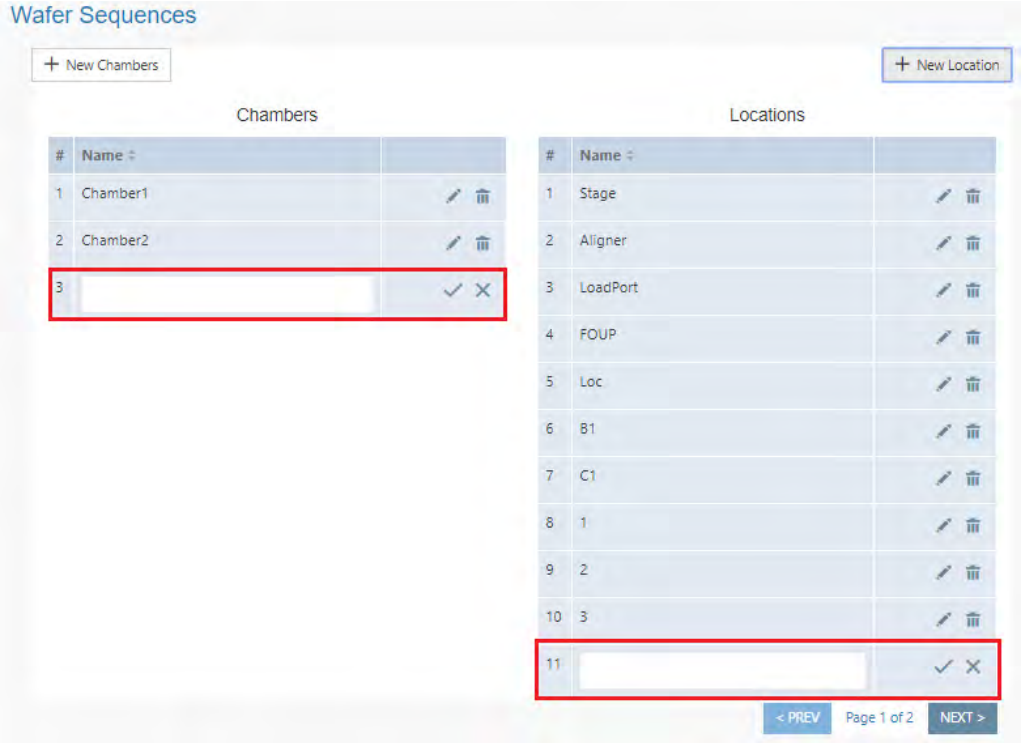


3. Type the **Name** for the chamber or location.

IMPORTANT

Use an informative name that includes information that will be important for operators to know about the chamber or station.

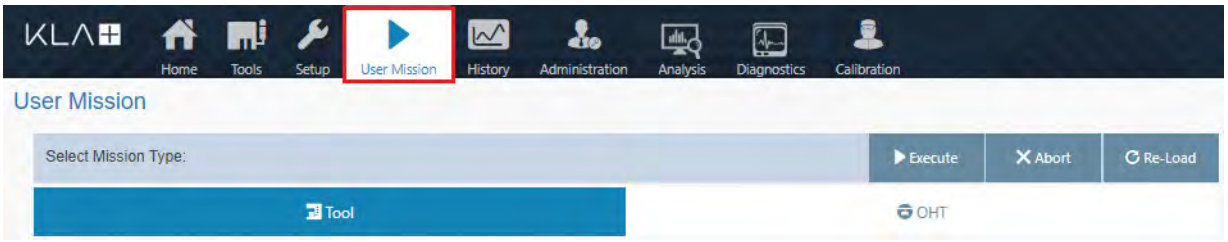
4. Click ✓ to save.



4.6 User Mission page

The **User Mission page** is used to execute the **Tool** or **OHT** manual mission.

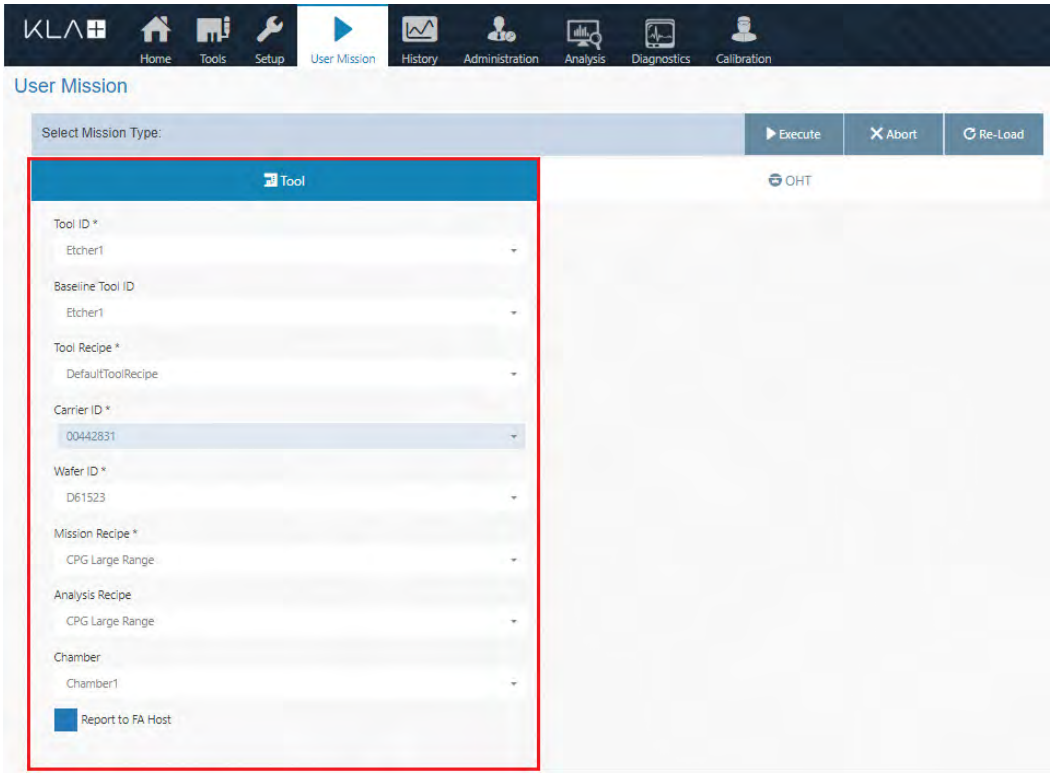
1. To view **User Mission** page, click User Mission.



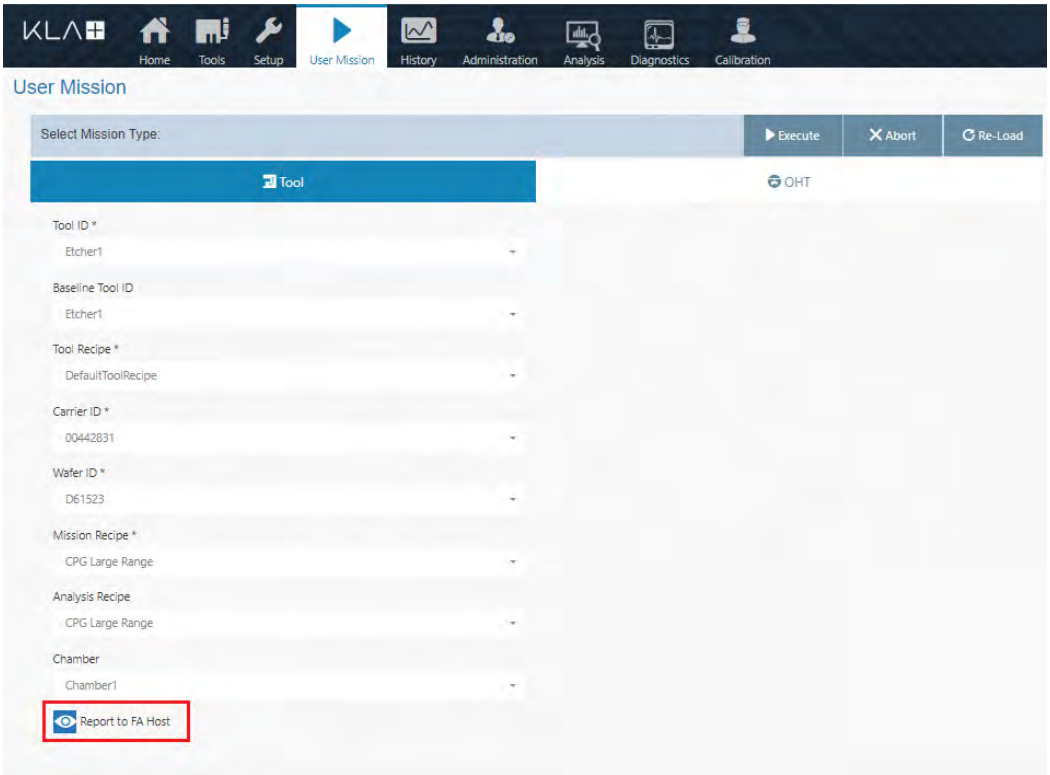
- Tool page will open by default.

4.6.1 To Execute Tool Mission

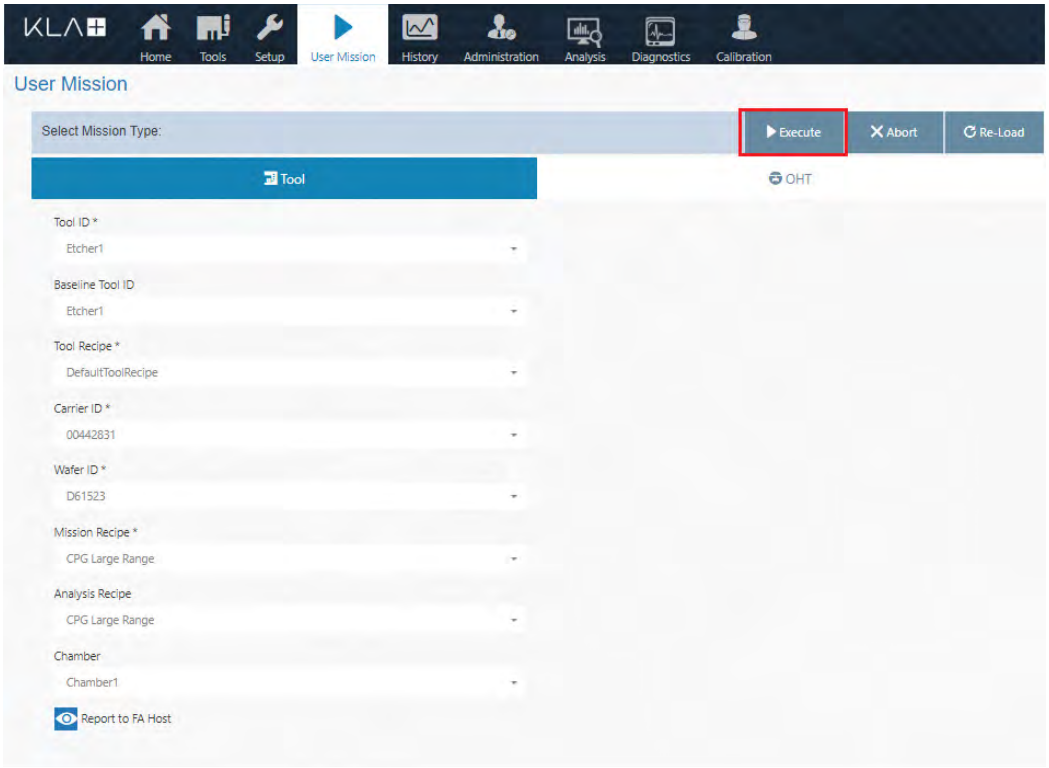
1. Add **Tool** data to execute the tool mission.



2. Click on **Reports to FA Host**.

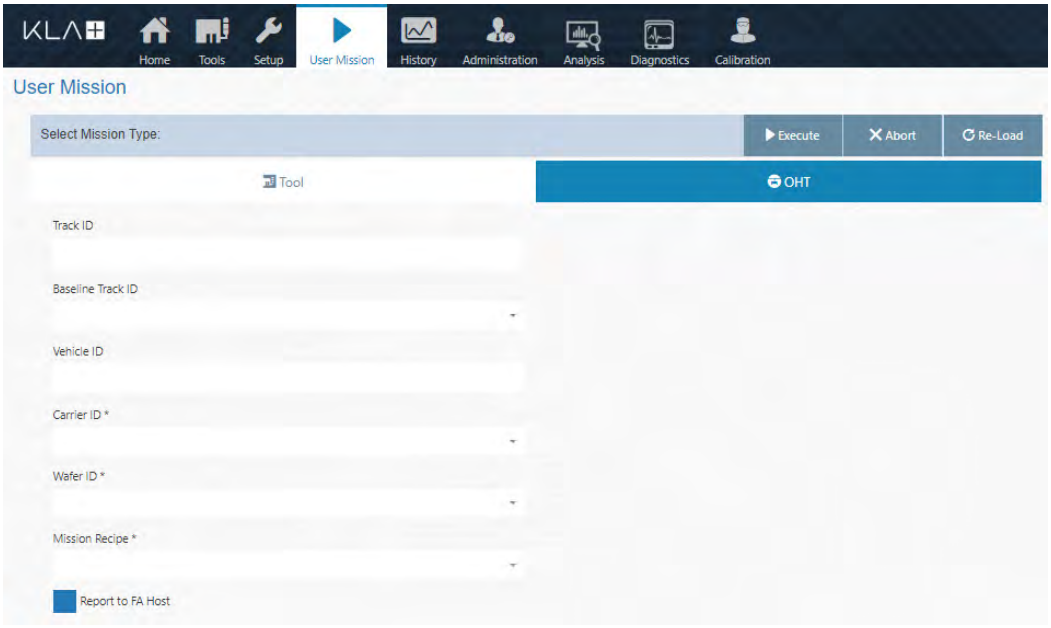


3. Click on **Execute** to run the tool mission.

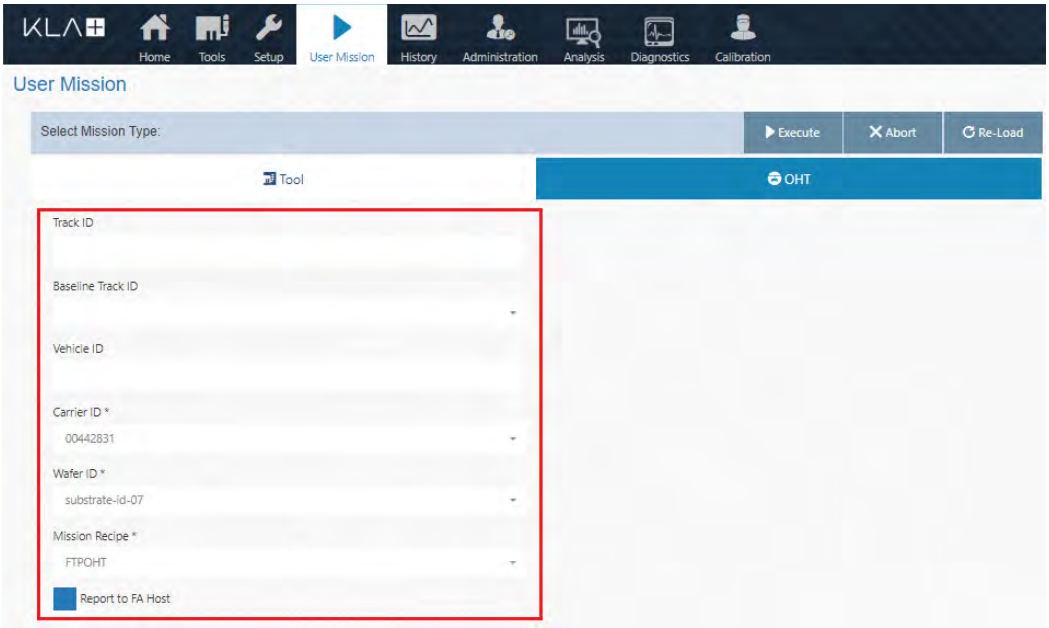


4.6.2 To Execute OHT mission

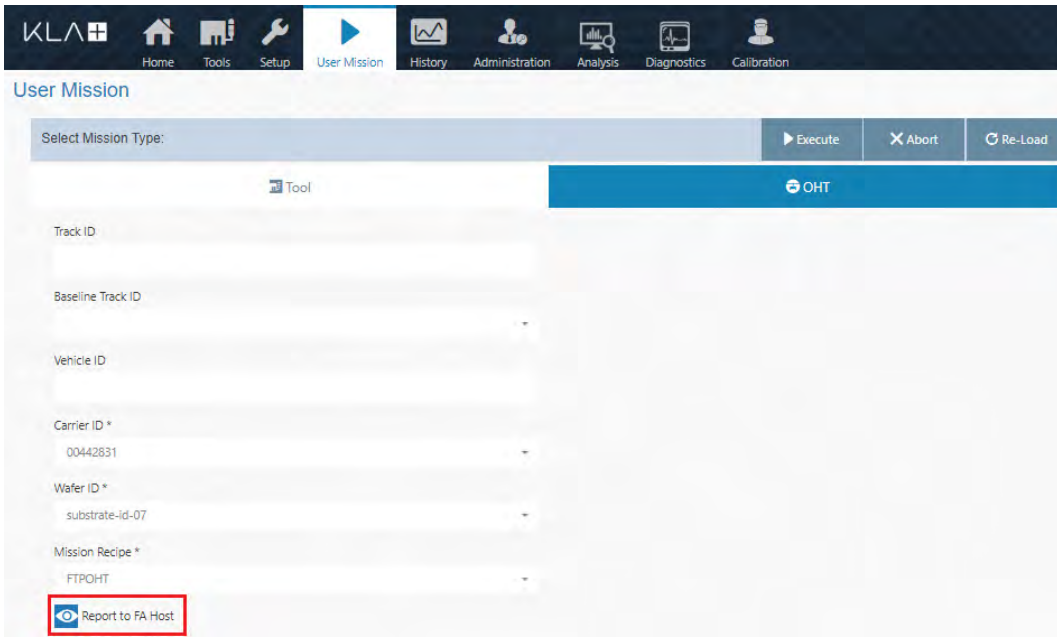
1. Click on **OHT** to execute the OHT mission.



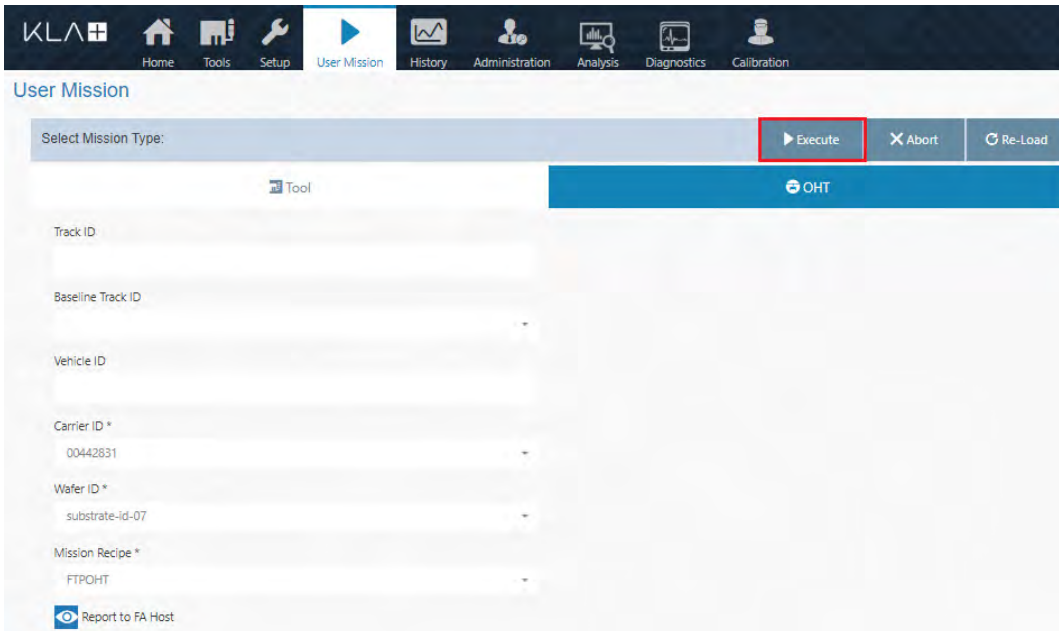
2. Add **OHT** data to execute the OHT mission.



3. Click on **Reports to FA Host.**



4. Click on **Execute** to run the OHT mission.

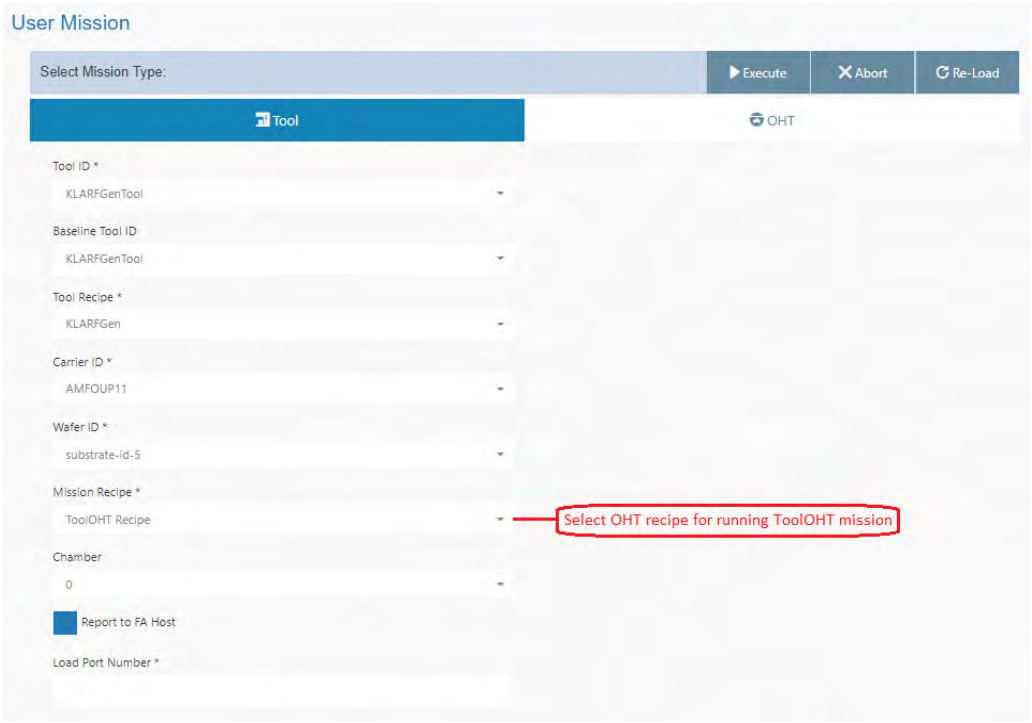


4.6.3 To Execute ToolOHT Mission

1. Click on **Tool** in **User Mission.**
2. Use drop-down and select **ToolID**.
3. Use drop-down and select **Basline Tool ID** (optional).
4. Use drop-down and select **Tool Recipe.**
5. Use drop-down and select **Carrier ID.**

6. Use drop-down and select the **Wafer ID.**

7. Use drop-down and select the **Mission Recipe** (added through **Setup - Recipes - New Recipe).**

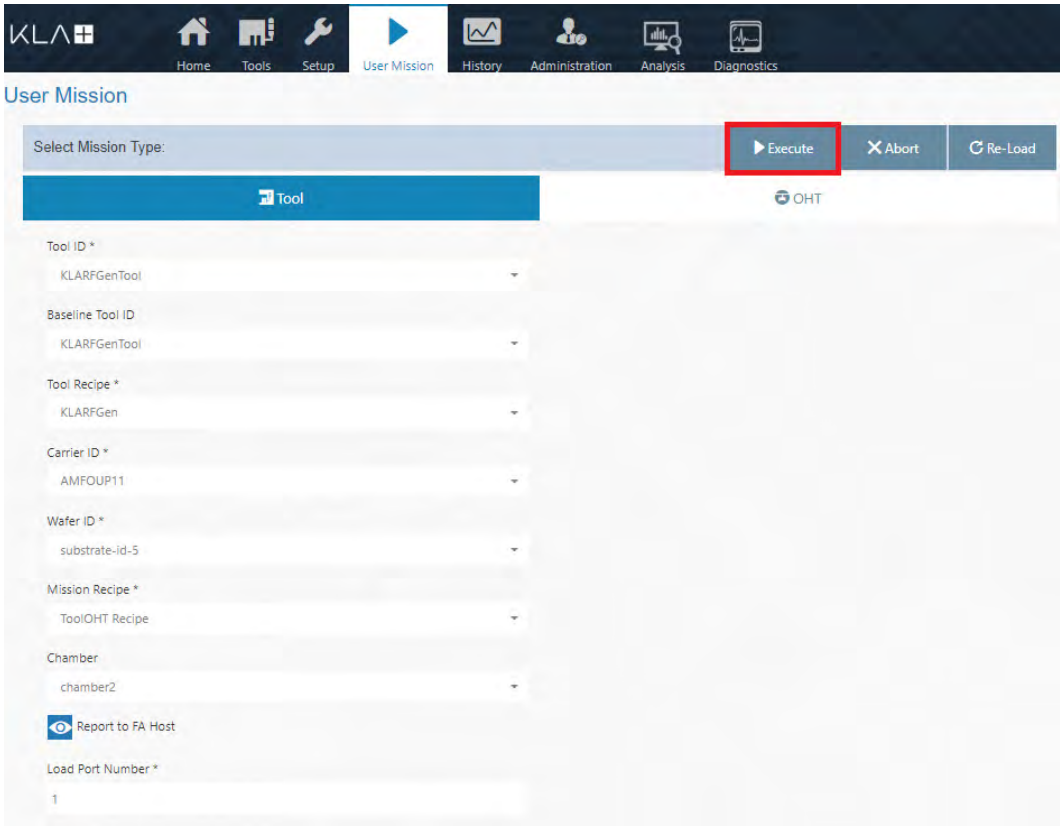


8. Use drop-down and select **Chamber** description.

9. Click on **Reports to FA Host.**

10. Select the **Load Port Number.**

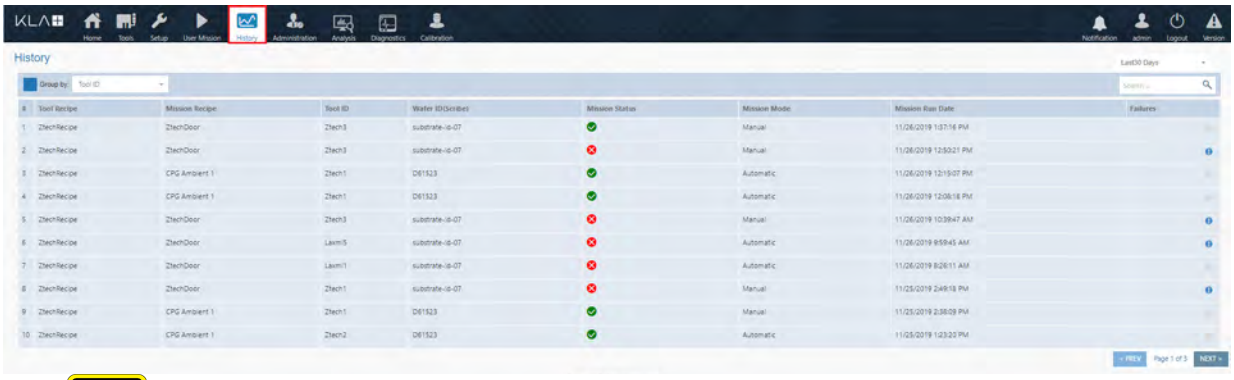
11. Click on **Execute** to run the **ToolOHT mission.**



4.7 History Page

The **History** page displays information about missions that have run.

1. To view the **History** page, click **History**.



NOTE

- *shows that the mission ran successfully*
- *shows that the mission did not run successfully*

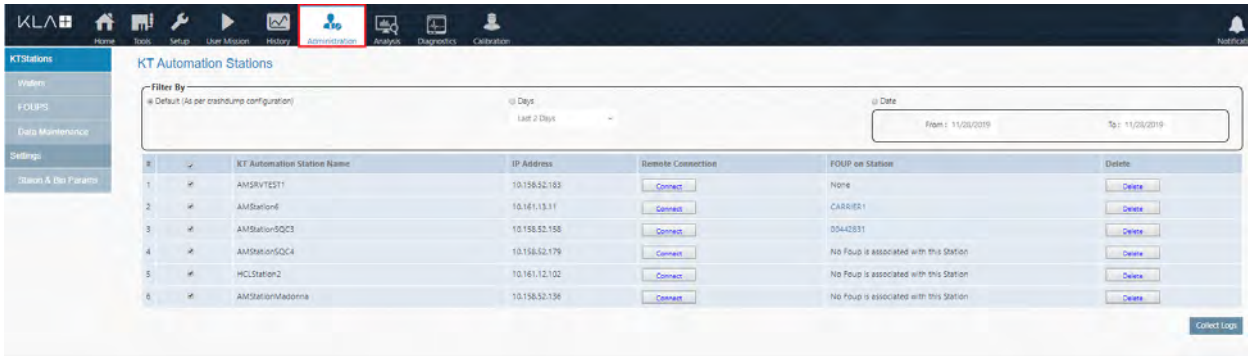
4.8 Administration Page

The **Administration** page allows those with Administrator-level privileges to remote-connect to KLA Automation Stations to perform troubleshooting.

IMPORTANT

The Administration page is available only to those who log in with the role of Administrator.

1. To view the **Administration** page, click **Administration**.

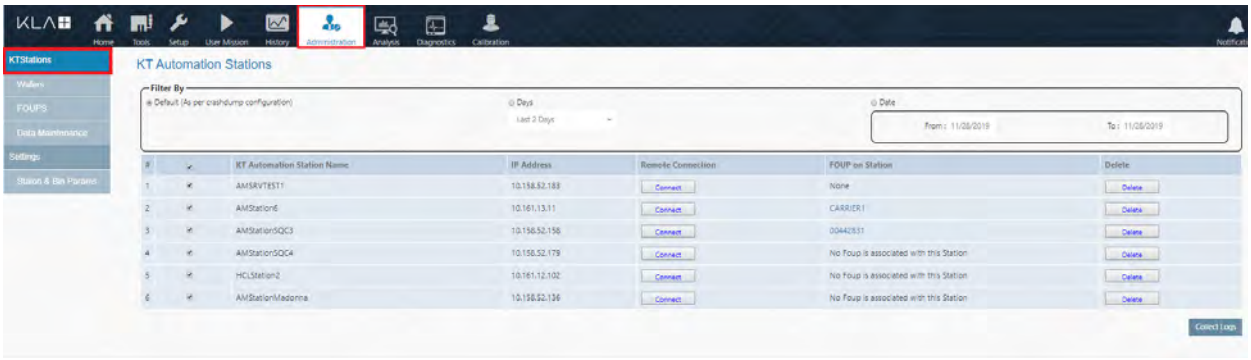


4.8.1 KLAStations

IMPORTANT

This will allow users to view the list of configured KLA Automations Stations to the Server.

1. Click on "**KTStations**" to view the list of **KT Automation Stations**.



2. User can filter the **KT Automation Stations** using the available selections, (**Default, Days** and **Date (select the required date))**.

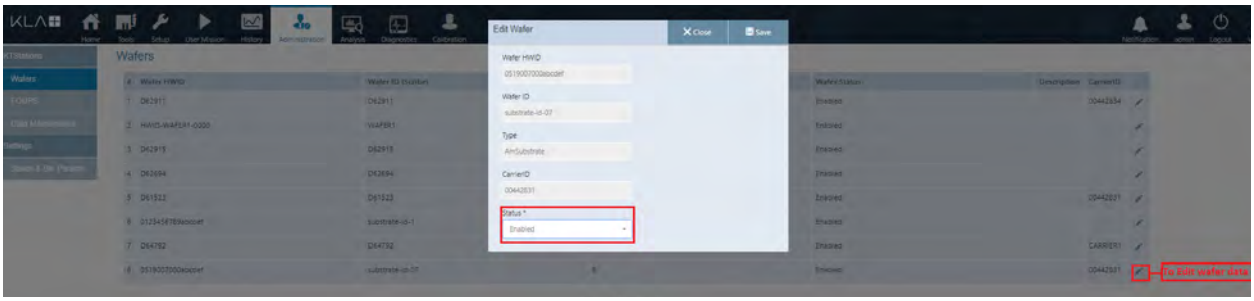
3. Click on **"Collect Logs"** to collect the all crash dump logs for the selected KLA Automation Station (Refer to the above Figure).

4.8.2 Wafers

IMPORTANT

This will allow users to view the list of Wafers available in the FOUP.

1. Click on "**Wafers**" to view the list of Wafers in the FOUP.



2. The newly added wafer **Status** will be "**Disabled**" by default.

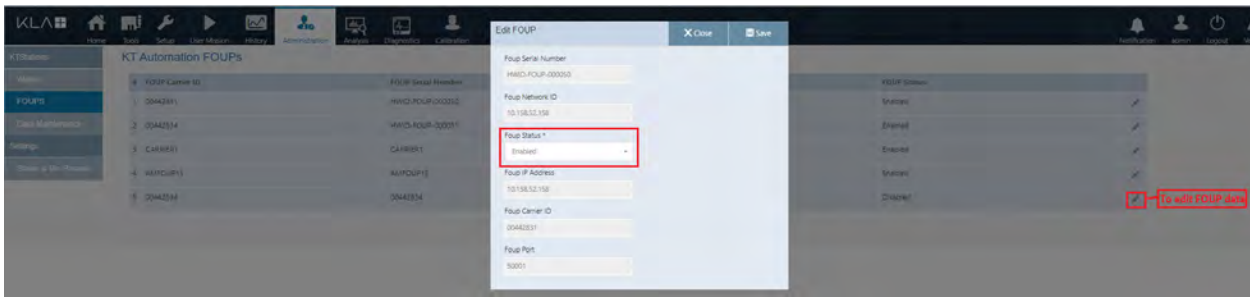
3. User has to enable the Status to "**Enabled**" with the edit option.

4.8.3 FOUPS

IMPORTANT

This will allow User to view the configured FOUPs list in the server.

1. Click on "**FOUPS**" to view the list of FOUPs configured in the server.



2. The newly added FOUP **Status** will be "**Disabled**" by default.

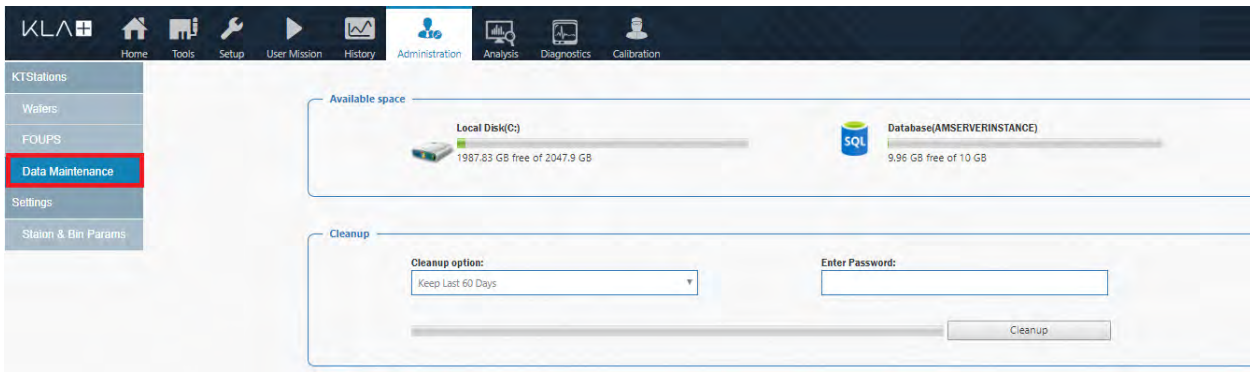
3. User has to enable the Status to "**Enabled**" with the edit option.

4.8.4 Data Maintenance

IMPORTANT

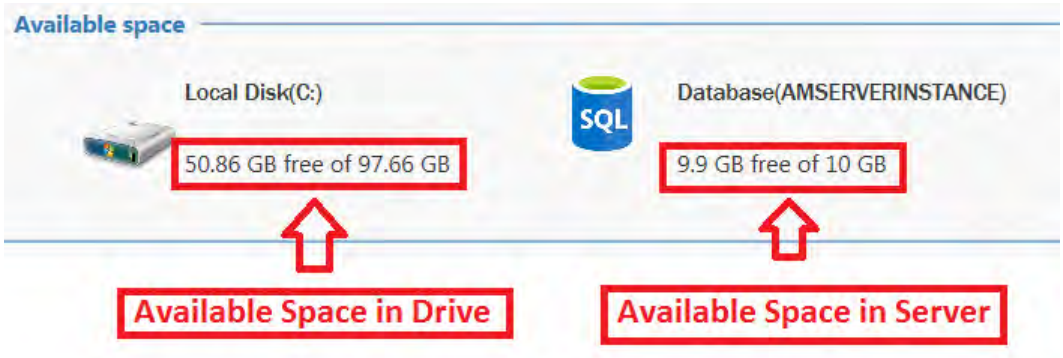
This feature allow the User to clean up the AM Data in Drive and Database.

1. Click on "**Data Maintenance**" to view the space existing in the Drive and Database.

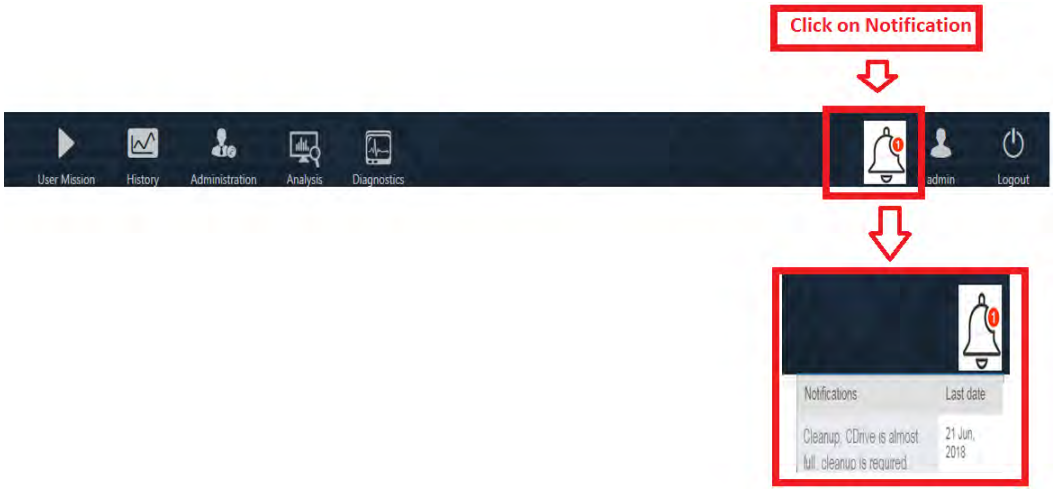


2. From the above figure User must identify the sections "**Available space**" and "**Cleanup**" in the UI.

3. User must see the available space in Drive and Database in "**Available space"**.



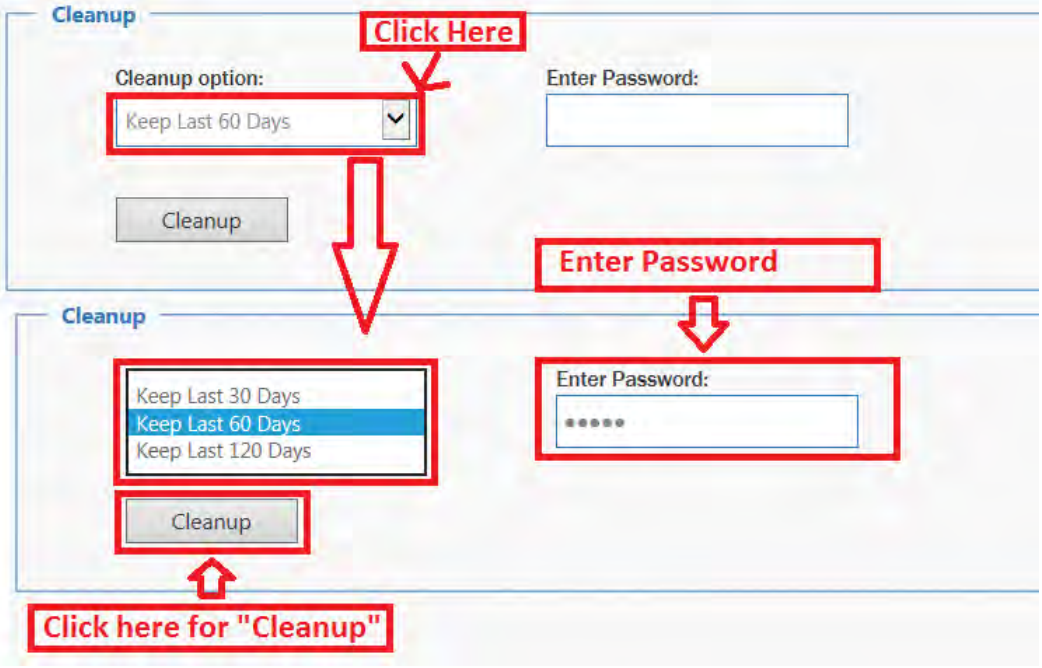
4. Also User must be notified when clean up is required to AM Data in Drive and Database (Refer to below Figure).



5. To cleanup the AM Data in Drive and Database, User must select required option in the Cleanup option drop down box (Refer to below Figure).

6. Then enter the password in the "**Enter Password**" section (Refer to below Figure).

7. Then click on “**cleanup**” (Refer to below Figure).



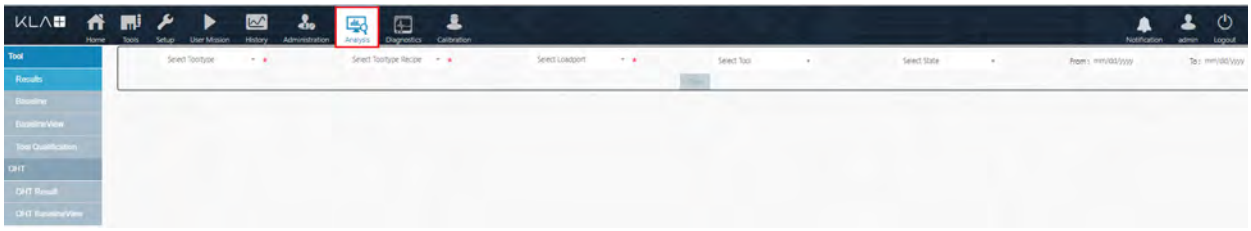
8. Now the AM Data is cleaned up in the Drive and Database.

4.9 Analysis

IMPORTANT

This Analysis page will allow User to create Baseline, allow User to see the monitoring mission results and User must view whether the tool has qualified or not.

- Click on "**Analysis**" and the page will be displayed as shown below.

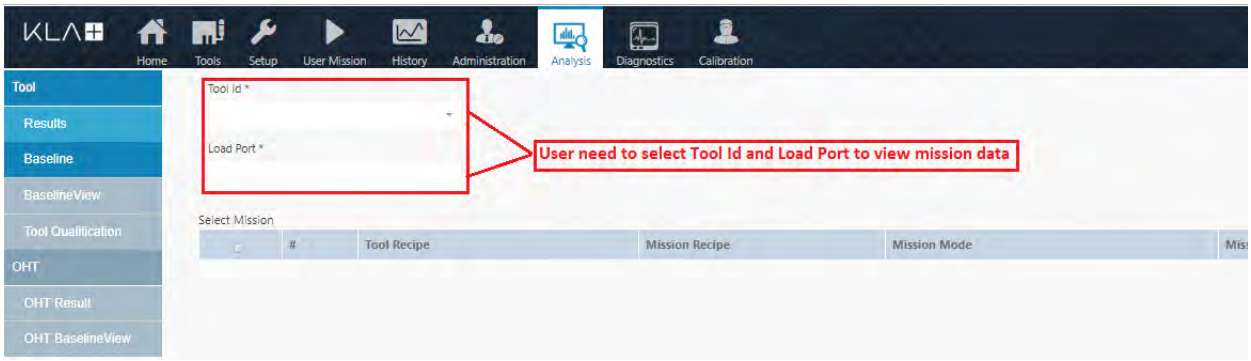


4.9.1 Baseline

IMPORTANT

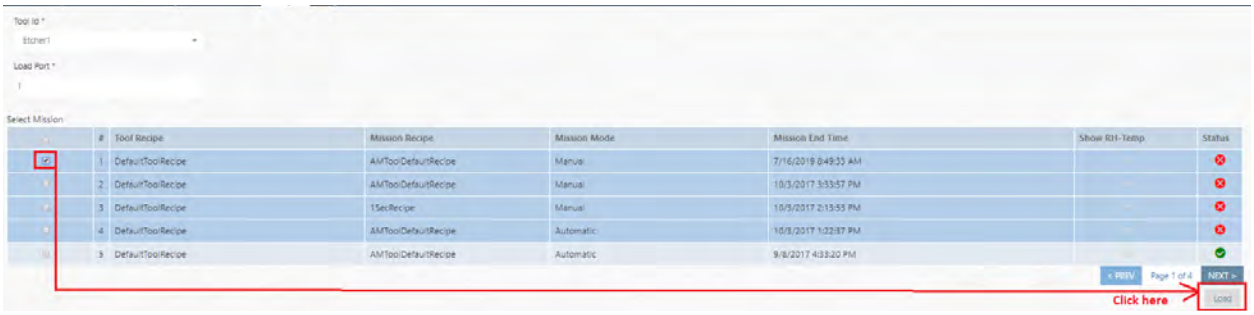
This section will allow user to create the Baseline per tool id and load port number.

1. Click on "**Baseline**" and the page will be displayed as shown below.



2. User can create the Baseline for particular Tool Id and Load Port.

3. Click on "**Load**" to get the mission raw data of particular event selected in the mission data.



4. User need to know the below mentioned details before creating the Baseline in the Chart

   - Adding/Removing the stations
   - Adding/Removing the Label

5. User has to right click on the chart to get the below shown options.

NOTE

*Station must be added in two ways either by clicking on "**Add All Cursor**" or **"Add Cursor"***

6. Click on "**Add All Cursor**" to add all stations in the chart which is shown in the below figure

7. Also User can able to delete the all stations by clicking on "**Remove All Cursor"** (Refer to step 5).

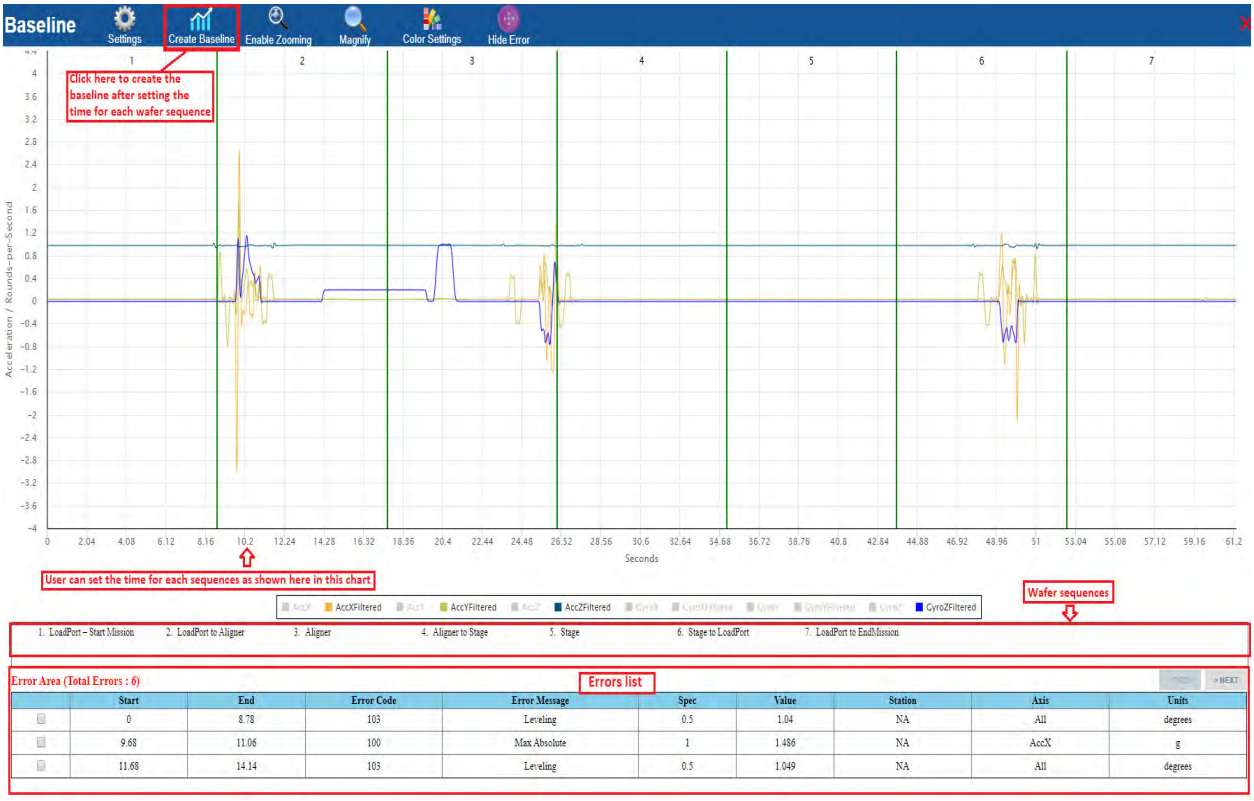
8. Each stage and label will be indicated between two green lines as shown in the above figure.

9. User must add each station into the chart by clicking "**Add Cursor**" and **"Add Label"** as shown in the below figure.

   - Right click on the Chart to get the options.
   - Select "**Add Cursor**" to add Station.
   - Select "**Add Label**" to add station number.

10. User can define the stage (or) Wafer sequence by moving the Station line (Green line) horizontally as shown in the above figure.

11. User will get the detailed information related to Baseline creation after defining the Stage (or) Wafer sequence and Station number (or) Label.



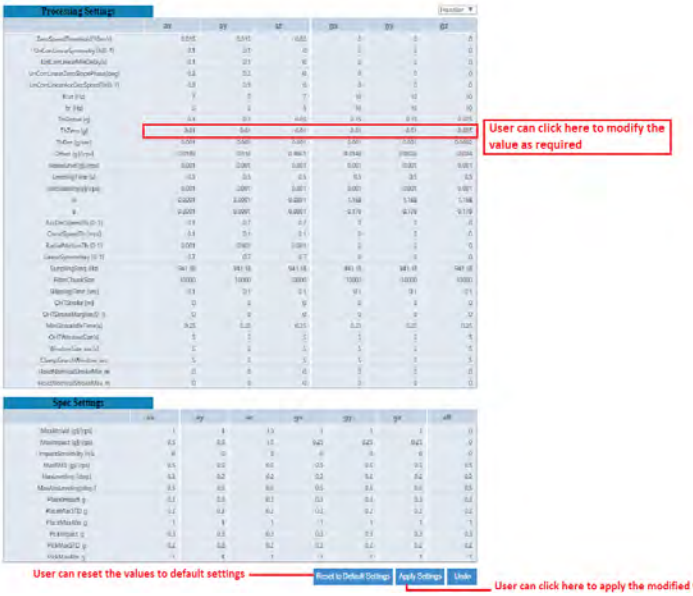
	Start	End	Error Code	Error Message	Spec	Value	Station	Axis	Units
	0	8.78	103	Leveling	0.5	1.04	NA	All	degrees
	9.68	11.06	100	Max Absolute	1	1.486	NA	AccX	g
	11.68	14.14	103	Leveling	0.5	1.049	NA	All	degrees

12. Also User can see the "**Error List**" as shown in the above Figure.

NOTE

Error List must be appeared in the Baseline mission if mission data has discrepancy with the predefined settings data.

13. Re-analysis: In the "**Errors List**" User can see the list of errors for the particular mission. Here User has to do the required changes in the JSON settings and re-run the machine to reduce the errors.



NOTE

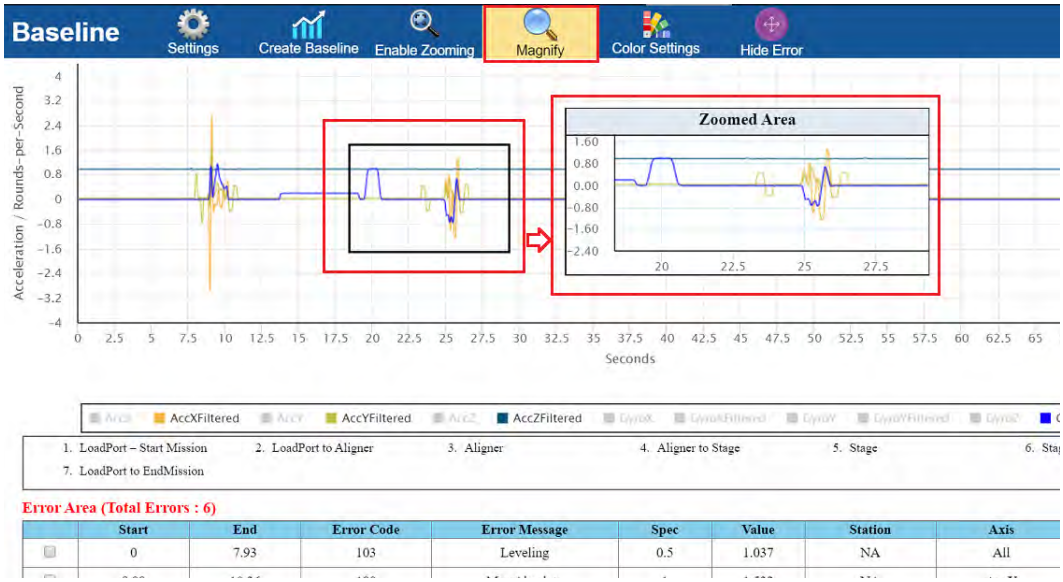
Here the number of errors may be increased if the JSON settings changes are not modified properly. User has to keep the exact values to reduce the errors.

14. User can enable the “Zoom” option as mentioned in the below figure.

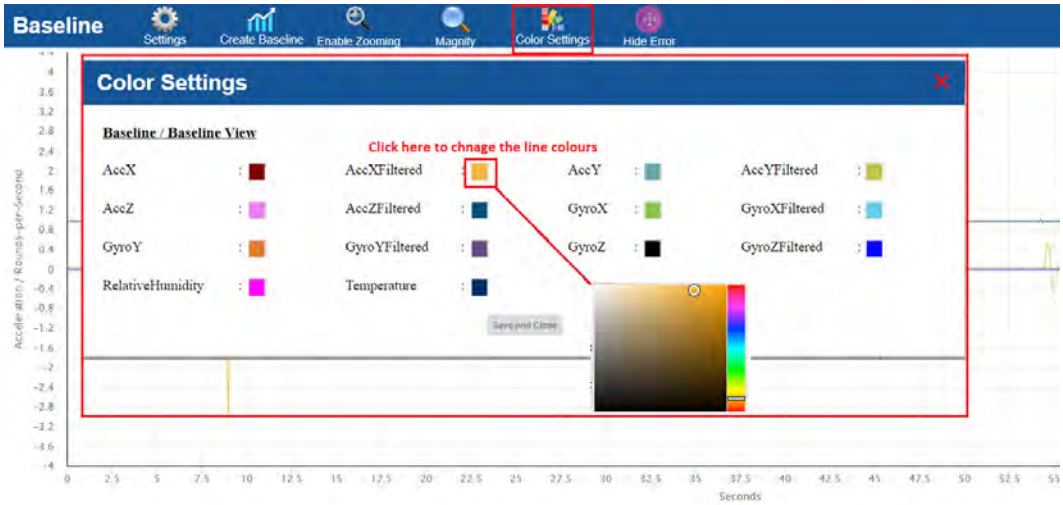
15. User has to check and click on respective error in “**Error List**” to see the detailed information about the error.

16. User must remove the stage by clicking on “**Remove Cursor**”, User must remove the station number (or) Label by clicking on “**Remove Label**” and User must remove all stations by clicking “**Remove All Cursors**”.

17. User can view the required raw data along with graph co-ordinates using **Magnify**. See below image for reference.



18. User can change the baseline colors for the graph using **Color Settings.**

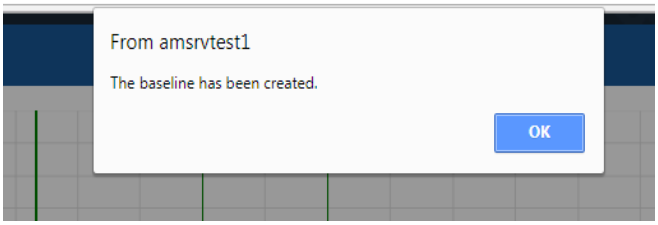


19. User can hide the error by clicking **Hide Error.**

Error Area (Total Errors : 6)

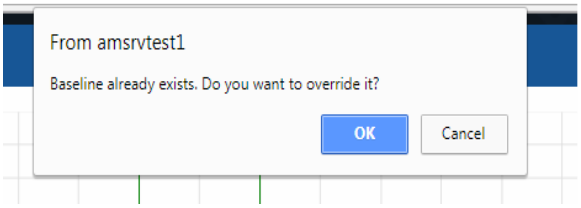
	Start	End	Error Code	Error Message	Spec	Value	Station
☐	0	7.93	103	Leveling	0.5	1.037	NA
☐	8.88	10.26	100	Max Absolute	1	1.522	NA
☐	10.88	13.67	103	Leveling	0.5	1.027	NA

20. After the successful creation of the Baseline the pop up will be shown as mentioned below.



NOTE

A pop up will be shown in case of the Baseline already exists, Here User has to decide whether to override or cancel the Baseline creation.



21. The Baseline existence will become "**true**" in "Results" page after successful creation of Baseline to the particular Tool Id and Load Port combination. Also the Baseline existence will become "**true**" for other events of same combination of Tool Id and Load Port Number.

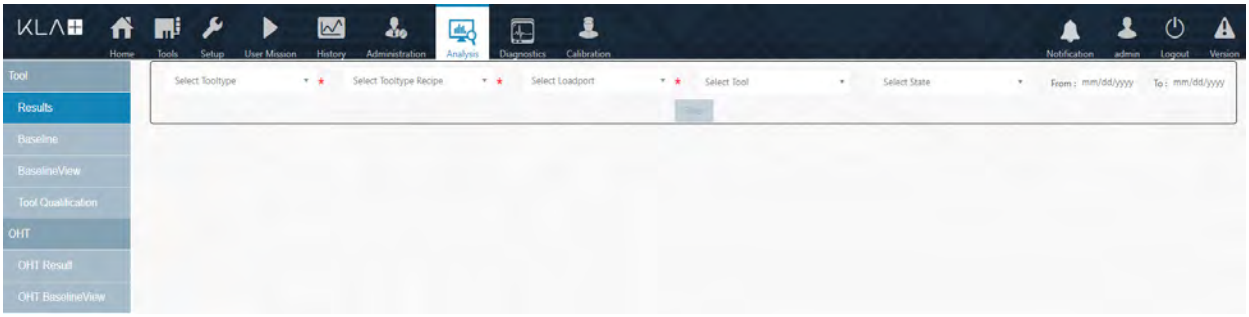
4.9.2 Results

IMPORTANT

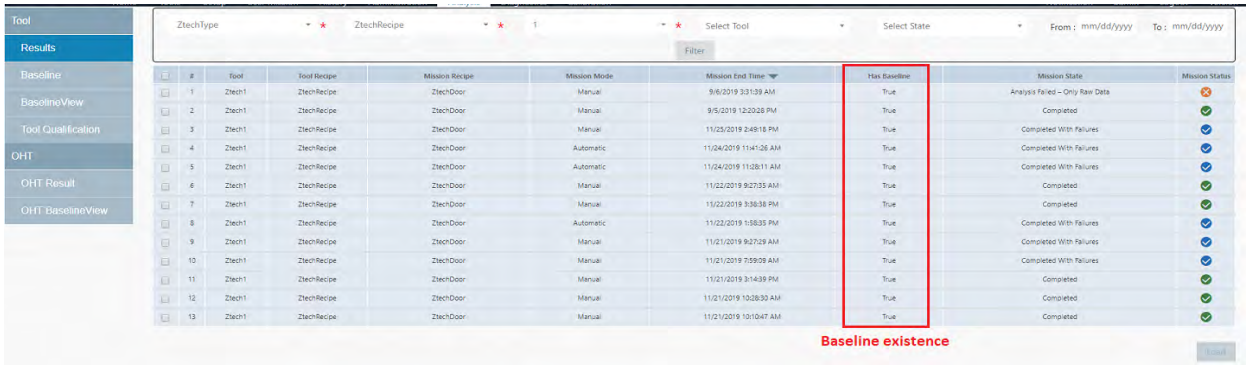
This page will allow User to see the Monitoring Mission details of per tool id and load port number.

- Baseline must be existed for monitoring mission results.
- Baseline will be created (in the section Baseline) in case of non existence of baseline and re-run the mission to get the monitoring mission details.

1. Click on "**Results**" to view the raw data of particular Tool, Recipe and Loadport combination.



2. User has to select the "**Tooltype**, **Tooltype Recipe, and Loadport**" to view the raw details (Refer to the below figure).



3. Also this "**Results**" page will allow user to see the existence of baseline.

NOTE

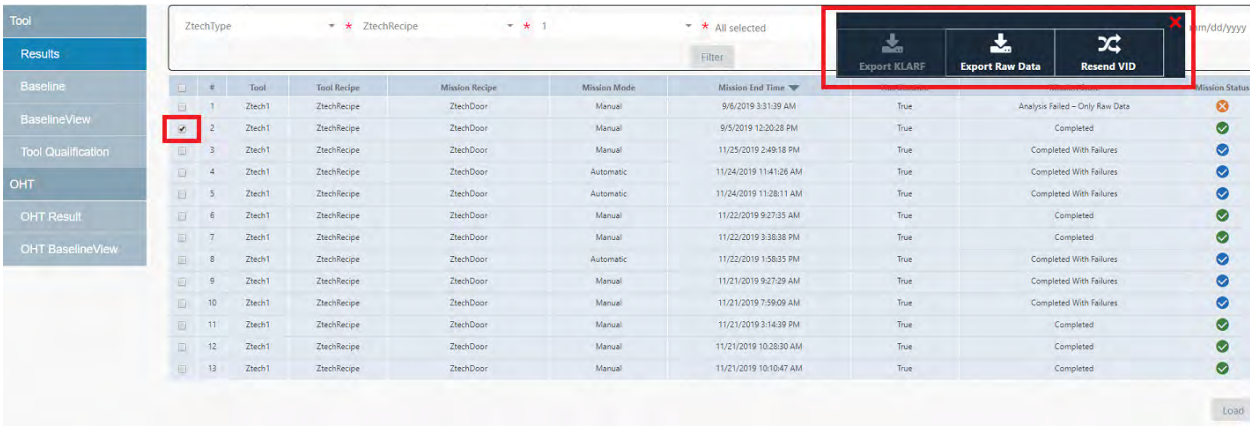
*User can not see the mission results without baseline, in the **Results** page.*

4. User has to create Baseline in Baseline section in case of non-existence of the baseline for the created mission.

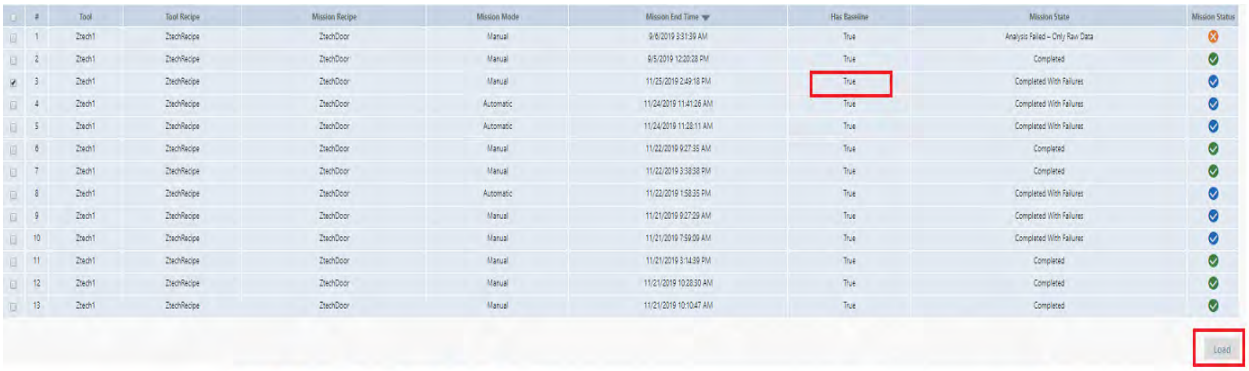
NOTE

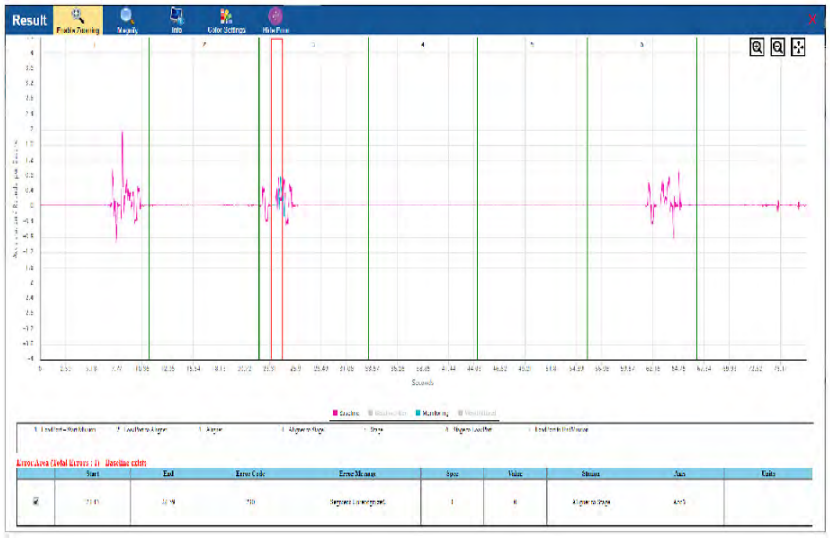
Error List will be empty if monitoring mission results has no leveling or impact problems.

5. User can **Export Raw Data** or **Resend VID**, once select the required mission. Click on **X(close)** to close the pop-up window.



6. Click on “**Load**” to get the mission raw data for the existence of Baseline of particular Tool ID, Tool Recipe, and Load Port Number. See below figure shows the mission raw data.





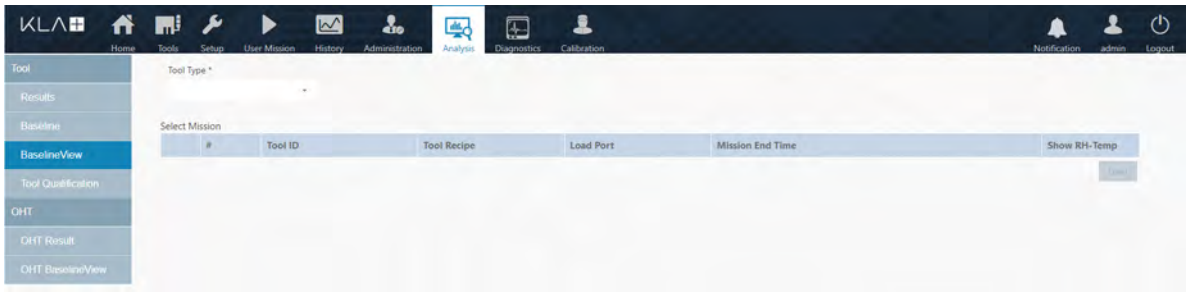
Loaded Result

4.9.3 BaselineView

IMPORTANT

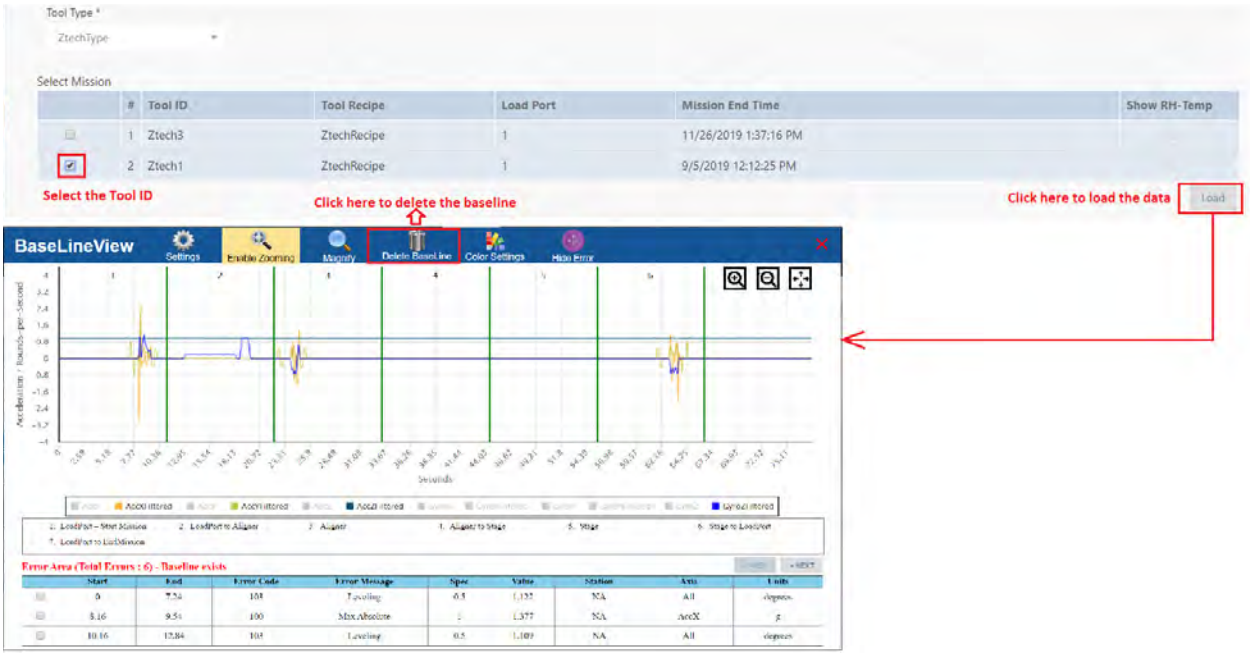
This section will allow user to view the Baselines existed (Base line created in Baseline section) per tool type and also allow the User to view their Mission Data.

1. Click on "**BaselineView**" and the page will be displayed as shown below.



2. Select **Tool Type** to load the mission data.

3. Click on "**Load**" to select to get the mission raw data of particular event selected in the mission data.



4. User can delete the Baseline for particular Tool Type (See the above figure).

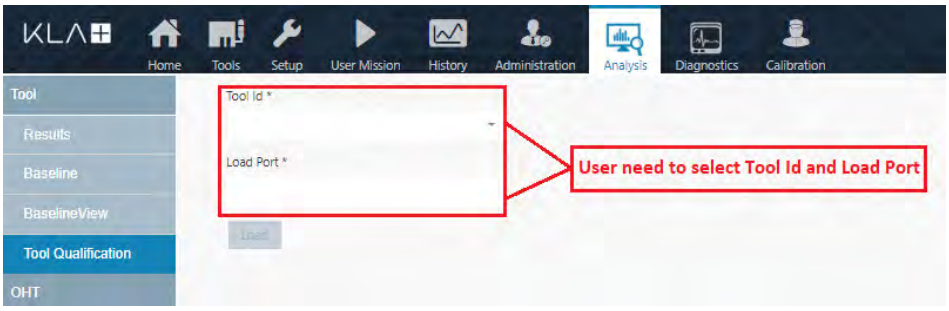
5. Refer to the step 12 to see the details of Errors List.

4.9.4 Tool Qualification

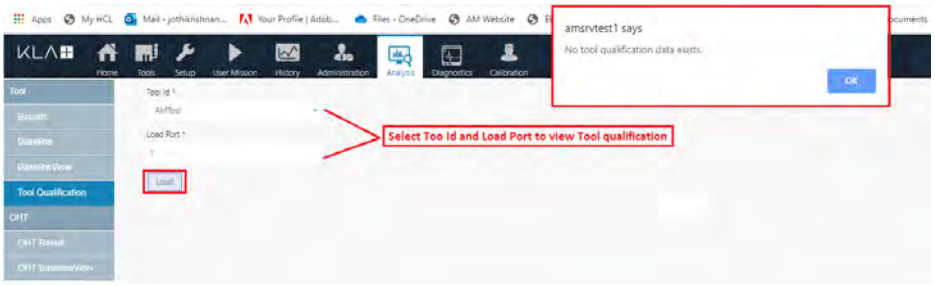
IMPORTANT

This UI must allow User to see the health of a tool mapping issues to different stations.

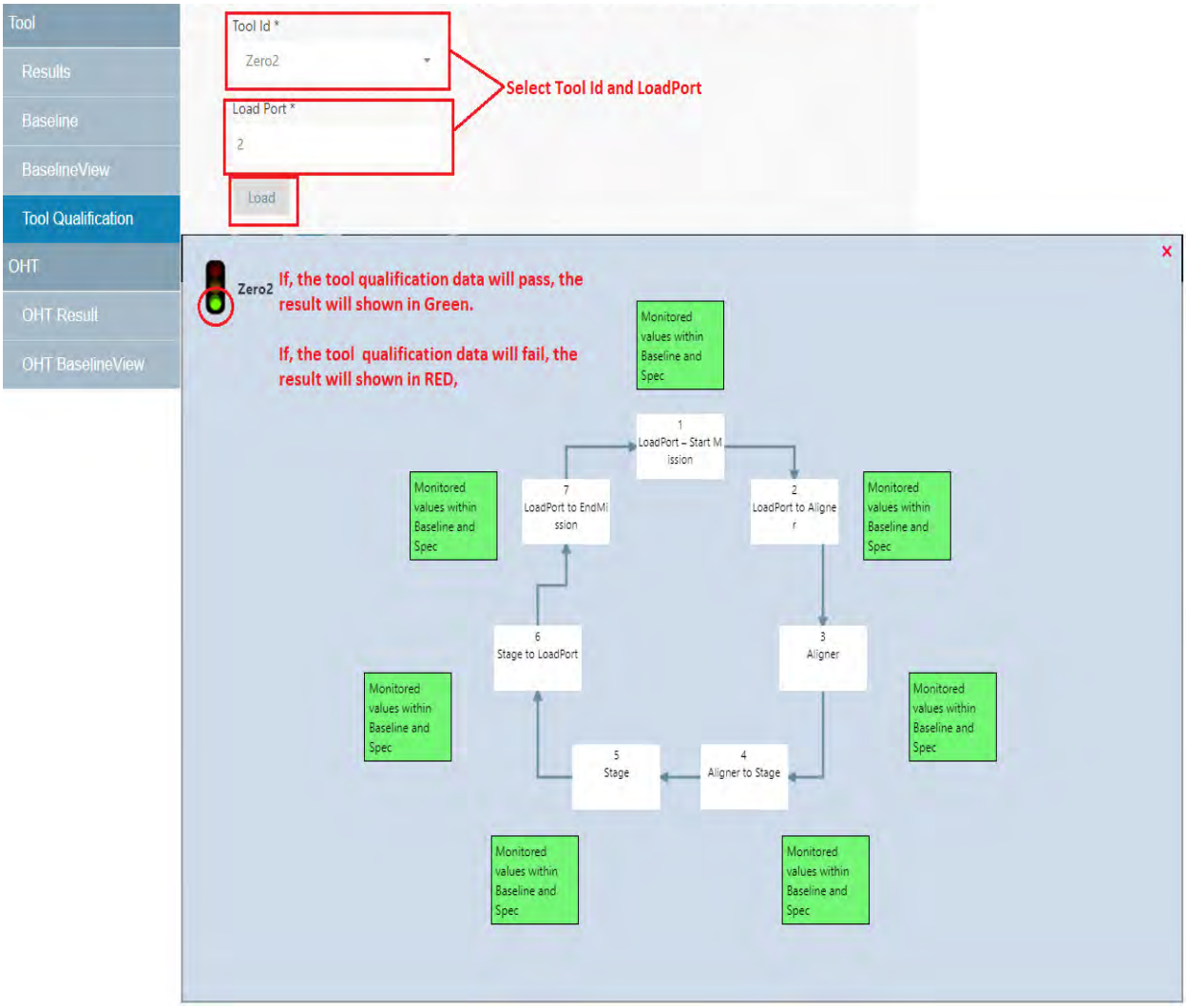
1. Click on "**Tool Qualification**" and the page will be displayed as shown below.



2. There will not be any data if no tool qualification data exists after clicking on "**Load**" for the particular combination of "Tool Id" and "Load Port".



3. For the successful qualified tool data, the data will be shown as mentioned below.



4. Mission end status of Tool qualification data will be anyone of the following 3 states

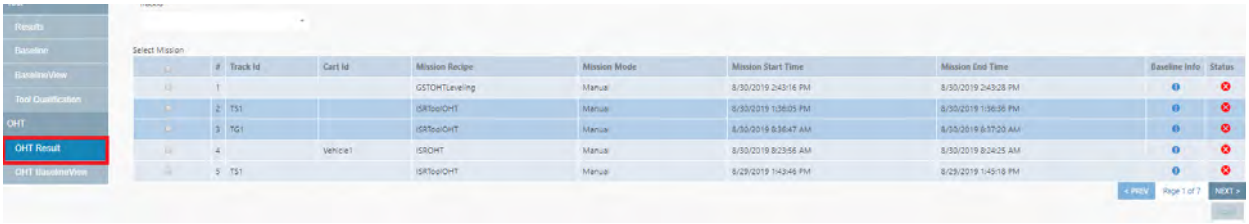
   - **Failed** - the tool has Baseline, Monitor mission has faults compared to Baseline.
   - **Completed** -the tool has Baseline, Monitor mission is equal to Baseline.
   - **Completed with Failures** - The tool has no Baseline.

5. Result Signal

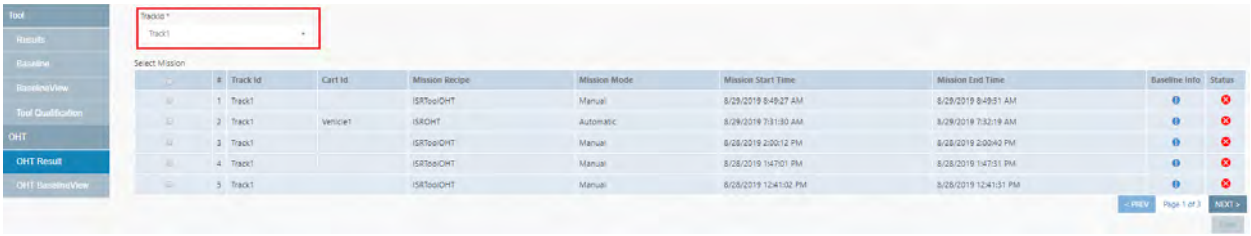
   - The result signal will be RED if “**Failed**” status exists in any stage (Refer to above step 3).
   - The result signal will be RED if both “**Failed**” stage and **“Completed with Failures”** stage exists.
   - The result signal will be in YELLOW if “**Completed with Failures”** stage exists and no **“Failed”** status.
   - The result signal will be GREEN if “**Completed**” stages only exists.

4.9.5 OHT Analysis

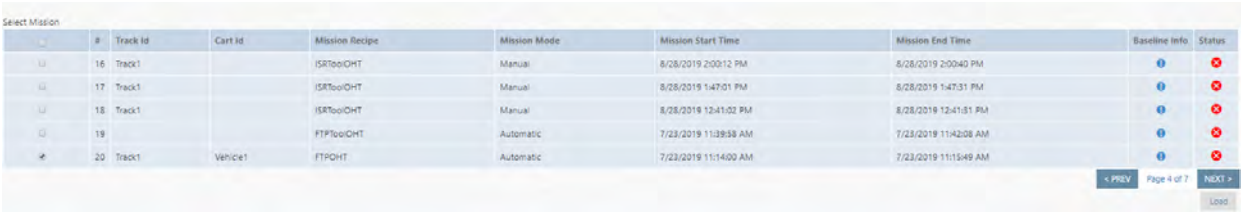
1. Click **OHT Result** to view, OHT Result page.



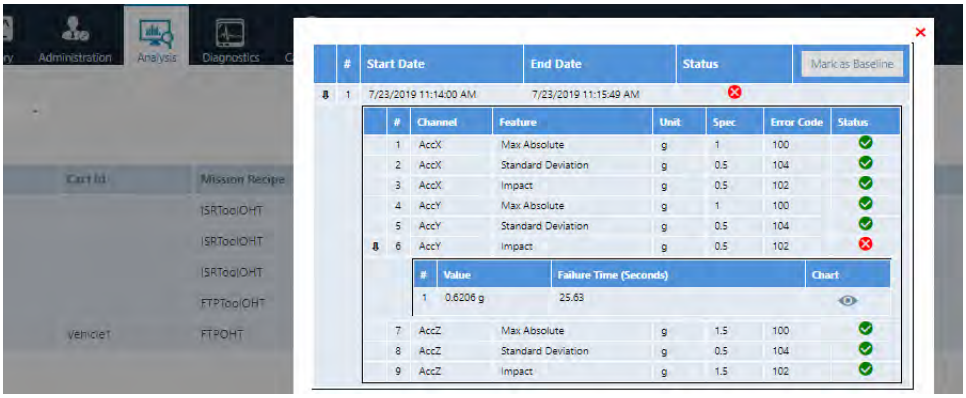
2. Select **Track ID**, using drop-down menu to view the mission data for the selected Track ID.



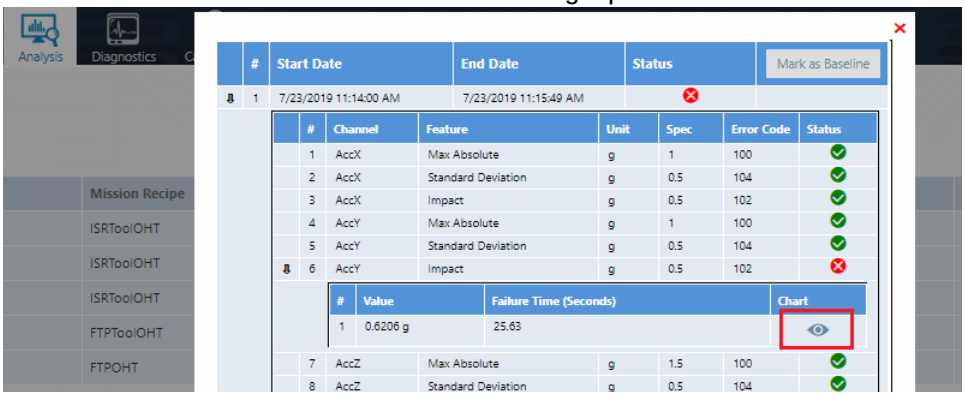
3. **Select Mission** from the mission data table, to view the analysis report for the selected mission.



4. Click on **“Load”** get the analysis report of the particular mission selected in the mission data.



5. Click on **chart** to view the OHT result graph.

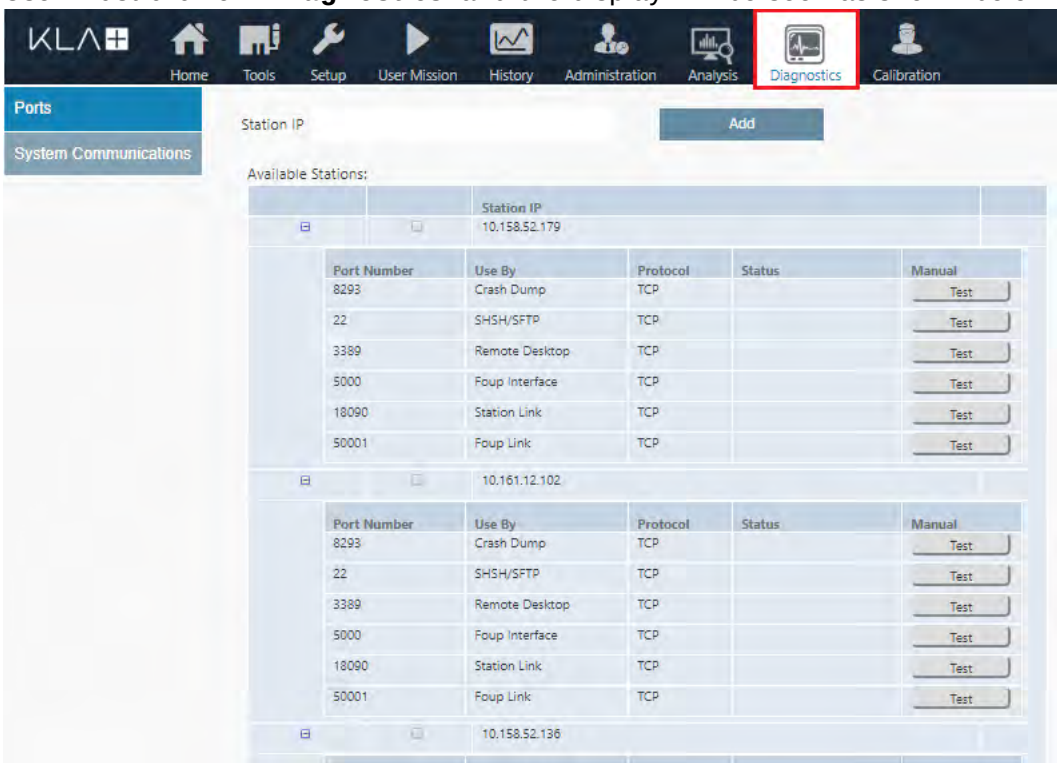


4.10 Diagnostics

IMPORTANT

This page allows the user to know the status of AM required Ports and AM system communications.

User must click on "**Diagnostics**' and the display will be seen as shown below.



This page must have the below mentioned features.

- Ports
- System Communications

4.10.1 Ports

1. User must click on "**Ports**" and the UI display will be seen as shown below.

2. Ports section must be divided into 4 sub sections which are shown below

   - Station IP
   - Available Stations
   - Server Details
   - Start Diagnostics

3. Station IP

   - This section allows the User to add new Station.
   - User must enter the IP details in the text box and click on "**Add**" to add the new Station IP details.

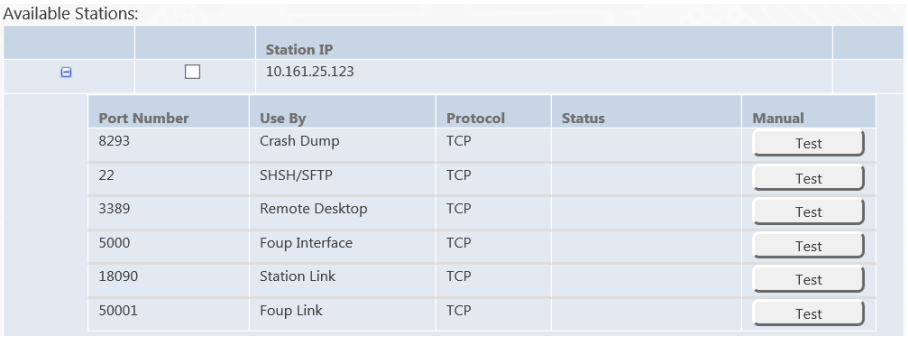
- The new Station IP address must be displayed in the section "Available Stations".

NOTE

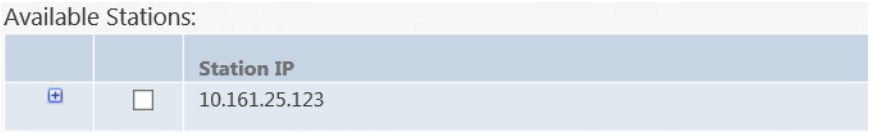
This Section must be used to add the Station IP in the available Station IP Grid.

4. Available Stations

- The “Available Stations” section must be seen as shown below.



- User must view the list of Station IPs which were added in the "Station IP" section.
- User must see the following columns in this section.



  - Expand / Collapse control
  - Check Box
  - Station IP

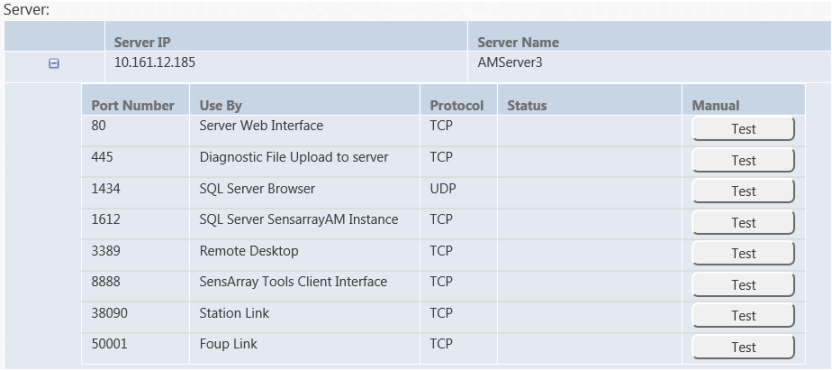
- User must see the below listed columns on clicking Expand.

Port Number	Use By	Protocol	Status	Manual
8293	Crash Dump	TCP		Test
22	SHSH/SFTP	TCP		Test
3389	Remote Desktop	TCP		Test
5000	Foup Interface	TCP		Test
18090	Station Link	TCP		Test
50001	Foup Link	TCP		Test

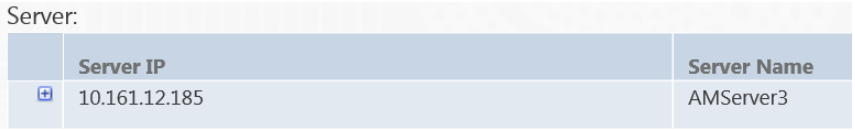
  - Port Number
  - Used By
  - Protocol
  - Status
  - Manual Test (Button)
- User must click on Manual Test button to test the particular port status.
- The status of the port must be seen under status column.

5. Server Details

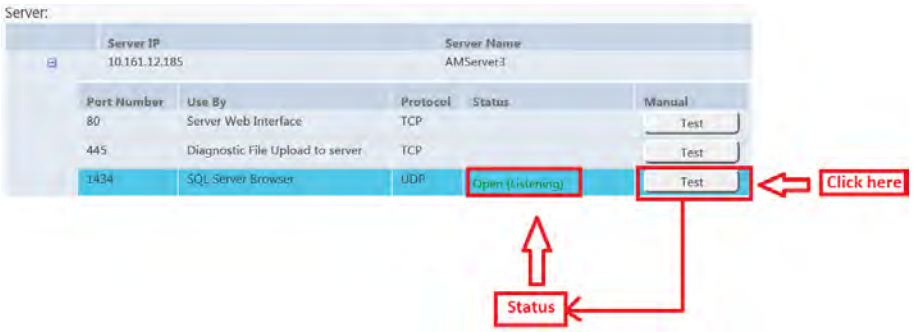
- The Server section must be displayed as shown below.



- This section has a table with nested grid. when the page gets loaded the nested grid will be expanded.



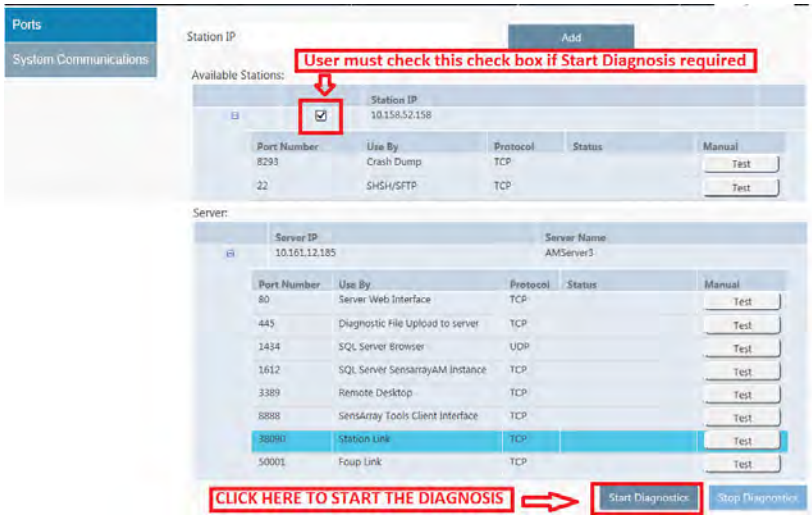
- User must see the all port details after the table grid expansion.
- User must see the below listed columns on clicking the expand button
  - Port Number
  - Used By
  - Protocol
  - Status
- User must click on Manual Test button to test the particular port status.
- The status of the port must be seen under status column.



6. Start Diagnostics

- This section allows the User to know the status of all available ports status in the Server.

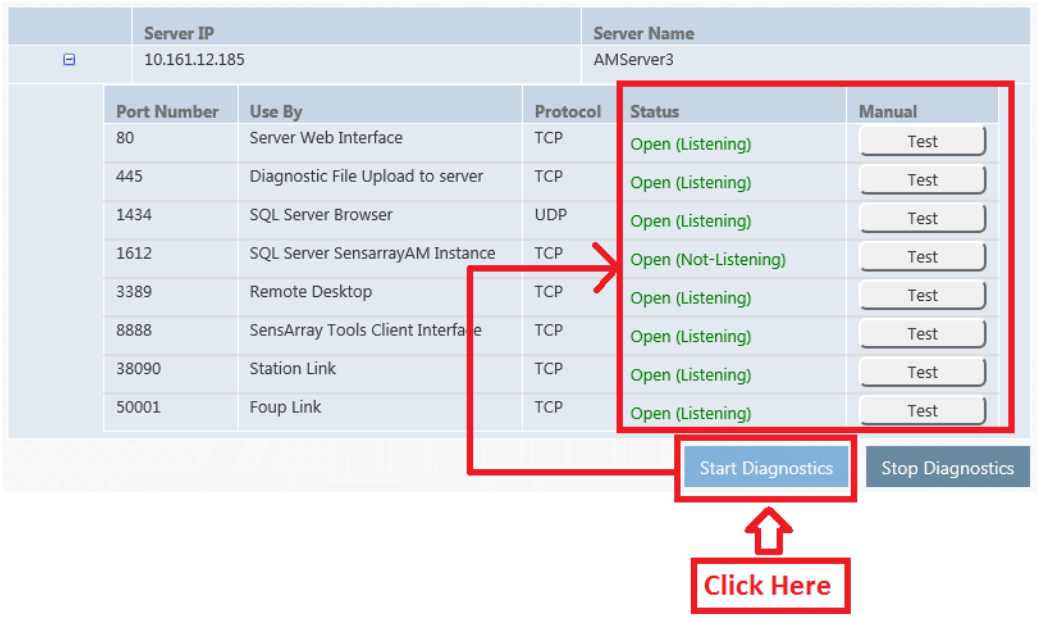
- User has to click on the required check box of available station to know the status.



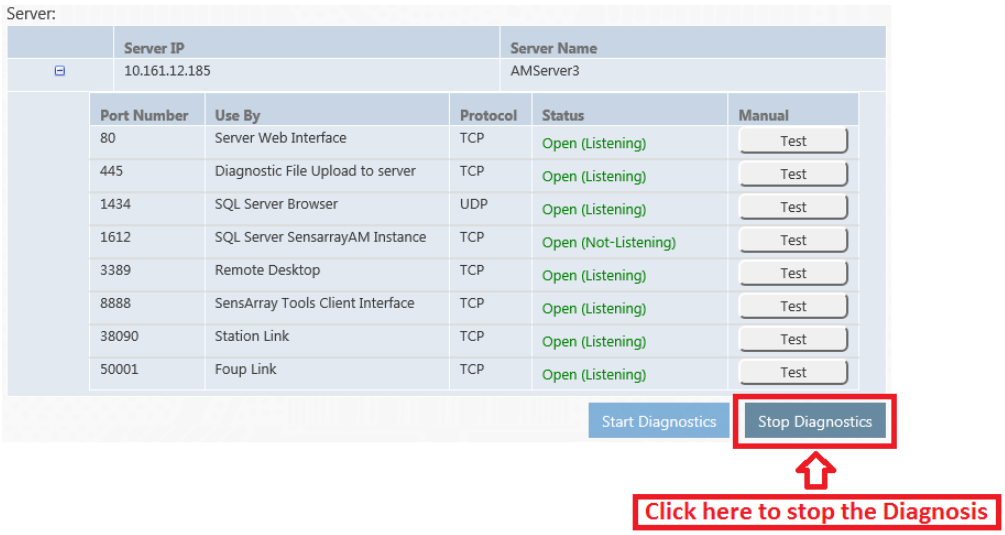
- User must click on "**Start Diagnosis**".

- Then all the available ports tests will be displayed after the completion of the diagnosis in the server as well as in the Station which was selected by User.

- User must find the all ports status in their respective column.



- Also User can stop the diagnosis by clicking on "**Stop Diagnosis**" after the start of the Diagnosis.

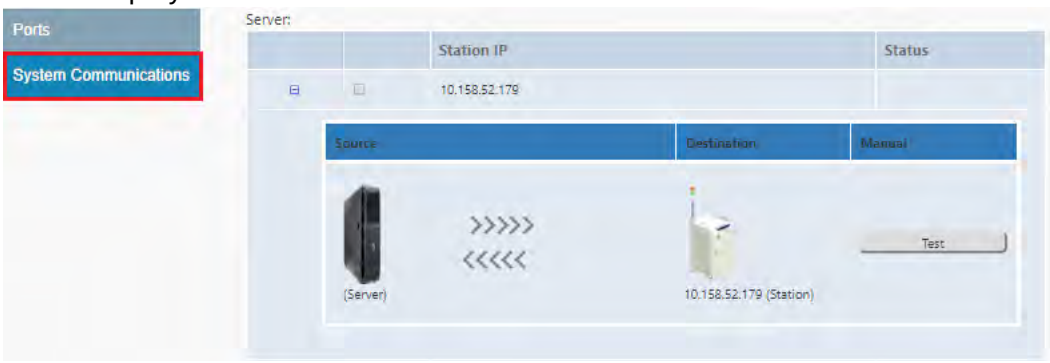


4.10.2 System Communication

IMPORTANT

This will allow the User to know the status of communication between AM Systems.

1. User must click on “System Communication” and the display must be seen as displayed below.



2. From the above figure User must observe the table with a nested grid.

3. The nested grid must have the following columns.

- Check Box
- Server IP
- Station IP

4. User must know the communication of between

   - Server to Station
   - Station to Server
   - Server to Foup

5. The UI Page of communication will look like as shown below.

6. From the above figure, User can see the status as "**Success**" of the station.

7. User must see the table with a nested grid with the below mentioned columns from the above figure.

   - Source:

     An image with IP address of the source machine. It could be server, station or Foup.

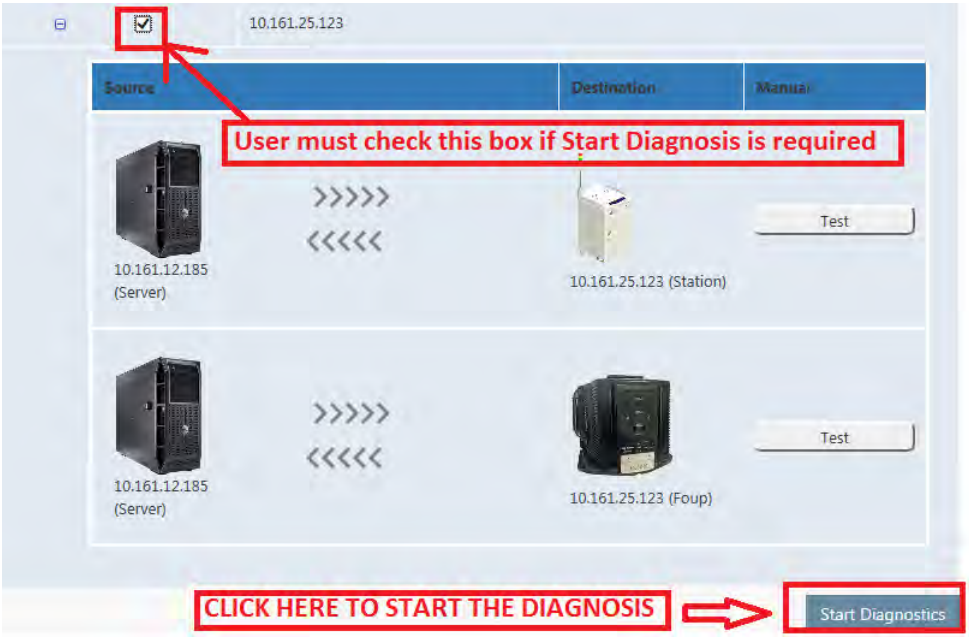
   - Destination:

     An image with IP address of the destination machine. It could be server, station or Foup.

   - Manual:

     Test buttons, on click, between the source and destination a arrow line will appear. If source and destination is communicating, then an arrow will become green with communicating status otherwise as red with Non-communicating status.

8. User must click on the check box of the respective station and then click on “Start Diagnostics”.



9. Then the UI communication will start and represent as shown below

4.11 Automation Metrology Wafer Functions

The below mentioned parameters are used to **Start** and **Stop** the triggers.

Table 4-1:

Trigger	Description
Start Trigger	
DoorOpen	FOUP door opens
Delay	Data acquisition begins after specified delay (in seconds) from start of mission
WaferLeavesFOUP	Wafer is picked from the FOUP at the start of a tool mission
FoupLeaveCharging	Data acquisition begins after the Foup leave from the station
Stop Trigger	
Door Close	FOUP door closes
Duration	Data acquisition ends after the specified duration (in seconds) of data acquisition
Wafer Return to FOUP	Wafer is returned to the FOUP at the end of a tool mission
FoupReturnCharging	Data acquisition stops after the Foup return to the station

4.11.1 To Add Tool Recipe

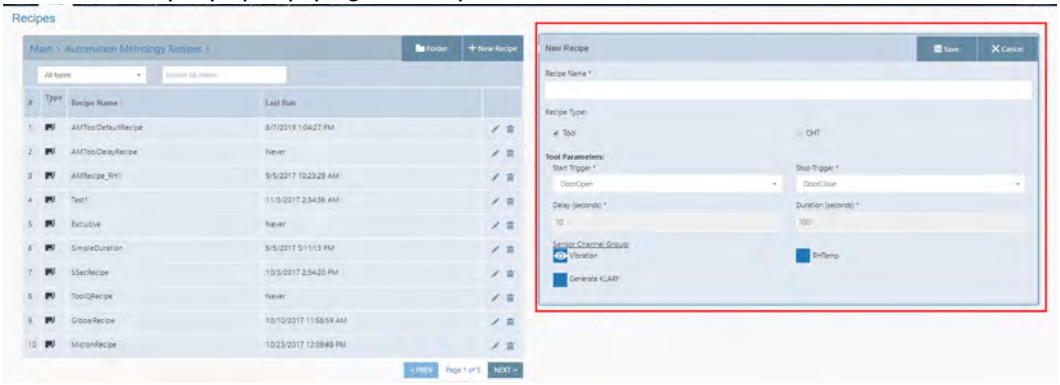
1. In the **Setup** page, click **Recipes.**

2. Click on **Automation Metrology Recipes.**

3. Automation Metrology recipes page will open.

4. Click on **New Recipe.**

5. New recipe pop-up page will open.



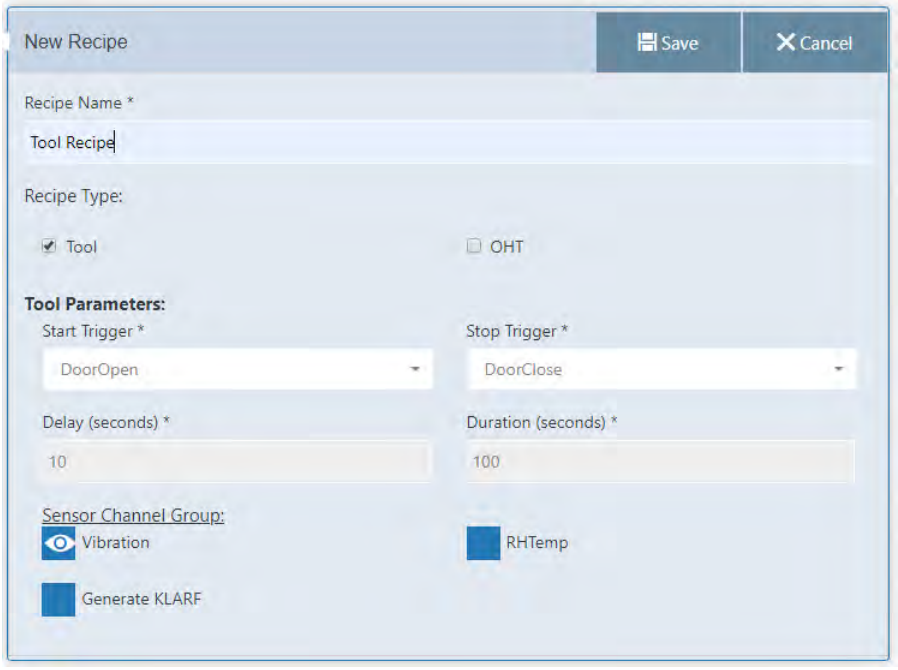
6. Enter **Recipe Name.**

7. Select **Tool** in **Recipe Type.**

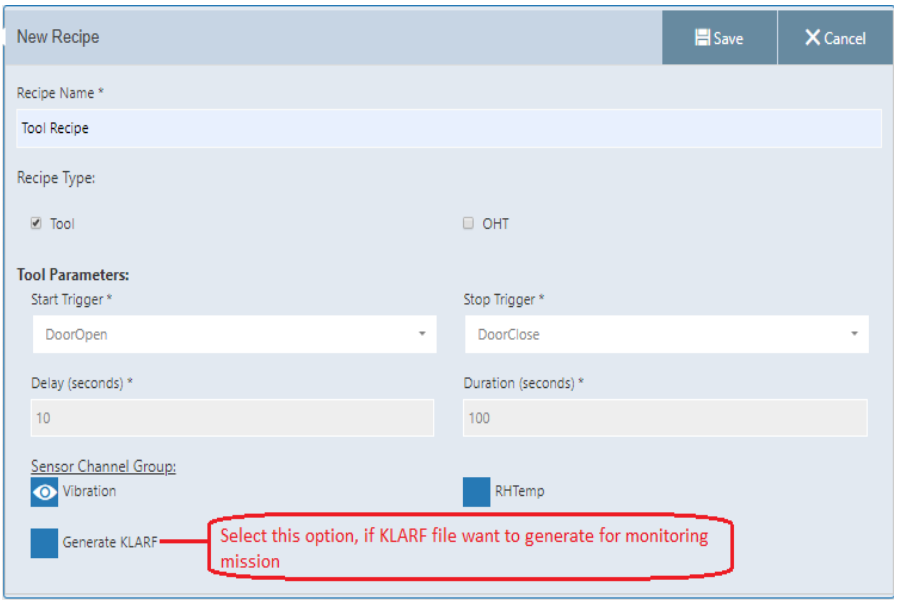
8. Use drop-down menu to select the **Start trigger** and **Stop Trigger**, for the **Tool Parameters.**

   - Select **Start Trigger - DoorOpen**

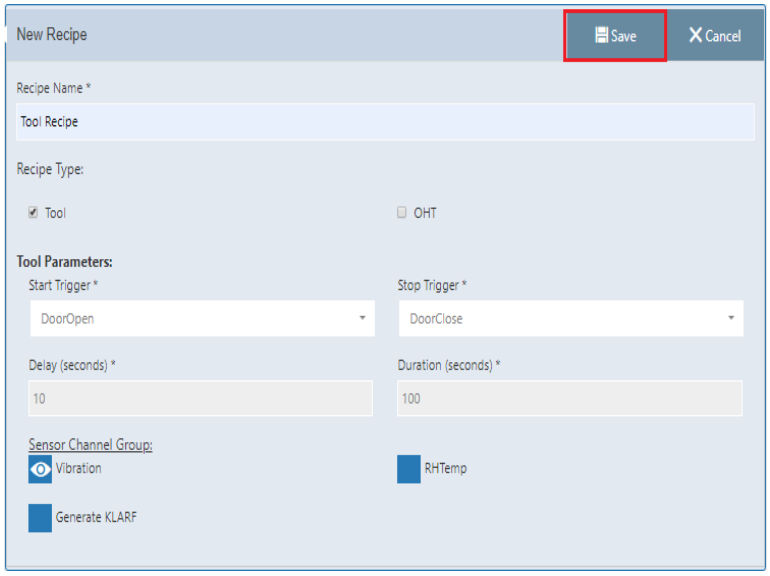
- Select **Stop Trigger - DoorClose**



- If required, Generate KLARF file for monitoring mission.

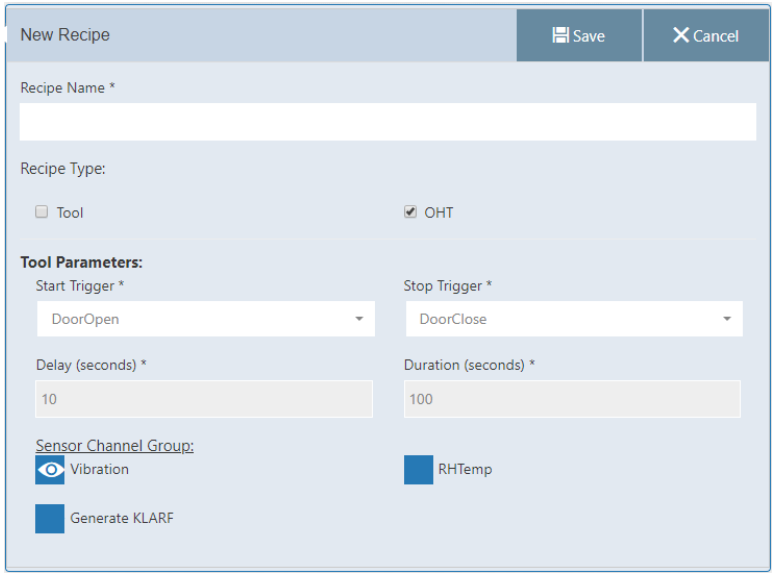


9. Click on **Save** to add the new tool recipe.



4.11.2 To Add OHT Recipe

1. Select **OHT**, from the **New Recipe** pop-up.

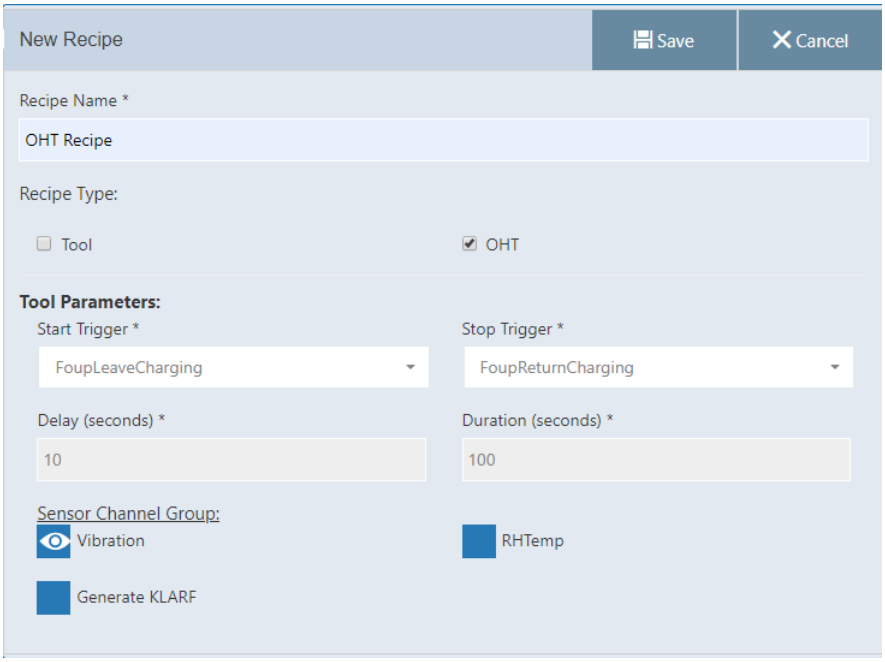


2. Enter **Recipe Name.**

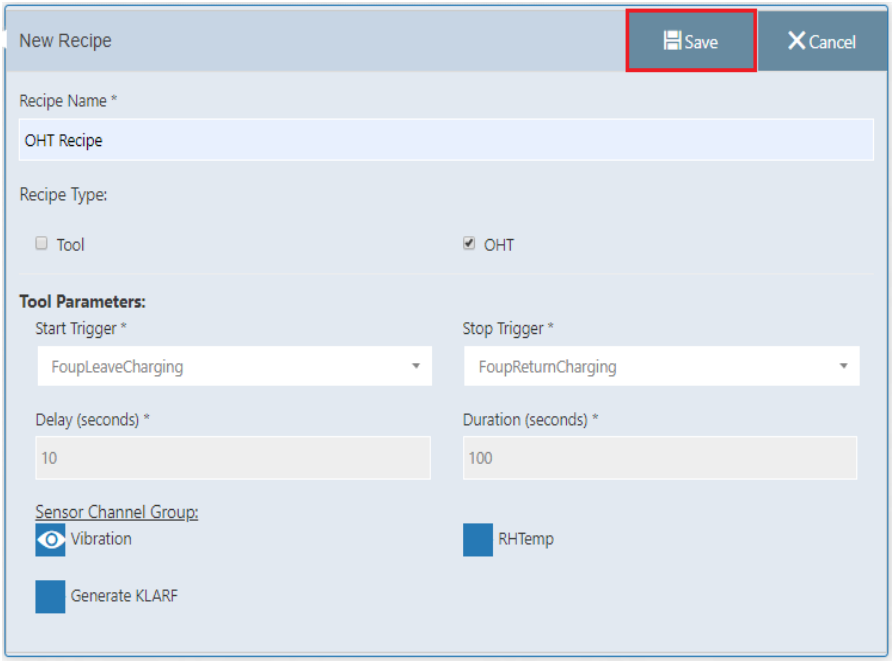
3. Use drop-down menu to select the **Start trigger** and **Stop Trigger**, for the **Tool Parameters.**

   - Select **Start Trigger - FoupLeaveCharging**

- Select **Stop Trigger - FoupReturnCharging**



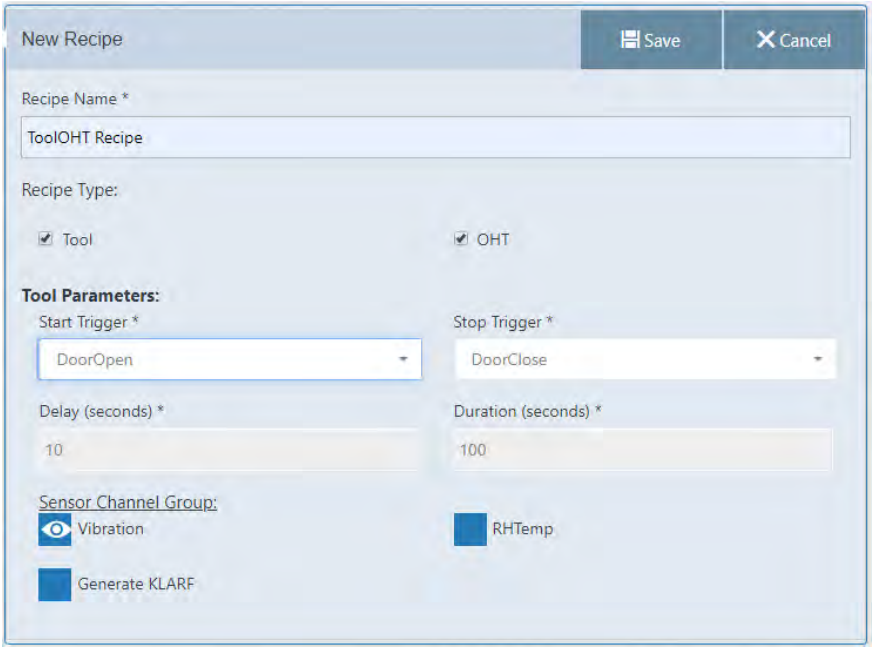
4. Click on **Save** to add the new OHT recipe.



4.11.3 To add ToolOHT Recipe

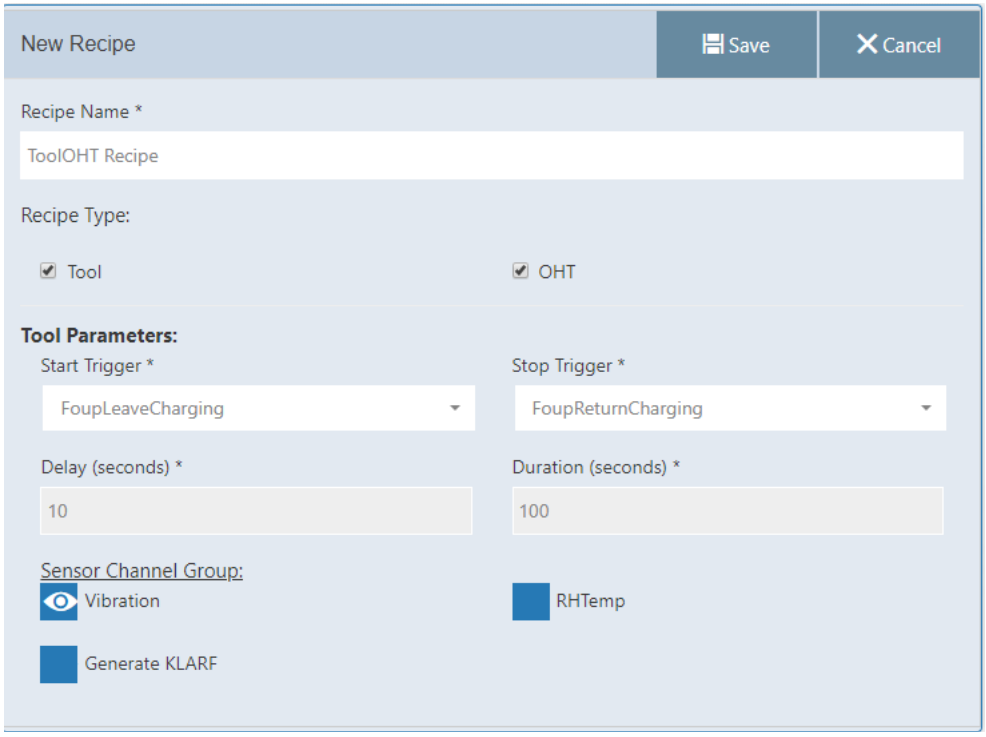
1. Select both **Tool** and **OHT** in **Recipe Type,** from the **New Recipe**

2. Enter **Recipe Name.**

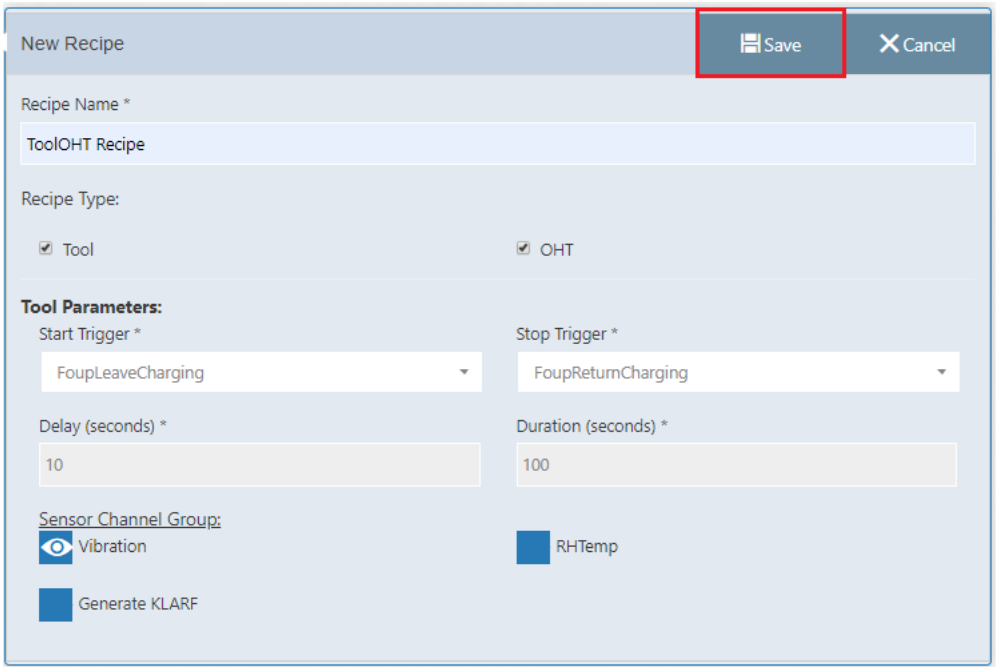


3. Use drop-down menu to select the **Start trigger** and **Stop Trigger**, for the **Tool Parameters.**

- Select **Start Trigger - FoupLeaveCharging**
- Select **Stop Trigger - FoupReturnCharging**



4. Click on **Save** to add the new **ToolOHT** recipe.

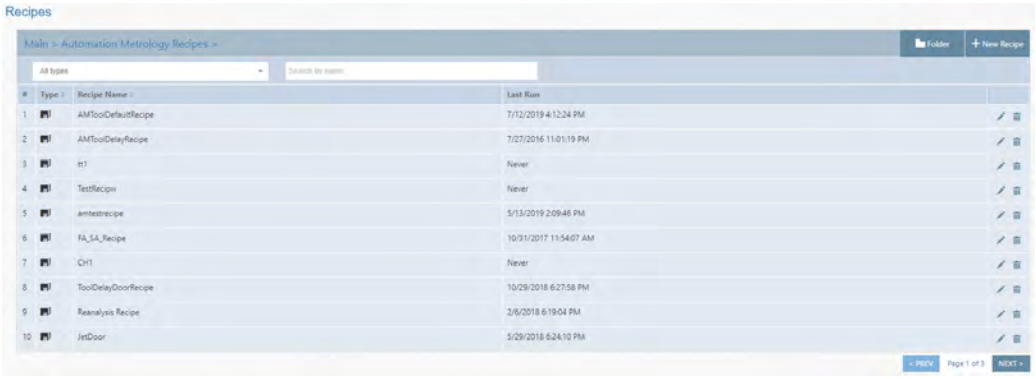


4.11.4 Edit or Add an Automation Metrology Wafer Mission Recipe

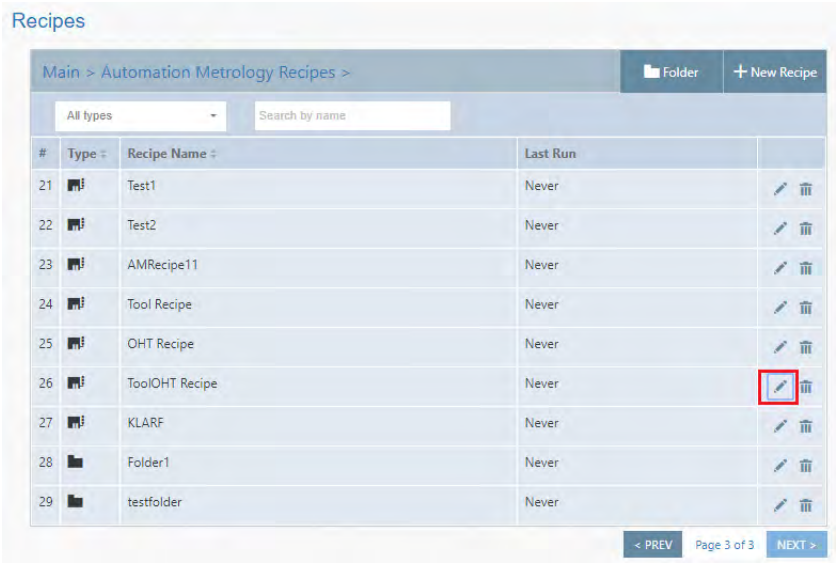
1. In the **Setup** page, click **Recipes**.

2. Click the **Automation Metrology Recipes** folder to edit or add new recipes.

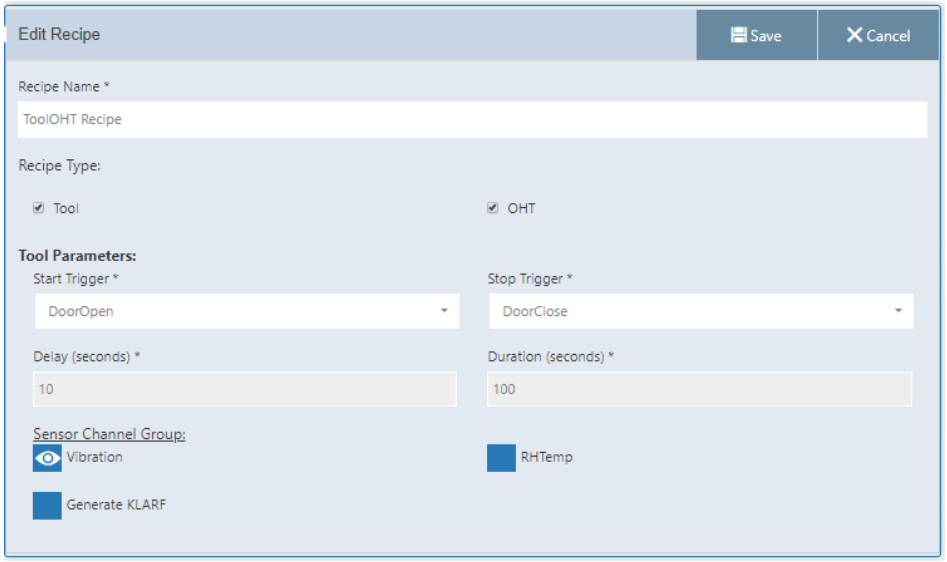
3. **Automation Metrology Recipes** page will open.



4. Click on edit icon to update the recipe.



5. **Edit Recipe** pop-up will open.



6. Update the recipe as per the requirement.

7. Click on **Save** to update the recipe.

Glossary

Term, acronym, abbreviation	Description
CID	Wafer Carrier ID (serial number contained in RF Pill of FOUP; might also be Lot ID, if written by fab)
FA	Factory Automation (software- and communications-based control of a semiconductor fab)
FOUP	Front-Opening Universal Pod (wafer container)
GEM	Generic Model for Communications and Control of SEMI Equipment
GSS	Global Support Services (KLA Support organization).
HWID	Hardware ID (serial number of the specified hardware component such as SensArray Wafer)
KLA	KLA Corporation
KLAAF	KLA Automation FOUP (to charge, transport, and store KLA in situ test wafers)
KLAAS	KLA Automation Station (charging and communication station for Automation FOUPs)
MES	Manufacturing Execution System (the fab Host)
Mission	Execution of a single KLA Automation job/cycle
OHT	Overhead Transport system (fab automation system for FOUP transportation)
UI	User Interface
WID	Wafer ID (T7 Mark on the bottom of the wafer)

Revision History

Revision Date	New Rev. Level	Changes Made	Reviewer	Approver
10/2016	AA	Initial Issue	Avi Zaban	Henry Lam
04/2017	AB	DCR T35533: Added Regulatory Compliance Statements (Section 1.4); other minor edits	Avi Zaban	Henry Lam
05/2017	AC	DCR T35123: Added FOUP Reset (Section 2.2.6)	Avi Zaban	Henry Lam
05/2018	AD	Figures Modified and added for the sections 3.3 and 3.3.1 Text added in the section 3.3.1 about Vibration and Temperature. Added the Sections 3.7.1, 3.7.2 and 3.7.3. Added the Section 3.8 and its sub sections 3.8.1, 3.8.2, 3.8.3 and 3.8.4	Evgeny Rudminsky	Avi Zaban
10/2018	AF	Added the section “3. KLA AM Station Application UI”. Added the sections “Data Maintenance” in Administration section in “KLA Automation Web UI” Section. Added the section “Diagnostics” in “KLA Automation Web UI” Section. Modified the Illustrations in “KLA Automation Web UI” Section.	Evgeny Rudminsky	Avi Zaban
07/2019	AG	Added section “3.3 Software upgrade for FOUP and Wafer.” Added the section “4.8 User Mission page.” Added the section “4.9.3 To Execute ToolOHT Mission” Added the section “4.11.5 OHT-Tool Analysis.” Added the section “4.11.6 OHT Analysis” Added the section “4.14.1 To add Tool Recipe” Added the section “4.14.2 To add OHT Recipe” Added the section “4.14.3 To add ToolOHT Recipe” Updated the section “4.14.4 Edit or Add an Automation Metrology Wafer Mission Recipe”	Raja Vishvanathan	Evgeny Rudminsky
12/2019	AH	Changed brand logo and text from “KLA-Tencor” to “KLA”. Added NCC statement. Added section 1.4.6 Input Power for Battery Charging. Added section 1.4.7 Environmental conditions for the equipment. Added section 1.4.8 Critical component list. Added Danger in Section 2.2.4 KLA Automation FOUP Battery. Updated images as per recent UI, in section 3. KLA AM Station Application UI and section 4.KLA Automation Web UI.	Eran Bachinski	Evgeny Rudminsky