

Project

Test Case Document

Prepared By

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Date

2025 / 04 / 21

Project Name

Airscape Realtime AQI Monitoring for colombo

Version : 1.0

Airscape

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Smoke Test Cases

General Information

- Test case type : Smoke Testing
- Prepared by : Akila Lakshitha
- Created at : 2025 / 04 / 22

RBA-TC004 - (Smoke Testing)

Medium

• Test Title	: Login as Web Master
• Test Description	: Verify Login as Web Master
• Related Requirement Id	: RRI-RBA-TC001
• Pre-conditions	: Navigate to the Web Master Login
• Test Steps	: 1.Navigate to the Web Master Login 2.Enter the valid credentials
• Test Data	: Email - webmaster@airscape.lk Password - password123
• Expected Result	: Successfully Login to the dashboard.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

DA-TC001 - (Smoke Testing)

Low

• Test Title	: Display real-time AQI cards load on dashboard.
• Test Description	: Verify real-time AQI cards load on dashboard.
• Related Requirement Id	: RRI-DA-TC002.
• Pre-conditions	: Navigate to the dashboard.
• Test Steps	: 1. Navigate to the dashboard. : 2. Observe active sensors with simulated AQI values.
• Test Data	: N/A
• Expected Result	: AQI cards should display with City, AQI badge, AQI level, AQI value, last update time.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add sensor with valid input
• Test Description	: Verify the form allows adding a new sensor when all required fields are valid.
• Related Requirement Id	: RRI-SM-TC002
• Pre-conditions	: User must be Admin or Web Master, on Sensor Management page.
• Test Steps	<ol style="list-style-type: none">: 1. Click "Add Sensor".: 2. Fill in all required fields with valid data.: 3. Click Submit.
• Test Data	<p>: Sensor ID: Sensor #101 Location: Kollupitiya Lat: 6.9271 and Lng: 79.8612 AQI Baseline: 80 Variation: 10% Frequency: 5 mins</p>
• Expected Result	: Admin page successfully load with Login option as Web master or Administrator
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if faild)	:

• Test Title	: Deactivate sensor → remove from view
• Test Description	: Ensure deactivating a sensor removes it from map and
• Related Requirement Id	dashboard.
• Pre-conditions	:
• Test Steps	: Sensor must already exist and be active. : 1. Click "Deactivate" on an active sensor. : 2. Confirm action. 3. Go to dashboard and map.
• Test Data	: Sensor ID: Sensor #101
• Expected Result	: Sensor disappears from map and dashboard card list.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Trigger system alert based on AQI threshold
• Test Description	: Ensure alerts are generated when AQI exceeds defined threshold.
• Related Requirement Id	:
• Pre-conditions	: Threshold rule already exists for $AQI > 100$
• Test Steps	: 1. Simulate AQI value = 120 for a sensor.. : 2. Check the “Recent System Alerts” list.
• Test Data	: Sensor ID: Sensor #101 Simulated AQI: 120 Threshold: 100
• Expected Result	: New system alert message logged in UI and stored in DB.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add new Admin user
• Test Description	: Verify Web Master can add an Admin with valid inputs.
• Related Requirement Id	: AUM-TC001
• Pre-conditions	: Web Master is logged in.
• Test Steps	: 1. Click “Add Admin” 2. Login as Web master 3. Submit form
• Test Data	: Full Name: Janudi Meegoda Email: janudi@airscape.com Password: AdminPass456 Status: Active
• Expected Result	: New Admin is saved and displayed in the Admin list.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Block login for inactive Admin
• Test Description	: Ensure inactive Admin users cannot log in to the system.
• Related Requirement Id	: REQ-DA-008
• Pre-conditions	: Admin user exists with status = inactive.
• Test Steps	: 1. Visit Admin login page. 2. Enter inactive user's credentials 3. Submit.
• Test Data	: Email: inactiveadmin@airscape.com Password: Admin123
• Expected Result	: Login fails with error: "Your account is inactive."
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: AQI chart reflects filter selections
• Test Description	: Ensure chart updates correctly when date/location filters are applied.
• Related Requirement Id	:
• Pre-conditions	: At least 7 days of AQI logs exist for a sensor.
• Test Steps	: 1. Navigate to Data Management : 2. Select location “Homagama” : 3. Choose date range: April 1–7 : 4. Apply filter
• Test Data	: Location: Homagama Date Range: 2025-04-01 to 2025-04-07
• Expected Result	: AQI chart displays relevant data and x-axis updates with correct dates.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Sensor marker popup on map
• Test Description	: Verify Leaflet map marker shows correct info in popup on click.
• Related Requirement Id	:
• Pre-conditions	: At least one public sensor with active AQI simulation.
• Test Steps	: 1. Go to Public Dashboard 2. Click on a map marker 3. Observe popup
• Test Data	: Sensor: Moratuwa AQI: 90
• Expected Result	: Popup shows AQI, sensor name, risk level, recommendation
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Public AQI card auto-refreshes
• Test Description	: Ensure AQI card updates without refresh based on live data simulation.
• Related Requirement Id	:
• Pre-conditions	: Sensor simulation is running
• Test Steps	: 1. Open Public Dashboard : 2. Observe a card for 2–3 simulation intervals
• Test Data	: Sensor ID: Sensor #A25 → AQI 78 → 85 → 92
• Expected Result	: Card AQI value changes over time, no reload required.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

Functional Positive Testing

General Information

- Test case type : Functional Positive Testing
- Prepared by : Akila Lakshitha
- Created at : 2025 / 04 / 23

DA-TC001 - (Functional Positive Testing)

Low

• Test Title	: Verify real-time AQI cards on dashboard.
• Test Description	: Validate the AQI cards for sensor of the location are visible on the dashboard with correct location, name, status.
• Related Requirement Id	: REC-ADA-001
• Pre-conditions	: Admin should logged as a Web master/Admin At least 1 sensor must be added.
• Test Steps	: Open admin panel and login as web master or Admin using credentials. : Navigate to dashboard page. : Observe the Realtime Sensor Overview Section : Check the sensor cards display correct name, location, status, AQI Level, added time.
• Test Data	: N/A
• Expected Result	: All added sensors display as cards <ul style="list-style-type: none">• Each cards includes:• Sensor name• Location• Status (Good, Hazardous, Unhealthy, Moderate)• AQI Level
	Added time
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Validate AQI status badge colors match AQI levels
• Test Description	: Validate the AQI status badge color match with AQI levels (eg: good-Green, Yellow-Moderate).
• Related Requirement Id	: REC-ADA-002
• Pre-conditions	: Admin should logged as a Web master/Admin At least 1 sensor must be added.
• Test Steps	: Open admin panel and login as web master or Admin using credentials. : Navigate to dashboard page. : Observe the Realtime Sensor Overview Section : Check color status is match to the AQI Levels.
• Test Data	: N/A
• Expected Result	: The AQI status colors must be in this ranges on status and risk bar, AQI(20 - 50) → Good with Color Green AQI(20 - 50) → Good with Color Green AQI(20 - 50) → Good with Color Green AQI(20 - 50) → Good with Color Green
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify card shows correct sensor location and AQI value
• Test Description	: Ensure the AQI card correctly display sensor location and Real-time AQI Values generated by system.
• Related Requirement Id	: REC-ADA-003
• Pre-conditions	: Login as a Webmaster or Admin. Sensor simulation running properly. At least 1 sensor must be added.
• Test Steps	: Open admin panel and login as web master or Admin using credentials. : Navigate to dashboard page. : Observe the Realtime Sensor Overview Section. : Select a sensor (eg: NSBM Green University). : Check the location and AQI value match to stored data.
• Test Data	: N/A
• Expected Result	: NSBM Green University sensor card includes, <ul style="list-style-type: none">• Location - homagama• Value - 22.04 (Check from database)
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify dashboard card shows correct risk level and recommendation
• Test Description	: Validate the AQI card correctly display risk level and recommendation
• Related Requirement Id	: REC-ADA-004
• Pre-conditions	: Login as a Webmaster or Admin. Sensor simulation running properly. At least 1 sensor must be added.
• Test Steps	: Open admin panel and login as web master or Admin using credentials. : Navigate to dashboard page. : Observe the Realtime Sensor Overview Section. : Pick 4 sensors with different AQI status badge. : Check the Risk level shows correctly and shows recommendations.
• Test Data	: N/A
• Expected Result	: The risk level bar shows like this If AQI value like the 200 bar should 50%. If AQI value like the 73 bar should 30%. If AQI value like the 22 bar should 10%.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

DA-TC005 - (Functional Positive Testing)

Low

• Test Title	: Verify "Last Updated" timestamp updates in real time
• Test Description	: Ensure the last updated timestamp display correctly.
• Related Requirement Id	: REC-ADA-005
• Pre-conditions	<p>: Login as a Webmaster or Admin.</p> <p>Sensor simulation running properly.</p> <p>At least 1 sensor must be added.</p>
• Test Steps	<p>: Navigate to dashboard page.</p> <p>: Observe the Realtime Sensor Overview Section.</p> <p>: Pick 1 sensor card.</p> <p>: Check the last updated date same as database timestamp.</p>
• Test Data	: N/A
• Expected Result	<p>: Last Updated date same to the database timestamp.</p> <p>Last updated date in correct format. (eg. 2 days ago)</p>
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Validate name of logged-in user is shown in top right corner.
• Test Description	: Ensure the correct role admin is display on right top corner.
• Related Requirement Id	: REC-ADA-006
• Pre-conditions	: Login as a Webmaster or Admin.
• Test Steps	<p>: Navigate to dashboard page.</p> <p>: Observe the top right corner.</p> <p>: Check Login role name and profile icon.</p>
• Test Data	: N/A
• Expected Result	<p>: The top right corner should display</p> <p>logged as web master → Web Master and Icon</p> <p>logged as Administrator → Administrator and Icon</p>
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: verify navigation to Sensor Management module
• Test Description	: Ensure admin will navigate to sensor management page by clicking the Manage sensor linked label.
• Related Requirement Id	: REC-ADA-007
• Pre-conditions	: Login as a Webmaster or Admin.
• Test Steps	: Navigate to dashboard page. : Observe the “Manage Sensor” linked label on top right corner. : Click the Manage Sensor button
• Test Data	: N/A
• Expected Result	: Admin should navigated to the Sensor Management Module. Then, Url should change to /admin/sensors
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify that only active sensors are shown on dashboard cards.
• Test Description	: Ensure the dashboard shows only active sensors.
• Related Requirement Id	: REC-ADA-008
• Pre-conditions	: Login as a Webmaster or Admin.
• Test Steps	<p>: Navigate to sensor management page.</p> <p>: Observe the active sensors in sensor management page.</p> <p>: Check that only active sensors will display in dashboard page.</p>
• Test Data	: N/A
• Expected Result	: The dashboard page should display only active sensors in sensor management module.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify After change simulated values , the AQI cards will refresh without any reload
• Test Description	: Ensure the dashboard AQI cards will refresh after the change simulated values without any reload.
• Related Requirement Id	: REC-ADA-008
• Pre-conditions	: Login as a Webmaster or Admin.
• Test Steps	<p>: Observe the current AQI card values in dashboard page and take a screenshot of the page.</p> <p>: Go to running and open a terminal.</p> <p>: Then, enter this command “<code>php artisan simulate:aqi</code>” and click enter</p> <p>: Then check the dashboard page.</p>
• Test Data	: N/A
• Expected Result	: Dashboard's AQI values should changed without refreshing. And Take screenshot.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:
• Evidences	

• Test Title	: Verify Administrator cannot access Web master areas.
• Test Description	: Ensure login as the Administrator cannot access web master areas.
• Related Requirement Id	: REC-ADA-008
• Pre-conditions	: Login as a Administrator.
• Test Steps	<p>: Open admin dashboard.</p> <p>: Observe the slide bar.</p> <p>: Check its include AdminUser Management module.</p>
• Test Data	: N/A
• Expected Result	: The Slide bar display without AdminUser Management module.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify Add sensor with all valid inputs successfully.
• Test Description	: Ensure login as the Administrator cannot access web master areas.
• Related Requirement Id	: REC-ASM-001
• Pre-conditions	: Login as a Administrator.
• Test Steps	: Go to module Sensor Management and click add sensor button. : Enter sensor data. : Click add button.
• Test Data	: Sensor Name - Test sensor name. : Sensor ID - S055 : Location / Area - Panadura : Status : active : AQI Baseline : 20 : Simulation Frequency (min) : 5 : Latitude : 6.7106 : Longitude : 79.9074
• Expected Result	: Successfully added the sensor and display successfull msg. : Sensor should display on map in sensor management and sensor card should display on sensor mangement page.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify sensor appears in sidebar after successful add.
• Test Description	: Validate sensor will successfully added to sidebar after adding a new sensor.
• Related Requirement Id	: REC-ASM-005
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	: Go to module Sensor Management and click add sensor button. : Enter sensor data. : Click add button.
• Test Data	: Sensor Name - Test sensor name. : Sensor ID - S055 : Location / Area - Panadura : Status : active : AQI Baseline : 20 : Simulation Frequency (min) : 5 : Latitude : 6.7106 : Longitude : 79.9074
• Expected Result	: Successfully added the sensor and display success msg. The sensor should display on side bar as a card.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify new sensor appears on Leaflet map with correct marker.
• Test Description	: Validate added sensor is successfully display on the map.
• Related Requirement Id	: REC-ASM-006
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	: Go to module Sensor Management and click add sensor button. : Enter sensor data. : Click add button.
• Test Data	: Sensor Name - Test sensor name. : Sensor ID - S056 : Location / Area - Anuradhapura : Status : active : AQI Baseline : 30 : Simulation Frequency (min) : 5 : Latitude : 8.3114 : Longitude : 80.4037
• Expected Result	: Successfully added the sensor and display success msg. The sensor should display on map at correct location.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

SM-TC007 - (Functional Positive Testing)

Low

• Test Title	: Verify popup shows AQI, location, time, status.
• Test Description	: Validate popup display correctly on the map.
• Related Requirement Id	: REC-ASM-007
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	: Go to module Sensor Management. : Click a mark on the map.
• Test Data	: N/A
• Expected Result	: The popup should display correct info. Including this, Sensor name, Location, Status, AQI including color code and status, Update Frequency, Variation, Last Updated, Risk Level, Recommendation.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Edit an existing sensor's details.
• Test Description	: Validate admin can edit the sensor.
• Related Requirement Id	: REC-ASM-008
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	: Go to module Sensor Management. : Click edit button on sensor cards.
• Test Data	: N/A
• Expected Result	: Showing editing popup including Sensor name, Location, Status, AQI including color code and status, Update Frequency, Variation, Last Updated, Risk Level, Recommendation.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Deactivate a sensor – check if it disappears from map.
• Test Description	: Validate admin can deactivate the active sensors and ensure the sensor disappear from map.
• Related Requirement Id	: REC-ASM-009
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	: Go to module Sensor Management. : Click edit button and click Deactivate the sensor.
• Test Data	: N/A
• Expected Result	: The sensor status should change to Deactivated with red color on the sensor card. And the sensor mark should remove from the map.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Simulate AQI: check if values change as per frequency/ variation logic
• Test Description	: Validate sensor AQI level will successfully change from given frequency.
• Related Requirement Id	: REC-ASM-010
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	: Go to module Sensor Management and click add sensor button. : Enter sensor data. : Click add button.
• Test Data	: Sensor Name - Test sensor name. : Sensor ID - S057 : Location / Area - Matara : Status : active : AQI Baseline : 20 : Simulation Frequency (min) : 2 : Latitude : 5.9496 : Longitude : 80.5469
• Expected Result	: Successfully added the sensor and display successfull msg. And the sensor should change the AQI level by 2 minutes.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify Add new Admin with valid full name, email, password, and active status.
• Test Description	: Validate Webmaster can add the new admin.
• Related Requirement Id	: REC-AUM-010
• Pre-conditions	: Login as a Web master.
• Test Steps	: Go to AdminUser Management page. : And ensure the url change to /admin/user-management . : Click Add Admin button. : Fill the form and click Add button.
• Test Data	: Full name - TestAdmin : Email - testadmin@gmail.com : Password - testadmin@123 : Status : active
• Expected Result	: Receive alert message with successfully added Admin. : In Database the user table should update with new admin fields Further added date should include the database user table.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify newly added Admin appears in Admin list.
• Test Description	: Validate added admin display on the AdminUser Management page.
• Related Requirement Id	: REC-AUM-010
• Pre-conditions	: Login as a Web master.
• Test Steps	: Go to AdminUser Management page. : And ensure the url change to /admin/user-management . : Click Add Admin button. : Fill the form and click Add button.
• Test Data	: Then, observe the new admin si : Full name - TestAdminUser : Email - testadmin@gmail.com : Password - testadmin@123
• Expected Result	: Status : active : Receive alert message with successfully added Admin. : The TestAdminUser should display on the AdminUser Management page list. : And The card must include, Admin name, Email, status(active or inactive), added date,
• Actual Result	and role.
• Status	: N/A
• Defect Id (if failed)	: Pass / Fail
	:

• Test Title	: Click “Edit” on an Admin – modify name, email, status.
• Test Description	: Validate Webmaster can edit the admin users.
• Related Requirement Id	: REC-AUM-010
• Pre-conditions	: Login as a Web master.
• Test Steps	<p>: Go to AdminUser Management page.</p> <p>: And ensure the url change to /admin/user-management.</p> <p>: Observe the Admin User Cards section.</p> <p>: Pick one Admin User.</p> <p>: Capture a screenshot for current view.</p> <p>: Click option button and click edit.</p>
• Test Data	<p>: Edit the forum and Click update.</p> <p>: Full name - TestAdminUserUpdate</p> <p>: Email - testadminupdated@gmail.com</p>
• Expected Result	<p>: Status : active</p> <p>: The picked admin user details should update in Management page list.</p> <p>: Capture a screenshot for updated details.</p> <p>: And Check the database and ensure the update that picked user with updated data.</p>
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Deactivate an Admin and verify status badge updates (red “inactive”)
• Test Description	: Validate Webmaster can deactivate a admin user and status will update.
• Related Requirement Id	: REC-AUM-010
• Pre-conditions	: Login as a Web master.
• Test Steps	: Go to AdminUser Management page. : And ensure the url change to /admin/user-management . : Observe the Admin User Cards section. : Pick the “TestAdminUserUpdate” admin. : Click option button and click edit. : Then changes the active status to inactive.
• Test Data	: Status : inactive
• Expected Result	: The picked admin user active status should change to inactive in Management page list. : And Ensure the status with green color change to red color.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify that delete button removes Admin from the list
• Test Description	: Validate the admin removed successfully by clicking the delete button
• Related Requirement Id	: REC-AUM-009
• Pre-conditions	: Login as Web Master
• Test Steps	: Go to Admin User Management Page. : Pick one Admin user and click delete button.
• Test Data	: N/A
• Expected Result	: Display “Admin Deleted Sucessfully” message. : And the picked admin user should removed from the list.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Validate sorting of Admin list (latest on top by default).
• Test Description	: Ensure the admin list in correct sorting with new on top.
• Related Requirement Id	: REC-AUM-009
• Pre-conditions	: Login as Web Master
• Test Steps	: Go to Admin User Management Page. : Observe the Admin user list.
• Test Data	: N/A
• Expected Result	: The Admin Users list should be sorted with new user on top concept by added date.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Check role label is always “Admin” (non-editable role display).
• Test Description	: Ensure the admin all roles on Admin role and cannot edit.
• Related Requirement Id	: REC-AUM-009
• Pre-conditions	: Login as Web Master
• Test Steps	: Go to Admin User Management Page. : Observe the Admin user list. : Check and ensure the user roles cannot edit.
• Test Data	: N/A
• Expected Result	: The all user roles should be Admin roles. : The Admin roles cannot editable.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

DM-TC001 - (Functional Positive Testing)

Low

• Test Title	: Filter AQI data by location dropdown
• Test Description	: Ensure admin can filter the AQI data by location dropdown.
• Related Requirement Id	: REC-AUM-009
• Pre-conditions	: Login as Web Master
• Test Steps	: Go to Admin User Management Page. : Observe the Admin user list. : Check and ensure the user roles cannot edit.
• Test Data	: N/A
• Expected Result	: The all user roles should be Admin roles. : The Admin roles cannot editable.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Check role label is always “Admin” (non-editable role display).
• Test Description	: Ensure the admin all roles on Admin role and cannot edit.
• Related Requirement Id	: REC-AUM-009
• Pre-conditions	: Login as Web Master
• Test Steps	: Go to Admin User Management Page. : Observe the Admin user list. : Check and ensure the user roles cannot edit.
• Test Data	: N/A
• Expected Result	: The all user roles should be Admin roles. : The Admin roles cannot editable.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Check role label is always “Admin” (non-editable role display).
• Test Description	: Ensure the admin all roles on Admin role and cannot edit.
• Related Requirement Id	: REC-AUM-009
• Pre-conditions	: Login as Web Master
• Test Steps	: Go to Admin User Management Page. : Observe the Admin user list. : Check and ensure the user roles cannot edit.
• Test Data	: N/A
• Expected Result	: The all user roles should be Admin roles. : The Admin roles cannot editable.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Check role label is always “Admin” (non-editable role display).
• Test Description	: Ensure the admin all roles on Admin role and cannot edit.
• Related Requirement Id	: REC-AUM-009
• Pre-conditions	: Login as Web Master
• Test Steps	: Go to Admin User Management Page. : Observe the Admin user list. : Check and ensure the user roles cannot edit.
• Test Data	: N/A
• Expected Result	: The all user roles should be Admin roles. : The Admin roles cannot editable.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

DM-TC005 - (Functional Positive Testing)

Low

• Test Title	: Check role label is always “Admin” (non-editable role display).
• Test Description	: Ensure the admin all roles on Admin role and cannot edit.
• Related Requirement Id	: REC-AUM-009
• Pre-conditions	: Login as Web Master
• Test Steps	: Go to Admin User Management Page. : Observe the Admin user list. : Check and ensure the user roles cannot edit.
• Test Data	: N/A
• Expected Result	: The all user roles should be Admin roles. : The Admin roles cannot editable.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

Functional Negative Test Cases

General Information

- Test case type : Functional Negative Testing
- Prepared by : Thanuga Soysa
- Created at : 2025 / 04 / 22

SM-TC011 - (Functional-Negative Testing)

High

• Test Title	: Add Sensor with Zero Frequency
• Test Description	: Validate that frequency input cannot be zero or negative.
• Related Requirement Id	: RRI-SM-TC011
• Pre-conditions	: Navigate to the Sensor-Management Page
• Test Steps	<ol style="list-style-type: none">1. Navigate to the Sensor-Management Page2. Click the 'Add Sensor' Button3. Fill all required field properly.4. Fill the 'Simulation Frequency (min)' 05. Click the 'Add' Button
• Test Data	: Frequency: 0
• Expected Result	: Display Error Message : 'Frequency must be greater than 0'
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Try to add sensor with missing required fields
• Test Description	: Validate can admin add a sensor using missing fields.
• Related Requirement Id	: RRI-SM-TC002
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	<p>: Go to module Sensor Management.</p> <p>: Enter sensor data.</p> <p>: Click add button.</p>
• Test Data	<p>: Sensor Name - Test sensor name.</p> <p>: Sensor ID - N/A</p> <p>: Location / Area - N/A</p> <p>: Status : active</p> <p>: AQI Baseline : 20</p> <p>: Simulation Frequency (min) : 5</p> <p>: Latitude : N/A</p> <p>: Longitude : 79.9074</p>
• Expected Result	<p>: The empty feilds should display like please fill this field.</p> <p>And error adding a sensor.</p>
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add sensor with invalid coordinates.
• Test Description	: Validate can admin add a sensor using wrong coordination's.
• Related Requirement Id	: RRI-SM-TC003
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	<p>: Go to module Sensor Management.</p> <p>: Enter sensor data.</p> <p>: Click add button.</p>
• Test Data	<p>: Sensor Name - Test sensor name.</p> <p>: Sensor ID - S055</p> <p>: Location / Area - Panadura</p> <p>: Status : active</p> <p>: AQI Baseline : 20</p> <p>: Simulation Frequency (min) : 5</p> <p>: Latitude : test latitude</p> <p>: Longitude : test longitude</p>
• Expected Result	: Latitude and longitude fields should showing error about invalid format and error adding a sensor.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add sensor with duplicate Sensor ID
• Test Description	: Validate can admin add a sensor using duplicate sensor Id.
• Related Requirement Id	: RRI-SM-TC004
• Pre-conditions	: Login as a Web master or administrator.
• Test Steps	<p>: Go to module Sensor Management.</p> <p>: Enter sensor data.</p> <p>: Click add button.</p>
• Test Data	<p>: Sensor Name - Test sensor name.</p> <p>: Sensor ID - S001</p> <p>: Location / Area - Panadura</p> <p>: Status : active</p> <p>: AQI Baseline : 20</p> <p>: Simulation Frequency (min) : 5</p> <p>: Latitude : testlatitude</p> <p>: Longitude : testlongitude</p>
• Expected Result	<p>: Show existing sensor Id error.</p> <p>Error adding a sensor.</p>
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

AUM-TC008 - (Functional-Negative Testing)

High

• Test Title	: Inactivate admin cannot login
• Test Description	: Verify Inactivate admin cannot login to the admin panel
• Related Requirement Id	: RRI-AUM-TC008
• Pre-conditions	: Webmaster change the 'Active' admin status to 'Inactivate'
• Test Steps	<ol style="list-style-type: none">1. Open the admin login page2. Enter the correct credential 'Inactivate' admin3. Click the 'Login' button
• Test Data	<p>Email : TestAdmin@gmail.com Password : TestAdmin@gmail.com</p>
• Expected Result	<p>: Display the Error Message 'Inactivate admin cannot logging : to the system</p>
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add 'Admin' without Password or Email
• Test Description	: Verify Webmaster cannot add admin without Password or Email
• Related Requirement Id	: RRI-AUM-TC002
• Pre-conditions	: Logged in as Web Master.
• Test Steps	<ol style="list-style-type: none">1. 'Webmaster' login to the system2. Click "Add Admin".3. Leave 'Email' and 'Password' fields empty.4. Fill other all field5. Click 'Add' button
• Test Data	<p>Full Name : Test Admin</p> <p>Email (Empty)</p> <p>Password (Empty)</p> <p>Status : Active</p>
• Expected Result	: Error Message is Display 'Errors: "Email is required." and "Password is required."'
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add Admin with Duplicate Email
• Test Description	: Ensure admin email must be unique.
• Related Requirement Id	: RRI-AUM-TC003
• Pre-conditions	: Admin already exists with "TestAdmin@gmail.com".
• Test Steps	<ol style="list-style-type: none">1. Click 'Add Admin' Button2. Set Email Field "TestAdmin@gmail.com"3. Fill other all field4. Click 'Add' button
• Test Data	<p>Full Name : Test Admin Email : TestAdmin@gmail.com Password : TestAdmin@gmail.com Status : Active</p>
• Expected Result	: Display Error message 'Email already exists'
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add Admin with Weak Password
• Test Description	: Verify password field enforces minimum strength (e.g., minimum 8 characters).
• Related Requirement Id	: RRI-AUM-TC004
• Pre-conditions	: Click the 'Add Admin' Button
• Test Steps	<ol style="list-style-type: none">1. Click 'Add Admin' Button2. Set Password Field "1234"3. Fill other all field4. Click 'Add' button
• Test Data	<p>: Full Name : Test Admin Email : TestAdmin@gmail.com Password : 1234 Status : Active</p>
• Expected Result	: Display Error: "Password must be at least 8 characters long."
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add Duplicate Alert Rule
• Test Description	: Verify duplicate alert rules are rejected.
• Related Requirement Id	: RRI-AC-TC002
• Pre-conditions	: Already need to add Pollutant Type as 100 / Threshold ($\mu\text{g}/\text{m}^3$) as 100 / Frequency as 10 minutes and Enable Email Alerts and System Alerts
• Test Steps	<ol style="list-style-type: none">1. Navigate to the 'Alert Configuration' page2. Click the 'Add Rule' Button3. Select Pollutant Type as AQI4. Enter Threshold ($\mu\text{g}/\text{m}^3$) as 1005. Enter Frequency as 10 minutes6. Enable Email Alerts and System Alerts
• Test Data	: Pollutant Type (AQI) Threshold ($\mu\text{g}/\text{m}^3$) (100) Frequency (10 minutes)
• Expected Result	: Display Error Message: "Rule already exists for this pollutant and frequency."
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add Alert Rule with Missing Pollutant Type
• Test Description	: Ensure pollutant type must be selected.
• Related Requirement Id	: RRI-AC-TC003
• Pre-conditions	: Navigate to the 'Alert Configuration' page
• Test Steps	<ol style="list-style-type: none">1. Navigate to the 'Alert Configuration' page2. Click the 'Add Rule' Button3. Leave Pollutant Type4. Enter Threshold ($\mu\text{g}/\text{m}^3$) as 755. Enter Frequency as 5 minutes6. Enable Email Alerts and System Alerts
• Test Data	<p>: Pollutant Type (Blank) Threshold ($\mu\text{g}/\text{m}^3$) (100) Frequency (10 minutes)</p>
• Expected Result	: Display Error: "Please select a pollutant type."
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Add Alert with Invalid Frequency (Zero or Negative)
• Test Description	: Verify invalid frequencies are not accepted.
• Related Requirement Id	: RRI-AC-TC011
• Pre-conditions	: Navigate to the 'Alert Configuration' page
• Test Steps	<ol style="list-style-type: none">1. Navigate to the 'Alert Configuration' page2. Click the 'Add Rule' Button3. Leave Pollutant Type4. Enter Threshold ($\mu\text{g}/\text{m}^3$) as 755. Enter Frequency as -5 minutes6. Enable Email Alerts and System Alerts
• Test Data	<p>: Pollutant Type (AQI) Threshold ($\mu\text{g}/\text{m}^3$) (100) Frequency (-5 minutes)</p>
• Expected Result	: Display Error message "Frequency must be greater than 0."
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Login with Wrong Password (Web Master)
• Test Description	: Verify incorrect password shows appropriate error.
• Related Requirement Id	: RRI-RBA-TC006
• Pre-conditions	: Navigate to the 'Web Master' Login
• Test Steps	<ol style="list-style-type: none">1. Enter valid Web Master email.2. Enter wrong password.3. Click 'Login' Button
• Test Data	: Email : webmaster@airscape.lk Password : 1234
• Expected Result	: Display a error message : "Incorrect email or password."
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Login with Wrong Password (Admin)
• Test Description	: Verify incorrect password shows appropriate error.
• Related Requirement Id	: RRI-RBA-TC007
• Pre-conditions	: Navigate to the 'Admin' Login
• Test Steps	<ol style="list-style-type: none">1. Enter valid admin mail.2. Enter wrong password.3. Click 'Login' Button
• Test Data	: Email : admin@airscape.lk Password : 1234
• Expected Result	: Display a error message : "Incorrect email or password."
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

Functional Alternative Test Cases

General Information

- Test case type : Functional Alternative Testing
- Prepared by : Thanuga Soysa
- Created at : 2025 / 04 / 23

DA-TC010 - (Functional-Alternative Testing)

High

• Test Title	: Admin cannot access `Admin-User-Management` page.
• Test Description	: Verify Admin cannot access `Admin-User-Management` page.
• Related Requirement Id	: RRI-DA-TC010
• Pre-conditions	: Admin log into the system
• Test Steps	<ol style="list-style-type: none">1. Admin Log into the system2. Navigate to the `Admin-User-Management` page
• Test Data	<p>Email : TestAdmin@gmail.com Password : TestAdmin@gmail.com</p>
• Expected Result	: Display message “ This Area is Secured Only Web Masters have access to Admin User Management.”
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Fallback rendering when table data lags behind AQI chart
• Test Description	: Verify that if AQI chart is loaded but raw table data is delayed due to backend delay, the interface shows a spinner or message instead of crashing.
• Related Requirement Id	: RRI-DM-TC011
• Pre-conditions	: Filtered data exists in chart but backend delay in table response is simulated.
• Test Steps	<ol style="list-style-type: none">1. Apply a known date and location filter2. Disable table response temporarily using browser dev tools or mock API3. Let chart load
• Test Data	<p>: Date: 2025-04-01 to 2025-04-03</p> <p>: Location: "Moratuwa"</p>
• Expected Result	: Chart loads, table area shows "Loading..." or "Awaiting data" gracefully.
• Actual Result	: N/A
• Status	: Pass / Fail
• Defect Id (if failed)	:

- Test Title : Unauthorized route fallback when Admin accesses Web Master-only URLs
- Test Description : Verify System should deny direct access if an Admin tries to manually enter Web Master-only route in the browser.
- Related Requirement Id : RRI-RBA-TC10
- Pre-conditions : User logged in as Admin
- Test Steps
 1. Login as Admin
 2. Manually navigate to /admin/user-management
- Test Data : Role : Admin
URL: /admin/user-management
- Expected Result : 403 access denied page or graceful fallback with “Access Denied” UI.
- Actual Result : N/A
- Status : Pass / Fail
- Defect Id (if failed) :

- Test Title : Unauthorized Web Master fallback when accessing restricted Admin modules
- Test Description : If a Web Master tries to access an Admin-specific tool (if separated), the system should redirect or show a fallback view.
- Related Requirement Id : RRI-RBA-TC009
- Pre-conditions : User logged in as Web Master
- Test Steps
 1. Manually enter Admin-only URL
 2. Try accessing /admin/sensors
- Test Data : Role: Web Master
- Expected Result : Fallback shown: "This section is restricted to Admins only."
- Actual Result :
- Status : Pass / Fail
- Defect Id (if failed) :

- Test Title : Fallback recommendation shown for extremely high AQI values
- Test Description : Verify System should still render popup and badge if AQI exceeds normal upper bounds (e.g., AQI > 500)
- Related Requirement Id : RRI-PUB-TC008
- Pre-conditions : Simulate AQI = 600 for a public sensor
- Test Steps
 1. Load public dashboard
 2. Click on a marker showing AQI > 500
 3. Observe badge and recommendation
- Test Data : Simulated AQI: 600
- Expected Result : Badge shown in red or warning color.
- Actual Result : Popup message: “Extremely hazardous. Avoid all outdoor exposure.”
- Status : Pass / Fail
- Defect Id (if failed) :

UI / UX Test Cases

General Information

- Test case type : UI/UX Testing
- Prepared by : Thanuga Soysa
- Created at : 2025 / 04 / 24

DA-TC002 - (Functional-UI/UX Testing)

Low

• Test Title	: AQI Badge Color Visual Validation
• Test Description	: Ensure the AQI status badge color matches standard AQI level colors
	: RRI-DA-TC002
• Related Requirement Id	: Simulated AQI values available from sensors.
• Pre-conditions	1. Navigate to the dashboard
• Test Steps	2. Observe color of each AQI badge based on value
• Test Data	: (Green = Good, Yellow = Moderate, Orange = Unhealthy, Red = Hazardous)
• Expected Result	: Badge color changes correctly based on AQI value range
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Verify “Last Updated” timestamp alignment & styling
• Test Description	: Verify the last updated time under AQI cards is visible, styled properly, and aligned consistently.
• Related Requirement Id	: RRI-DA-TC005
• Pre-conditions	: Sensor simulation must be active.
• Test Steps	<ol style="list-style-type: none">1. Navigate to the Dashboard2. Locate “Last Updated on watch icon” on any AQI card
• Test Data	: N/A
• Expected Result	: Text is readable, aligned bottom-left, and formatted in ` _ hours ago `
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: New sensor appears on Leaflet map
• Test Description	: Verify new sensor appears on Leaflet map with correct marker
• Related Requirement Id	: RRI-SMTC006
• Pre-conditions	: At least one sensor with valid coordinates
• Test Steps	<ol style="list-style-type: none">1. Navigate to the sensor management2. Click 'Add Sensor'3. Fill all required fill4. Click 'Add' button
• Test Data	<p>: City : Homagama Latitude : 6.8202 Longitude : 80.0395</p>
• Expected Result	: Markers are correctly positioned and spaced out, with no overlap.
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Sensor Marker Popup UI Styling
• Test Description	: Verify the sensor marker popup shows all content about sensor
• Related Requirement Id	: RRI-SM-TC007
• Pre-conditions	:
• Test Steps	<ol style="list-style-type: none">1. Click on any map marker2. Observe popup include with all content
• Test Data	: Location , Status , AQI , Update Frequency , Variation , Last Updated , Risk Level , Recommendation
• Expected Result	: Popup consist with all sensor content
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	:

• Test Title	: Display new admin details in admin list
• Test Description	: Verify newly added Admin appears in Admin list
• Related Requirement Id	: RRI-AUM-TC005
• Pre-conditions	: Log as a 'Webmaster'
• Test Steps	<ol style="list-style-type: none">1. Log as a 'Webmaster'2. Navigate to the 'Admin-User-Management' page3. Click 'Add Admin' button4. Fill all details required to add new Admin5. Click 'Add' Button
• Test Data	: Full Name , E-mail , Password , Status
• Expected Result	: Display new admin details correct and responsive and wrap correctly
• Actual Result	: Pass / Fail
• Status	:
• Defect Id (if failed)	:

• Test Title	: Role Display Tag UI (Read-only)
• Test Description	: Validate that “Admin” or “Web Master” role tag on cards is styled consistently and not editable.
• Related Requirement Id	: RRI-AUM-TC011
• Pre-conditions	: Log as a ‘Webmaster’ or ‘Admin’
• Test Steps	<ol style="list-style-type: none">1. Log into the system as a ‘Webmaster’ or ‘Admin’2. Look at role labels on cards
• Test Data	: N/A
• Expected Result	: Tag is visually consistent, non-clickable, and styled with rounded background.
• Actual Result	:
• Status	: Pass / Fail
• Defect Id (if failed)	: