**Test Plan: ThingsBoard Device Management**

**1. Test Scope and Objectives**

* Scope:
* Testing the device management module of ThingsBoard, including creation, assignment, and deletion of devices.
* Tests were designed to be executed in chromium.
* Objectives:
  + Validate that devices can be created via UI and API
  + Validate that devices appear correctly in the device table
  + Validate that devices can be deleted via UI
  + Ensure that devices assigned to customers behave correctly

**2. Test Approach**

* **Automation**: Using Playwright with JavaScript/TypeScript
* **Manual**: Exploratory testing for edge cases and bug discovery

**3. Test Environment Requirements**

* Local ThingsBoard instance running on http://localhost:8080
* Node.js >= 18
* Playwright installed (npm i -D @playwright/test)
* Access credentials for tenant user: tenant@thingsboard.org / tenant

**4. Test Cases for Critical User Flows (sample 10)**

| **ID** | **Test Case Description** | **Precondition** | **Test Steps** | **Expected Result** |
| --- | --- | --- | --- | --- |
| TC01 | Create device via UI | Logged in as tenant | Navigate to Devices → Add Device → Fill form → Add | Device appears in device table |
| TC02 | Create device via API | Tenant token | POST /api/device | Device returned with valid ID |
| TC03 | Delete device via UI | Device exists | Click delete on row → Confirm | Device removed from table |
| TC04 | Assign device to customer | Device exists | Select customer in device form | Device listed under customer |
| TC05 | Device table search | Devices exist | Search by name | Table filters correctly |
| TC06 | Negative: create device without name | Logged in | Add Device → Leave name blank → Add | Error validation appears |
| TC07 | Negative: delete non-existent device | No such device | Click delete on nonexistent row | Error handled gracefully |
| TC08 | Edit device label | Device exists | Click edit → Change label → Save | Label updated |
| TC09 | Device pagination | >10 devices exist | Navigate pages | Correct devices displayed per page |
| TC10 | Device sorting | Multiple devices exist | Sort by Name | Table sorted correctly |

**5. Risk Assessment and Prioritization**

| **Risk** | **Priority** | **Mitigation** |
| --- | --- | --- |
| Device creation fails due to validation | High | Automate creation tests, validate form inputs |
| Device table UI delay | Medium | Implement waits and retries in automation |
| API token expiration | Medium | Refresh token before critical API calls |
| Delete operation fails | High | Assert row removed from table |

**6. Defect Reporting Procedure**

* Template:
  + **Title**: Short description of bug
  + **Description**: An explanation of the problem and/or circumstances when it occurs
  + **Steps to Reproduce**: Step-by-step
  + **Expected Result**: What should happen
  + **Actual Result**: What happened
  + **Severity / Priority**: Critical, Major, Minor
  + **Suggested Fix**: Optional