## **1. Test Objective**

To verify the proper functioning of the data collection and transmission module in the HumCare app running on smartphones and smartwatches. This includes user input of server connection parameters, sensor selection, and initiating data transfer to a RabbitMQ-based server.

## **2. Test Environment**

| **Component** | **Description** |
| --- | --- |
| Device Type | Smartphone / Smartwatch |
| Operating System | Android |
| App Name | HumCare |
| Server Technology | RabbitMQ + Eclipse-based server |
| Storage Directory | C:\sensor\_data\ |
| Network Requirement | Local or public IP access to RabbitMQ server |

## **3. Preconditions**

1. The HumCare app is installed on the phone and smartwatch.
2. RabbitMQ server and Eclipse-based server are running and listening on provided IP and port.
3. Devices are connected to a network that can reach the server.

## **4. Test Cases**

### **Test Case 1: Application Launch**

This test ensures that the app initializes correctly and displays all necessary input fields for server configuration and sensor selection.

| **Field** | **Details** |
| --- | --- |
| Test ID | TC\_01 |
| Objective | Verify app launches and displays all input fields. |
| Steps | Launch app on device. |
| Expected Result | Fields shown: IP, Port, Username, Sensor selection, Send Data button. |
| Pass/Fail | Pass |

### **Test Case 2: Input Server Details**

This test verifies that the app correctly accepts and stores the server's IP address and port without throwing validation errors.

| **Field** | **Details** |
| --- | --- |
| Test ID | TC\_02 |
| Objective | Ensure user can input and store valid server IP and Port. |
| Steps | Enter valid IP (e.g., 192.168.1.100) and port (e.g., 5672). |
| Expected Result | Inputs accepted without error. |
| Pass/Fail | Pass |

### **Test Case 3: Enter Username**

This test confirms that the username field accepts valid alphanumeric characters and handles empty input appropriately.

| **Field** | **Details** |
| --- | --- |
| Test ID | TC\_03 |
| Objective | Ensure the username field accepts valid input. |
| Steps | Input alphanumeric username (e.g., test\_user01). |
| Expected Result | Input accepted without error. |
| Pass/Fail | Pass |

### **Test Case 4: Sensor Selection**

This test checks whether the user is able to select available sensors like accelerometer and gyroscope from the smart devices.

| **Field** | **Details** |
| --- | --- |
| Test ID | TC\_04 |
| Objective | Allow users to select available sensors. |
| Steps | Select Accelerometer and Gyroscope. |
| Expected Result | Sensors selected with checkboxes/toggles. |
| Pass/Fail | Pass |

### **Test Case 5: Start Data Transmission**

This test ensures that when all inputs are valid and the user clicks "Send Data", the app begins transmitting data to the server.

| **Field** | **Details** |
| --- | --- |
| Test ID | TC\_05 |
| Objective | Verify data is sent to the server after clicking send. |
| Steps | Tap "Send Data" after filling all fields. |
| Expected Result | Sensor data begins streaming to the server. Status message shown. |
| Pass/Fail | Pass |

### **Test Case 6: Server-Side Verification**

This test validates that the server successfully receives and stores the incoming sensor data in the appropriate directory on the specified drive.

| **Field** | **Details** |
| --- | --- |
| Test ID | TC\_06 |
| Objective | Ensure the server receives and stores incoming data. |
| Steps | Check server logs and C:\sensor\_data\ directory. |
| Expected Result | Data file or entry exists with correct format. |
| Pass/Fail | Pass |

### **Test Case 7: Input Validation (Edge Cases)**

This test checks if the app blocks data transmission when required fields are missing or invalid, and whether appropriate error messages are shown.

| **Field** | **Details** |
| --- | --- |
| Test ID | TC\_07 |
| Objective | Prevent sending if required fields are missing. |
| Steps | Leave out IP/Port/Username or deselect all sensors. Press “Send.” |
| Expected Result | Relevant error messages shown. |
| Pass/Fail | Pass |

## **5. Postconditions**

1. Sensor data must be received at the server and stored in the correct directory.
2. The app must handle invalid/missing inputs gracefully without crashing.