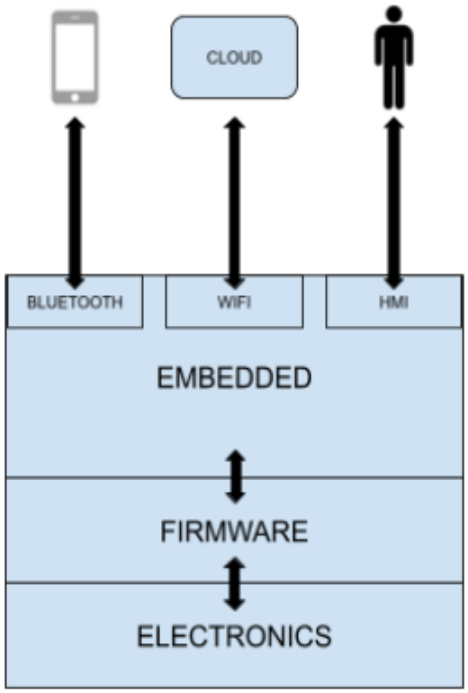
Part 2: System Testing

Considering the following device



a) How would you test that the API between the embedded and the cloud is working as expected without having the real physical device

b) How would you test that the API between the embedded and the mobile is working as expected without having the real physical device

Common part for both a) and b):

I would start testing with creating a proper Master Test Plan for this activity. In the test plan I would define what is the IUT (implementation under test) the scope of tests, limitations, test environment including HW and SW. In the test plan I will also define which test levels and test types are required to be covered. Test plan will also contain information about the Test Automation Solution (TAS) required to implement automated tests (if applicable) and CI/CD.

a) Testing that the API between the embedded and cloud working as expected without having the real physical device:

I think I will introduce at least several type of tests in this context:

- Unit Tests, API checks to be run on Host (PC computer). To test logic of implemented functions.
- System Tests:

I can see that the device has a WIFI interface which is in use to communicate with the cloud. It means to me that most probably I should be able to communicate with the could over REST API provided by the could.

To test API between embedded and cloud I think I could use a HOST (PC computer) which is able to communicate with the cloud using REST API provided by the cloud. I believe it will be required to implement both functional and non-functional tests (performance, stress, load, etc)

b) Testing API between the embedded and mobile:

In the schematics I can see that the device communicates with the mobile over Bluetooth.
Similarly, as in point a) I propose to implement at least:

- Unit Tests, API checks to be run on Host (PC computer). To be able to tests functions logic.
- System Tests:

To be able to implement some system tests without the physical devices I would need to use some Development Board, or other simple device allowing communication over Bluetooth. Then I would establish a Bluetooth connection with mobile and depending on the scope of tests I could implement required test scenarios running on the Bluetooth API. I will use GATT or other Bluetooth profile during testing depending on defined scope.
Other possibility would be to use simulation environment allowing verification without physical devices.