

HeartWave Use Cases

Turn Device On Use Case(UC1)

Primary Actor: HeartWave Device User, HeartWave Device

Level: Subfunction

Precondition: User has a HeartWave device.

Main Success Scenario:

1. User presses the power button.
2. The HeartWave device turns on and the device screen is on.

Postcondition:

The HeartWave device has been turned on and is waiting on the default main menu tab.

Extensions:

- 2a. The device does not turn on.
 - 2a1. Press the power button again until the device begins to run
 - 2a2. Check the battery level and charge the HeartWave device.
 - 2a3. Contact the customer service team of HeartWave and report the issue.

Start New Session Use Case(UC2)

Primary Actor: HeartWave Device User, HeartWave Device

Level: User goal

Precondition:

1. The device has been turned on properly and is waiting on the main menu page.
2. HeartWave pulse sensor has been placed on skin (For example, place the ear pulse sensor on the center of ear lobe).

Main Success Scenario:

1. The user locates 'Start new session' by pressing the up and down buttons, and then confirms by pressing 'Selector'.
2. Pulse sensor is on, indicated by HR contact light, which indicates an active pulse reading.
3. The session screen starts to output an HRV graph displaying HRV indicators.

4. Coherence level is displayed on the top of the session screen through a light which changes to red, blue or green, indicating low, medium or high coherence, according to the challenge level.
5. A beep goes off when a new coherence level is reached.
6. The session screen also outputs metrics including the current coherence score (numerical value, update the score every 5 seconds), length(duration of session) and achievement (total sum of coherence scores sampled every 5 seconds).
7. Breath pacer in the form of a progress bar displays on the session screen with default set at one breath every 10 seconds and adjustable in settings(1-30 seconds) for the user.
8. User presses selector button to end a session, a summary view will appear on the session screen and be automatically saved, which includes the following information: start time, challenge level, percentage of time in different coherence levels (low, medium and high), average coherence, length of session, achievement score, and the entire HRV graph.
9. Pulse sensor is no longer active.

Postcondition:

Heart rate variation indicators' data are collected, stored, and displayed for the user.

Extensions:

- 1a. The selector button does not work.
 - 1a1. User presses the button again until a new session starts.
 - 1a2. Check the battery level and charge the device and then restart the device.
 - 1a3. Contact the customer service team of HeartWave and report the issue.
- 2a. Pulse sensor fails to connect to the device and HR contact light is off before a session starts.
 - 2a1. Check the pulse sensor is on or not and restart the device.
 - 2a2. Check the battery level and charge the device.
 - 2a3. Contact the customer service team of HeartWave and report the issue.
- 2b. Pulse sensor is disconnected after the session starts

2b1. The session will be paused and the user needs to connect to the sensor again.

3a. No HRV graph is displayed.

3a1. Check the battery level and charge the device and then restart the device.

3a2. Contact the customer service team of HeartWave and report the issue.

3b. A new session cannot be started when battery level is less than 15%.

3b1. Charge the device

5a. There is no beep when a new coherence level is reached.

5a1. Check the battery level, charge the device and then restart the device.

5a2. Contact the customer service team of HeartWave and report the issue.

7a. The breath pacer does not function well.

7a1. Check the breath pacer settings.

7a2. Check the battery level, charge the device and then restart the device.

7a3. Contact the customer service team of HeartWave and report the issue.

8a. The session does not end when the user presses the selector button.

8a1. User presses the button again until the session ends.

8a2. Check the battery level, charge the device and then restart the device.

8a3. Contact the customer service team of HeartWave and report the issue.

8b. The session can be ended at any time if the user presses the power button. By doing that, the session will stop and related data will be saved. The sensor will be off and the device will also be off.

Related Information:

1. User case can be ended at any time if the user presses the Back button. By doing that, the session will stop and a summary view will be displayed on the screen and related data will be saved.

2. Use case can be ended at any time if the user presses the Menu button. By doing that, the session will stop and a summary view will be displayed on the screen and related data saved.

Log/History Use Case(UC3)

Primary Actor: HeartWave Device User, HeartWave Device

Level: User goal

Precondition:

The HeartWave device has been turned on properly and is waiting on the main menu page.

Main Success Scenario:

1. User presses up and down to select the 'History' option, then presses 'Selector' to confirm.
2. The screen displays all records brief to the user, which contains its datetime, challenge level, and length.
3. User presses up and down buttons to select a specific record to view, and use the selector button to enter its submenus.
4. User selects the view option to view the record which includes the following information: start time, challenge level, percentage of time in different coherence levels (low, medium and high), average coherence, length of session, achievement score, and the entire HRV graph.
5. User selects the delete option to delete the record.

Extensions:

2a. There is no record to display

2a1. Start a new session to complete at least one measurement

Related Information:

1. Use case can be ended at any time if the user presses the Back button. By doing so, the case will end, and the user will return to the device's previous page.
2. Use case can be ended at any time if the user presses the Menu button. By doing so, the case will end, and the user will return to the device's main menu.

Change Challenge level Use Case(UC4)

Primary Actor: HeartWave Device User, HeartWave Device

Level: User goal

Precondition:

The HeartWave device has been turned on properly and is waiting on the main menu page.

Main Success Scenario:

1. The user presses up and down to select 'Settings', then presses 'Selector' button to confirm and enter the settings screen.
2. The user scrolls down to the challenge level option and presses the right arrow button to increase the challenge level.
3. The user scrolls down to the challenge level option and presses the left arrow button to decrease the challenge level.
4. Repeat step 3 or step 4 until the desired challenge level is reached.

Postcondition:

The challenge level has been adjusted to the user's desired level.

Related Information:

1. Use case can be ended at any time if the user presses the Back button. By doing so, the case will end, and the user will return to the device's previous page.
2. Use case can be ended at any time if the user presses the Menu button. By doing so, the case will end, and the user will return to the device's main menu.

Change Breath Pacer Interval Use Case(UC5)

Primary Actor: HeartWave Device User, HeartWave Device

Level: User goal

Precondition:

The HeartWave device has been turned on properly and is waiting on the main menu page.

Main Success Scenario:

1. The user presses up and down to select 'Settings', then presses 'Selector' button to confirm and enter the settings screen.
2. The user scrolls down to the breath pacer interval option and presses the right arrow button to increase the interval.
3. The user scrolls down to the breath pacer interval option and presses the left arrow button to decrease the interval.
4. Repeat step 3 or step 4 until the desired breath pacer interval is reached.

Postcondition:

The breath pacer interval has been adjusted to the user's desired level.

Related Information:

1. Use case can be ended at any time if the user presses the Back button. By doing so, the case will end, and the user will return to the device's previous page.
2. Use case can be ended at any time if the user presses the Menu button. By doing so, the case will end, and the user will return to the device's main menu.

Reset Use Case(UC6)

Primary Actor: HeartWave Device User, HeartWave Device

Level: User goal

Precondition:

The HeartWave device has been turned on properly and is waiting on the main menu page.

Main Success Scenario:

1. The user presses up and down to select 'Settings', then presses the Selector button to confirm and enter the settings screen.
2. The user presses up and down buttons to select 'Reset' and then presses the Selector button to confirm and enter the sub-menus.
3. The user selects 'Yes' to confirm the delete action
4. All data is wiped and the device is restored to its initial state.
5. The user selects 'No' to cancel the delete action and back to previous menu

Postcondition:

All currently saved history records are deleted.

Related Information:

1. Use case can be ended at any time if the user presses the Back button. By doing so, the case will end, and the user will return to the device's previous page.
2. Use case can be ended at any time if the user presses the Menu button. By doing so, the case will end, and the user will return to the device's main menu.

Turn Device Off Use Case(UC7)

Primary Actor: HeartWave Device User, HeartWave Device

Level: Subfunction

Precondition: User has a HeartWave device.

Main Success Scenario:

1. User presses the power button while the device is on.
2. The device powers off and the device screen is off.

Postcondition:

The HeartWave device has been turned off and does not drain battery.

Main Success Scenario:

1. User presses the power button.
2. The HeartWave device turns off and the device screen is off.

Extensions:

- 2a. The device does not turn off.
 - 2a1. Press the power button again until the device is off.
 - 2a2. Reset the HeartWave device
 - 2a3. Contact the customer service team of HeartWave and report the

issue.

Use cases diagram

