**77HUCX**

**Denas sound settings use case**

Actor: Denas user(patient)

Summary: This use case describes all the necessary steps required for the user to change some of the sound settings in the Denas device. The device needs to support features such as buttons and contact.

Pre-condition: The Denas medical device, a patient.

Description:

1) Patient uses the navigation button.

2) User navigates to “settings”

3) User presses the “sound” menu

3.1) Three menus show up “General”, “Contact”, “Buttons”.

4) User presses the sound option.

5) User presses on “general”

5.1) Three sound levels are provided.

5.1.1) User navigates and presses “Mute”

5.1.1.1) System mutes all sound outputs.

5.1.2) User navigates and presses “minimum”.

5.1.2.1) System adjusts volume sound accordingly.

5.1.3) User navigates and presses “maximum”

5.1.3.1) System adjusts volume sound accordingly.

5.2) User presses “ok” to confirm adjustments.

5.2.1) If the user presses the back button instead of “ok” normal settings should try be set.

6) User presses on “Contact”

6.1) Two sound options are provided.

6.1.1) User selects “on”.

6.1.1.1) System turns on “contact with skin” sound on.

6.1.2) User selects “off”.

6.1.2.1) System turns off “contact with skin” sound off.

6.2) User presses “ok” to confirm adjustments.

6.2.1) If the user presses the back button instead of “ok” normal settings should try be set.

7) User presses on “Buttons”

7.1) Two sound options are provided.

7.1.1) User selects “on”.

7.1.1.1) System turns on “button sound” on.

7.1.2) User selects “off”.

7.1.2.1) System turns off “button sound” sound off.

7.2) User presses “ok” to confirm adjustments.

7.2.1) If the user presses the back button instead of “ok” normal settings should try be set.

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**Denas MED(minimum effective dose) use case**

Description:

1. User navigates to the bottom option using the down button to where “MED” is located.
2. Patient clicks on the MED program menu.
3. MED menu shows up.
4. Comfort intensity is automatically set to 5 by default.
   1. User changes the intensity between (5-15)
      1. If a patient tries to surpass intensity 15, the device will handle it by keeping the intensity to its maximum number as there is no intensity above 15.
      2. If a patient tries to decrease the intensity below 5, the device will handle it by keeping the intensity to its minimum number as there is no intensity below 5.
5. User puts the electrodes of the device into the target area.
6. Device detects skin surface and starts countdown of period of minimum effective dose.
   1. If the device is removed or does not detect skin, it should cancel the session.
7. After the first phase is done(I do not know the duration of a phase. need to do more research) a sound is played to notify the user.
8. After the second phase is done, return the user back to the MED menu.

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**Use Allergy Treatment**

1. User navigates to the “programs” menu
2. presses the “enter/ok” button
3. A second menu shows up with the following programs: “Allergy”, “Pain”, “Severe pain”, “Bloating”, “Neuro-Circulatory Dystonia”, “Gynaecology”, “Hypertension”, “Hypotonia”, “Head”, “Throat”, “Diarrhea” etc…
4. User selects “Allergy” and presses the “ok/enter” button
5. Software will change to “Allergy” mode.
   1. Duration of the session is set to 10 minutes.
   2. Frequency is set to 7710Hz
6. Unit displays the appropriate page for “Allergies”
   1. If a user presses the “right” button, power is incremented.
   2. If the user presses the “left” button, power is decreased.
7. User applies the unit(Electrodes) to the skin.
8. Contact sound is played to alert the user.
9. Device provides a timer starting at 10m decreasing every seconds.
   1. If the timer decreases to 0, play a sound and redirect the user to the allergy page.
   2. If the user removes the device while the session is taking place. Show a warning message, and play contact sound.
10. When the session is done play a sound and redirect the user to the allergy page if the user presses the “Add recording” button

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**Use Throat Treatment**

1. User navigates to the “programs” menu
2. presses the “enter/ok” button
3. A second menu shows up with the following programs. User navigates to the “Throat” program.
4. Throat page automatically shows up.
   1. If the user presses the “right or left” button, the power will increase incrementally.
      1. If the user tries to surpass maximum power then the power stays to its maximum value.
      2. If the user tries to decrease the power below 1 then the power stays to its lowest value 1.
5. Frequency will automatically be set to 77Hz
6. User presses the “contact skin” button.
7. Timer will start from 0 ending to 10:00
   1. If the user presses the “remove skin contact” button then the timer will pause.
   2. If the user presses the “back” button, then the unit will return to the menu.
8. When the timer ends the unit will redirect the user to the throat menu.
9. All settings and therapy will be added to the history of treatments if the user presses the “Add recording” button

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**Use Head Treatment**

1. User navigates to the “programs” menu
2. presses the “enter/ok” button
3. A second menu shows up with the following programs. User navigates to the “head” program.
4. The head page automatically shows up after pressing “ok/enter”.
   1. If the user presses the “right or left” button, the power will increase incrementally.
      1. If the user tries to surpass maximum power then the power stays to its maximum value.
      2. If the user tries to decrease the power below 1 then the power stays to its lowest value 1.
5. Frequency will automatically be set to 60Hz
6. User presses the “contact skin” button.
7. Timer will start from 0 ending to 5:00
   1. If the user presses the “remove skin contact” button then the timer will pause.
   2. If the user presses the “back” button, then the unit will return to the menu.
8. When the timer ends the unit will redirect the user to the throat menu.
9. All settings and therapy will be added to the history of treatments if the user presses the “Add recording” button

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**Use Hypotonia Treatment**

1. User navigates to the “programs” menu
2. presses the “enter/ok” button
3. A second menu shows up with the following programs. User navigates to the “hypotonia” program.
4. The hypotonia page automatically shows up after pressing “ok/enter”.
   1. If the user presses the “right or left” button, the power will increase incrementally.
      1. If the user tries to surpass maximum power then the power stays to its maximum value.
      2. If the user tries to decrease the power below 1 then the power stays to its lowest value 1.

5) Frequency will automatically be set to 77AM Hz

6) User presses the “contact skin” button.

7) Timer will start from 0 ending to 5:00

* 1. If the user presses the “remove skin contact” button then the timer will pause.
  2. If the user presses the “back” button, then the unit will return to the menu.

8) When the timer ends the unit will redirect the user to the throat menu.

9) All settings and therapy will be added to the history of treatments if the user presses the “Add recording” button

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**Denas brightness use case**

1. User navigates the “settings” menu, and presses the “ok/enter” button
2. User navigates the “Brightness” menu using the “button” or “up” buttons, and presses “ok/enter” the button to confirm his choice.
3. Unit contains 5 levels of brightness. By default 3 is already selected.
   1. Patient uses the “up” button to increase the brightness to 4 or 5. User then presses the “ok” button to confirm the choice.
      1. If the user presses back before the “ok” button, then his previous settings are unchanged.
      2. If the user tries to surpass brightness level 5 then the device will keep it to 5.
   2. Patients use the “down” button to change the brightness.
      1. If the user presses back before the “ok” button, then his previous settings are unchanged.
      2. If the user tries to decrease the brightness level below 1 then the device will keep it at 1.
4. The brightness opacity will be adjusted accordingly.

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**Denas time setup use case**

1. User navigates to the “settings” menu using the “up” and “down” button.
2. User navigates to the “time” menu using the “up” and “down” button.
3. User adjusts the hour using the “Up” and “down”.
4. User adjusts the minutes by navigating to the right using the button. “Up” and “down” buttons are also used to change the hour.
5. User presses “ok” to confirm the settings
   1. If the user presses back instead, the previous time should still be set and unaltered.
6. The unit adjusts the time accordingly.

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**Frequency Selection Use Case**

1. User navigates to the “Frequency” Menu
2. Unit displays list of available frequencies for delivery
   1. List contains: “1.0 - 9. 9Hz”, “10Hz”, “20 Hz”, “60 Hz”, “77 Hz”, “140Hz”. “200Hz”, and two special modes “77 10” and “77AM”.
3. User selects desired frequency
4. Unit prepares electrode to deliver selected charge
5. User can adjust power level from 0 to 100 using the “left” and “right” arrows
6. User applies Unit to affected area
7. Unit displays a timer of how long frequency has been delivered
8. Unit delivers the frequency continuously until “return” is pressed

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**Screening Use Case**

1. User navigates to the “Screening” Menu
2. User applies unit to area they wish to “screen”and presses “OK”
3. Unit delivers small pulses for 5 seconds, reading tissue galvanic resistance
4. Unit displays number reading from 1 to 100, higher meaning higher tissue resistance
5. User can relocate the device and press “OK” again to take another screening
6. User can press “back” at any time to end screening mode

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**Start Device**

1. Press and hold ON/OFF button for about 3 seconds
   1. Power ON/OFF switch is triggered in the device, lighting up the visual display
2. The user is presented with a menu list of items and is ready to begin using the device.

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**Turn Off Device**

1. Press and hold OFF/ON button for about 3 seconds
2. Device turns off lighted display, and menu options disappear

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**Change Power (add system changes?)**

1. User presses and holds either the left or right arrow on the user interface
2. A display of the current power level is shown.
3. The current power level is then either increased or decreased, depending on the users choice, up until the user is satisfied with current power level.

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**Frequency 10Hz use case**

1. User navigates to the “Frequency” menu
2. presses the “enter/ok” button
3. A second menu shows up with the four choices of frequencies.
4. User navigates to the “10Hz” program.
5. A timer with 00:00 will show up
   1. If the user presses the “right” button, the power will increase incrementally.
      1. If the user tries to surpass maximum power then the power stays to its maximum value.
   2. If the user presses the “left” button, the power will decrease..
      1. If the user tries to decrease the power below 1 then the power stays to its lowest value 1.

6) Frequency will automatically be set to 10Hz

7) User presses the “contact skin” button.

7) Timer will start from 0 ending at 10:00(maybe?)

* 1. If the user presses the “remove skin contact” button then the timer will pause.
  2. If the user presses the “back” button, then the unit will return to the menu.

8) When the timer ends the unit will redirect the user to the frequency 10hz page.

9) All settings and therapy will be added to the history of treatments if the user presses the “Add recording” button

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**Frequency 20Hz use case**

1. User navigates to the “Frequency” menu
2. presses the “enter/ok” button
3. A second menu shows up with the four choices of frequencies.
4. User navigates to the “20Hz” program.
5. A timer with 00:00 will show up
   1. If the user presses the “right” button, the power will increase incrementally.
      1. If the user tries to surpass maximum power then the power stays to its maximum value.
   2. If the user presses the “left” button, the power will decrease..
      1. If the user tries to decrease the power below 1 then the power stays to its lowest value 1.

6) Frequency will automatically be set to 20Hz

7) User presses the “contact skin” button.

7) Timer will start from 0 ending at 10:00(maybe?)

* 1. If the user presses the “remove skin contact” button then the timer will pause.
  2. If the user presses the “back” button, then the unit will return to the menu.

8) When the timer ends the unit will redirect the user to the frequency 20hz page.

9) All settings and therapy will be added to the history of treatments if the user presses the “Add recording” button

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**Frequency 60Hz use case**

1. User navigates to the “Frequency” menu
2. presses the “enter/ok” button
3. A second menu shows up with the four choices of frequencies.
4. User navigates to the “60Hz” program.
5. A timer with 00:00 will show up
   1. If the user presses the “right” button, the power will increase incrementally.
      1. If the user tries to surpass maximum power then the power stays to its maximum value.
   2. If the user presses the “left” button, the power will decrease..
      1. If the user tries to decrease the power below 1 then the power stays to its lowest value 1.

6) Frequency will automatically be set to 60Hz

7) User presses the “contact skin” button.

7) Timer will start from 0 ending at 10:00(maybe?)

* 1. If the user presses the “remove skin contact” button then the timer will pause.
  2. If the user presses the “back” button, then the unit will return to the menu.

8) When the timer ends the unit will redirect the user to the frequency 60hz page.

9) All settings and therapy will be added to the history of treatments if the user presses the “Add recording” button

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**Frequency 77Hz use case**

1. User navigates to the “Frequency” menu
2. presses the “enter/ok” button
3. A second menu shows up with the four choices of frequencies.
4. User navigates to the “77Hz” program.
5. A timer with 00:00 will show up
   1. If the user presses the “right” button, the power will increase incrementally.
      1. If the user tries to surpass maximum power then the power stays to its maximum value.
   2. If the user presses the “left” button, the power will decrease..
      1. If the user tries to decrease the power below 1 then the power stays to its lowest value 1.

6) Frequency will automatically be set to 77Hz

7) User presses the “contact skin” button.

7) Timer will start from 0 ending at 10:00(maybe?)

* 1. If the user presses the “remove skin contact” button then the timer will pause.
  2. If the user presses the “back” button, then the unit will return to the menu.

8) When the timer ends the unit will redirect the user to the frequency 77hz page.

9) All settings and therapy will be added to the history of treatments if the user presses the “Add recording” button

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**Record Session**

1. User’s skin is no longer touching the electrodes
2. User navigates to the main menu and clicks on “Record Session”.
3. The device stores a record of the session with data including: time, power level, program/therapy, and frequency

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**Skins button use case**

During any treatment, if the user presses the “skin” button, the timer for the treatment will automatically start.

* 1. If the user “presses the off skin” button during a treatment, the treatment will automatically pause until the device has been reapplied to the skin.

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**View Recorded Session**

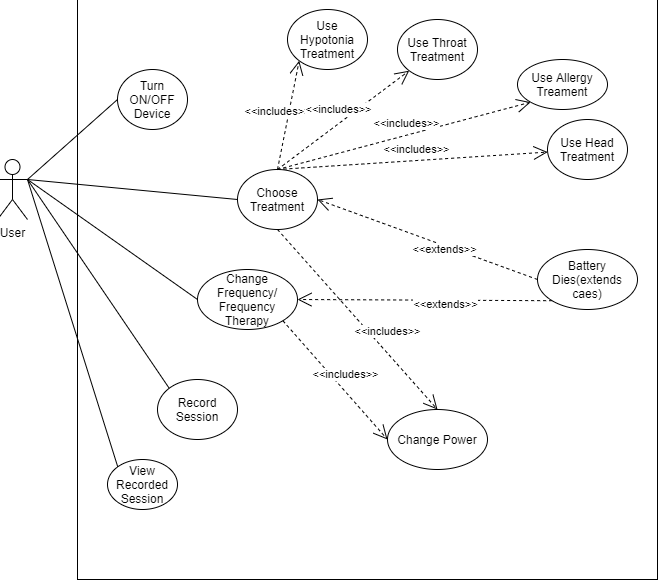
1. In the main menu, user presses on the “View Recorded Session” menu option using the unit buttons
2. A second menu will show up with a list of the most recent added treatments from up to down.
3. If the user clicks on any of the recordings, another screen will show up with the treatment information such as: frequency, power, time and treatment.

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**Battery Dies**

1. User presses the contact skin button during a treatment.
2. If the battery approaches 0 during skin contact, the battery dies and the device turns off.
3. The user should then charge the device to use again.

(Depending on the power level, the battery life will decrease accordingly(yet to have created a formula for it, apparently we create our own formula).



Temporary Denas Use Case Diagram

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**Menu/back button use case**

1. User presses the menu button
2. Device clears all menus and returns the user to the main menu indicating “program”, “frequency”, “History”.

2) User presses the back button

1. Device checks the prevMenu variable to find out where the user was before.
2. Returns user to that menu.
   1. prevMenu is then updated.