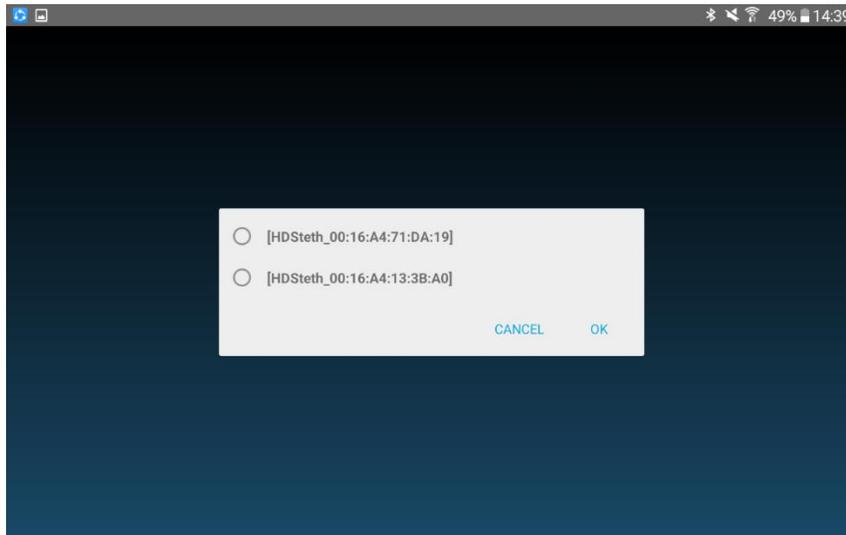# HD STETH™ Mobile App User Guide

1   BLUETOOTH CONECTIVITY

1.1   As soon as the App is launched it proceeds to scan for HDSteth devices in the vicinity. If only one device is available, then it proceeds to pair with that device.

1.2   If multiple devices are available, then they will be listed so that the user can select one of the devices for pairing. Even if there are multiple devices available if the lastly paired device is there then the App will proceed to connect with that last paired HDSteth device. If it is unavailable, then it will go for a full Bluetooth scan and repeat the subsequent steps as described above.
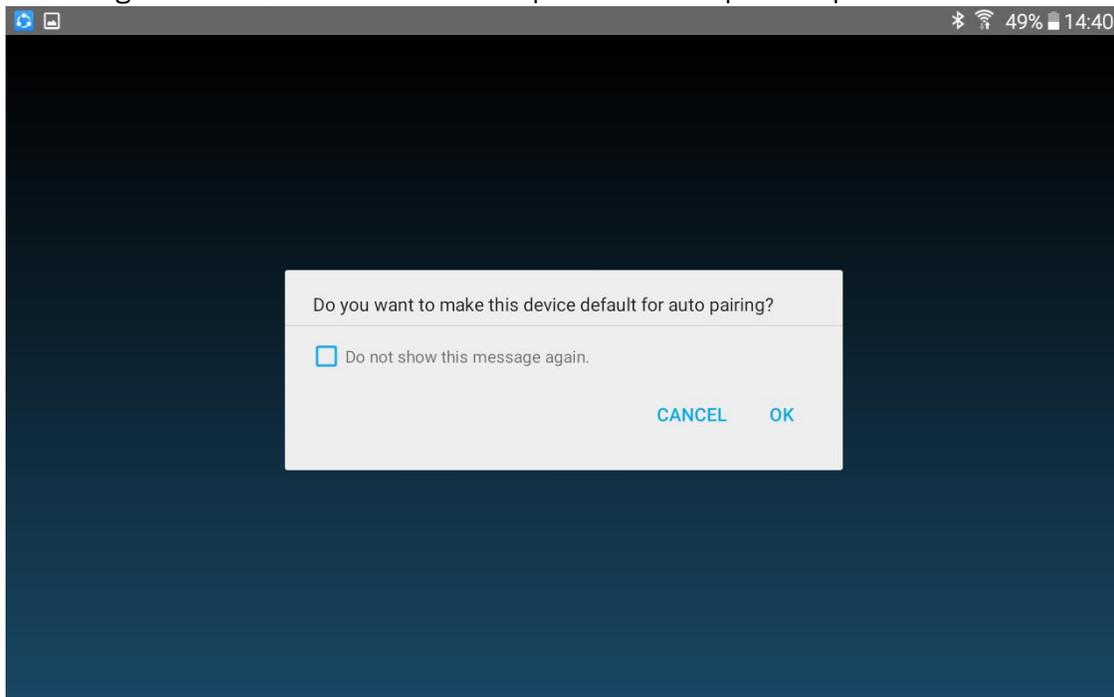
1.3   On pairing with a device for the first time it asks the user whether that device can be made the default Steth device so that the App can try for direct connection with that device instead of scanning for Bluetooth devices, thereby saving time.

2 MAIN SCREEN/LIVE AUSCULTATION SCREEN

On successful connection with the device the main screen appears depicting the live auscultation waveforms received from the device.
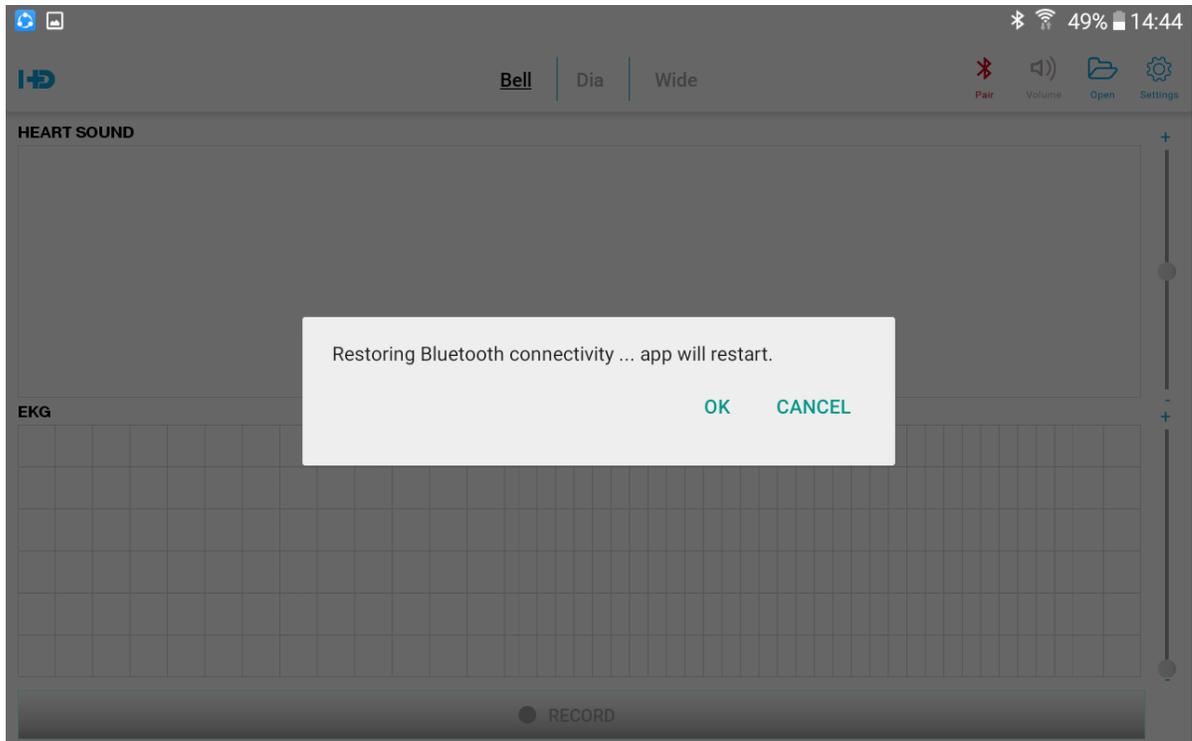

2.1 There are three filter modes Bell/Dia/Wide available for the user to choose, Bell mode is chosen by default

2.2 The volume can be modified by using the slider control that appears on tapping the speaker icon.

2.3 Settings button: When user taps, it leads to the Settings screen that contains set of configuration options.

2.4 The Heart Sound a.k.a the PCG data appears as blue (default color) waveform and the High frequency murmur detection (HF MD) will be depicted with orange (default color) waveform interposed with the Heart Sound.

2.5 ECG waveform is depicted in green (default) color.

2.6 In the single page of the screen, waveforms corresponding to 2.5 sec will be accommodated.

2.7 The Heart Sound & ECG Amplitude Slider Controls appearing on the extreme right side of the waveform windows can be used to modify the amplitudes of these waveforms.

HD STETH™ Mobile App User Guide

2.8   The Bluetooth button turns Red when the Bluetooth connection gets broken.

2.9   The user can attempt reconnection by tapping it. The App proceeds to restart and attempts to connect with the device.

2.10 Record button: On tapping anywhere on the Record button, recording starts, and the progress is indicated.

2.10.1 While recording is in progress, rest of the buttons in the screen turn inactive.
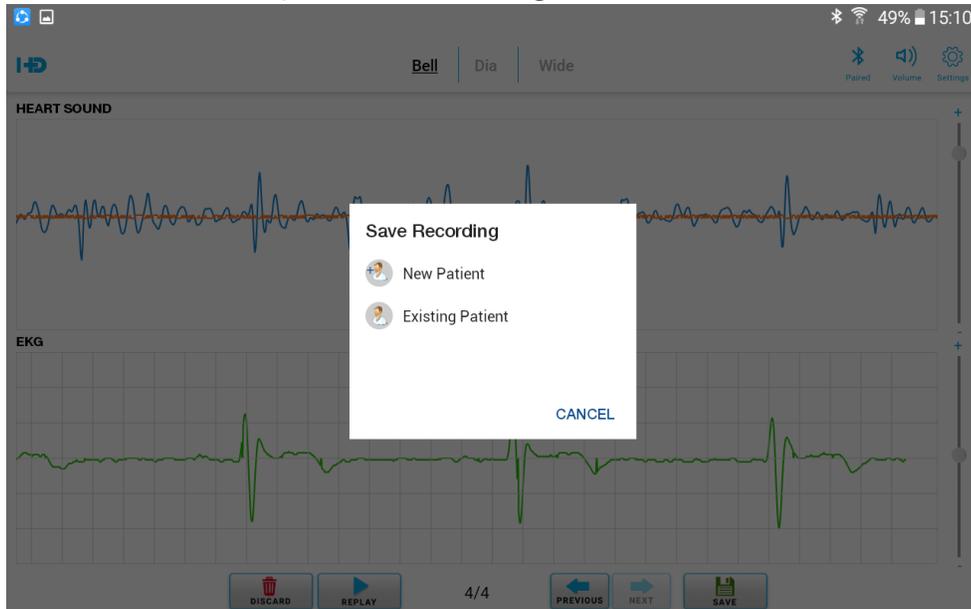
2.10.2 After 10 secs of recording, a Playback screen appears where the user can preview to decide whether to save or discard that recording. During this playback the Heart Sound is audible on the HD Steth device.

3 ACTIONS AFTER RECORDING
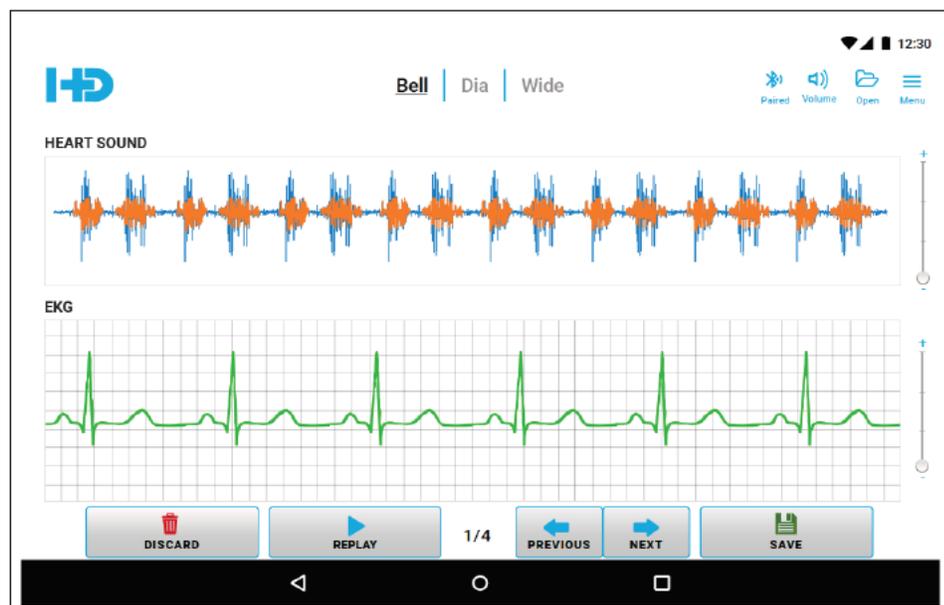
3.1   Discard: If the recording is unsatisfactory it can be discarded by tapping the Discard button, as a result the program leads to the Live Auscultation screen so that user can do a fresh recording.

3.2   Replay Button: On tapping this button, the current recording is played covering four pages. These pages are indicated as 1/4, 2/4, 3/4 & 4/4 pages. During the playback the heart sound is audible on the HD Steth device.

3.3   Previous & Next: These buttons support scrolling of waveform screens in left & right sides one page a time.

3.4   Save Button: After previewing, the user can proceed to save the recording through this button. It leads to a Save menu with options New & Existing Patient.

3.4.1 Choosing New Patient leads to a screen for adding new patient profile

3.4.2 After entering the mandatory fields marked by red star, the user can save by tapping the save button available on the top right corner.

3.4.3 As soon as saving is over the Live Auscultation screen appears.

3.5 In case the user chose Existing Patient, the list of existing patients will be displayed.
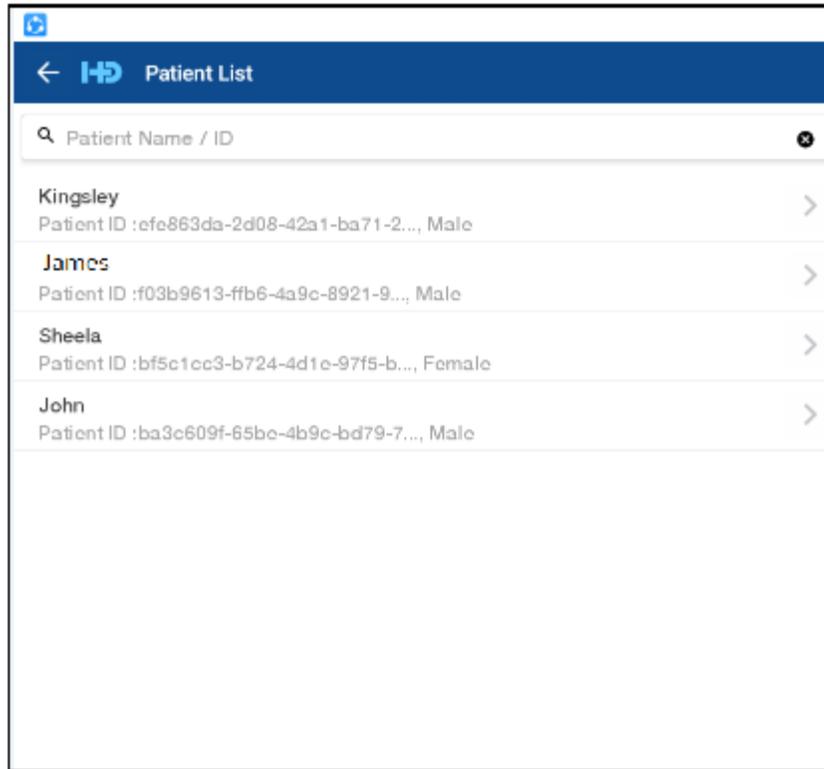
The user can search/select an existing user and save the recording.

4   PATIENT & DEMO FILES

On tapping the Open button present in the Live Auscultation screen, the following screen appears displaying two tabs Patient files (default) and Demo files tab (contains a list of demo files which will be available for the user reference).
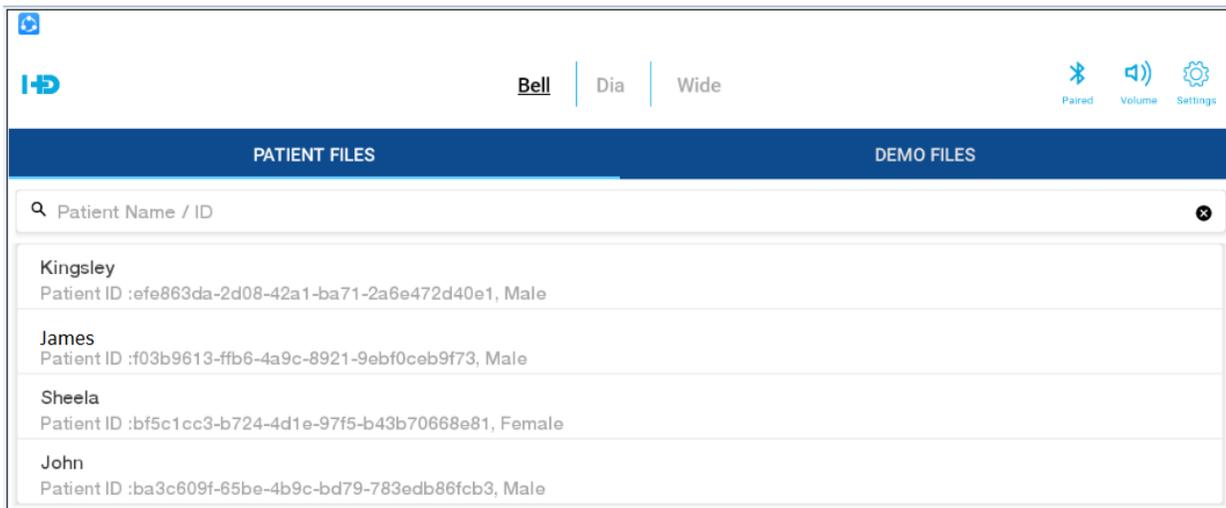
The user can navigate to a patient record by entering the patient id/ name in the search space.

HD STETH™ Mobile App User Guide

4.1   On choosing a patient, all recordings belonging to that person will be listed. Each recording is identified by its timestamp.
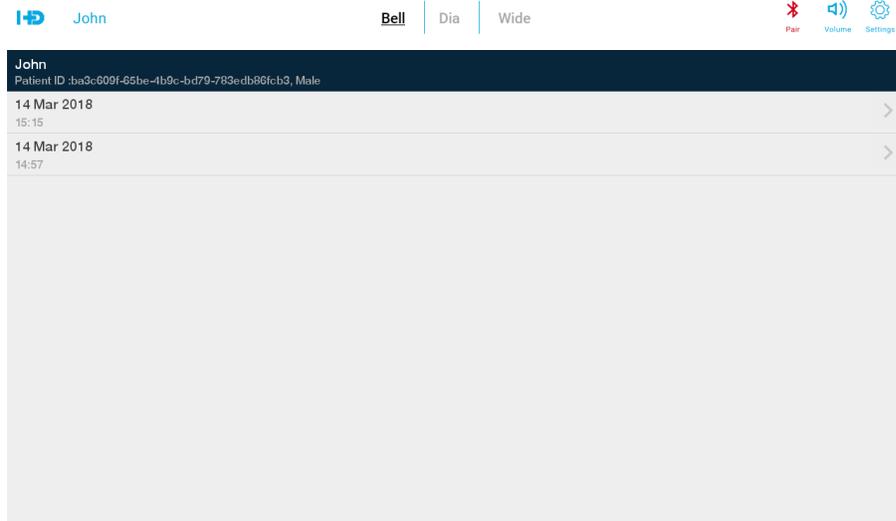
4.2   On tapping a recording, it commences to play in the playback screen.

4.3   Replay button is available to play the recording whereas Previous & Next are there for moving Back and Forward page wise.

HD STETH™ Mobile App User Guide

5   SETTINGS SCREEN
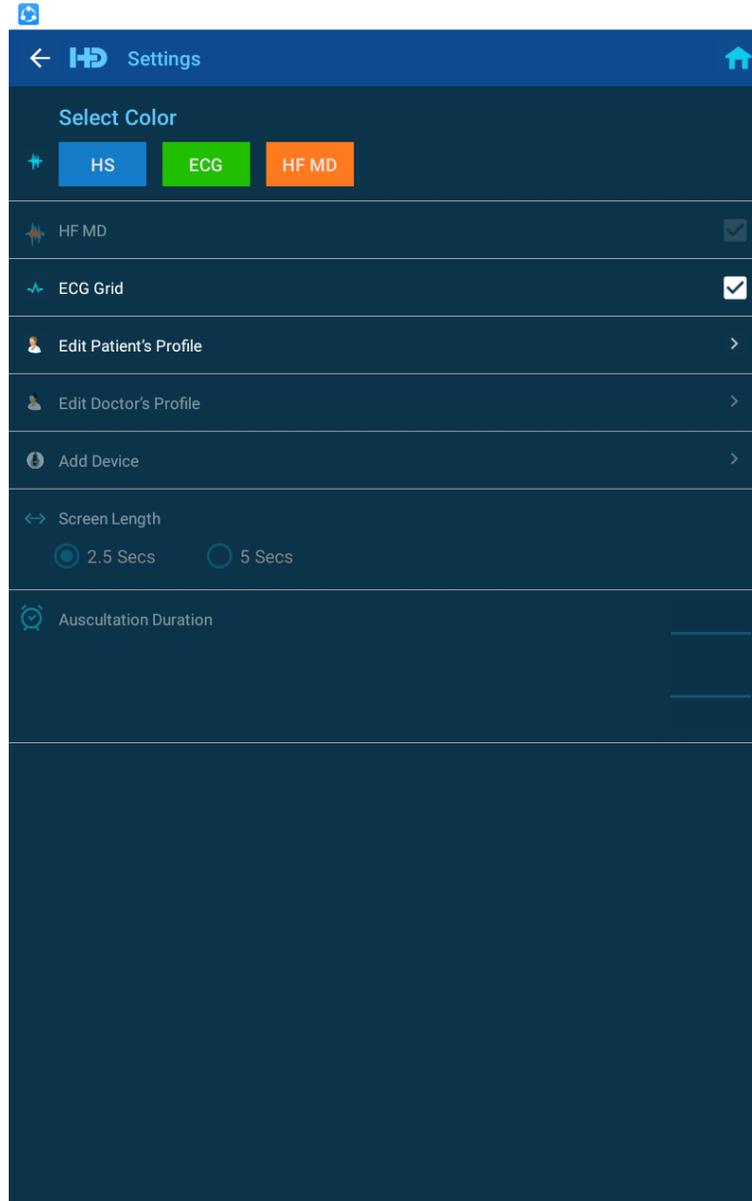
5.1   The user can select a color from the color palette that appears on tapping the color buttons for Heart Sound, ECG & High frequency Murmur detection Waveforms.

5.2   Currently the check box to enable/disable the High Frequency Murmur Detection waveform has been disabled.

5.3   A check box to enable ECG grid has been provided. It appears enabled by default.

5.4   Edit Patient's Profile is available to edit an existing patient's profile.

5.5   Rest of the controls are disabled.

6 TROUBLESHOOTING

Sr. No.	Problem	Possible Cause	Solution
1	Recording is being played only for 3 screens. 4th Screen appeared as blank.	Steps to reproduce: 1. Launch the application. 2. Once redirected to the Main screen, tap on 'Record' button and Record the auscultation. 3. Post completing the recording, redirected to the 'Preview' screen. 4. Tap on 'Reply' button post recording is being played automatically. 5. Observe the screen pagination and data displayed on the HS-EKG graphs. Actual result: Recording is being played only for 3 screens. 4th Screen appeared as blank. Expected Result: Recording should be played up to 4 screens.	Close and restart app
2	Application does not show lost Bluetooth connection message if BT connection is turned OFF while recording is in progress.	Steps to reproduce: 1. Launch the application. 2. Tap on 'Record' button. 3. While recording is in progress, turned off the Bluetooth connection of the device and observe. Actual result: Application does not show lost Bluetooth connection message if BT connection is turned OFF while recording is in progress. Expected Result: Application should show lost Bluetooth connection message if BT connection is turned OFF while recording is in progress. 4. Post turning off the Bluetooth connection of the device, Tap on the Bluetooth toggle icon. Actual Result: Blue tooth toggle button at time is not clickable. Due to which user needs to kill the app from app manager to relaunch the app. Expected Result: Blue tooth toggle button should be clickable. And, app should relaunch on tapping BT toggle icon.	Close and restart app

3	Volume icon and Record button appeared as disabled even when BT connection is established.	Steps to reproduce: 1. Launch the application. 2. Observe the Volume icon and Record button on Main screen. Actual Result: Volume icon and Record button display as disabled even when BT connection is established. Note: This is random occurrence. Observed 1 out of 12-15 recordings. Expected Result: Volume icon and Record button display should be enabled when BT connection is established.	Close and restart app
4	BT connection fail even after successful pairing and "Paired Successfully" toast message is display.	Precondition: One HD Steth device should be available in the vicinity. Steps to repro: 1. Launch the application. 2. Observe the scanning and pairing process. Actual Result: BT connection fail even after successful pairing and "Paired Successfully" toast message is display. Expected Result: BT connection shouldn't fail even after successful pairing and "Paired Successfully" toast message is display.	Close and restart app
5	Waveform stalling issue observed on Auscultation screen.	Precondition: HD Steth device and application should be connected. Steps to repro: 1. Launch the application. 2. Observe the waveform plotting on Main screen. Actual Result: Waveform get stall on Auscultation screen. Expected Result: Waveform shouldn't stall on Auscultation screen.	Close and restart app

		Precondition : App and HD Steth-device A should be turned ON and paired. HD Steth Device-B should be available and Turned OFF. Steps to Reproduce: Launch the application by pairing with Device A. Post successful pairing perform any activity or just kill the App followed by turned off the HD Steth Device-A. Turned ON the HD Steth Device-B and launch the app again. Observe the Scanning n pairing process after launching the app. Actual Result : After BT connection lost and relaunching the app, app doesn't get paired with HD Steth Device-B. Expected Result : After BT connection lost and relaunching the app, app should be paired with HD Steth Device-B.	Close and restart app
6	App doesn't get paired with another Steth device, on launching the app post Bluetooth connection lost.		
7	App gets paired even after displaying "Pairing Failed. Device Disconnected" toast message.	Precondition: - App and HD Steth-device A should be turned ON and paired. - HD Steth Device-B should be available and Turned OFF. Steps to Reproduce: 1. Launch the application by pairing with Device A. 2. Post successful pairing perform any activity or just kill the App followed by turned off the HD Steth Device-A. 3. Turned ON the HD Steth Device-B and launch the app again. 4. Observe the Scanning and pairing process after launching the app. Actual Result: App gets paired successfully even after displaying "Pairing Failed. Device Disconnected" message. Expected Result: App should perform appropriate activity as per the event callback received from the HD Steth device.	Close and restart app

| 8 | At times BT toggle button is not tappable when BT connection is lost. | Steps to repro:
1. Launch the application.
2. Perform any recording activity post, launching the app.
3. Disconnect the BT connection by tapping on BT toggle button or Turned off the Steth device.
4. Tap on 'BT toggle button and observe.

Actual Result: At times, BT toggle button is not tappable if BT connection is lost.

Expected Result: BT toggle button should be tappable when BT connection is lost and on tapping BT toggle button "Restoring BT connection" popup should be display. | Close and restart app |