CLAIMS

I claim:

1. A device for performing active auscultation comprising:

   a speaker wing housing that houses a speaker configured to project an acoustic signal into a patient's skin responsively to an electrical signal received from a controller;

   a microphone wing housing that houses a microphone configured to detect a detected acoustic signal emanating from the patient's skin and communicate the detected acoustic signal to the controller; and

   a main body housing physically and communicatively coupled to the microphone wing housing via a first coupling and physically and mechanically coupled to the speaker wing housing via a second coupling, the main body housing comprising:

      a transceiver communicatively coupled to the controller and a memory, the transceiver being configured to communicate the detected acoustic signal to an external device and receive instructions from the external device;

      the memory communicatively coupled to the controller and the transceiver, the memory being configured to receive instructions from the transceiver and store a set of instructions for execution by the controller;

      the controller configured to generate an electrical signal responsively to an instruction stored in the memory and communicate the electrical signal to the speaker, receive the detected acoustic signal from the microphone and communicate the detected acoustic signal to the transceiver; and

      a battery electrically coupled to the speaker, the microphone, the transceiver, the memory, and the controller, the battery being configured to provide electrical power to the speaker, the microphone, the transceiver, the memory, and the controller.

2. The device for performing active auscultation of claim 1, wherein the controller is further configured to pre-process the detected acoustic signal to remove noise.
3. The device for performing active auscultation of claim 1 or 2, wherein the speaker wing housing houses an array of a plurality of speakers.
4. The device for performing active auscultation of claim 1, 2, or 3, wherein the microphone wing housing houses an array of a plurality of microphones.

5. The device for performing active auscultation of any of claims 1-4, wherein the main body housing includes a first section that is physically coupled to a second section via a flexible hinge.
6. The device for performing active auscultation of any of claims 1-5, wherein a surface of at least one of the microphone wing housing, speaker wing housing, and main body housing is configured to be acoustically coupled to the patient's skin via at least one of an elastic band, a sleeve, a garment, and an adhesive.
7. The device for performing active auscultation of any of claims 1-6, wherein the at least one of the first coupling and the second coupling is flexible and device is configured to curve via the flexibility of the at least one of the first coupling and the second coupling.
8. The device for performing active auscultation of any of claims 1-7, wherein the memory is further configured to store the detected acoustic signal.
9. The device for performing active auscultation of any of claims 1-8, further comprising:

    a motion detector for detecting a movement of the device.
10. The device of claim 9, wherein the controller is further configured to perform a calibration of the speaker and the microphone responsively to receipt of a detected movement from the motion detector.