

Device for the qualitative detection of nucleic acid from the coronavirus SARS-CoV-2 that causes COVID-19

At A Glance

Customer

Lucira Health Inc., formerly Diassess Inc.

Product

Lucira COVID-19 All-In-One Test Kit

Services/ Market

Healthcare

Challenge

The principal challenge was to add an electronic output reading in a compact and very low-cost manner.

Summary

Diassess Inc. (now Lucira Health Inc.) developed a compact rapid diagnostic tester of Flu and STDs. The original design provided a visual color change at the end of the test and was intended to be read out by a trained professional. Early trials demonstrated that it was difficult to create a definitive reading. Gener8 was asked to investigate if a low-cost electronic reader could be developed for either a disposable handheld device or for a higher throughput benchtop unit. The initial aim of this work was to investigate available technologies and propose solutions that could be implemented within a tight budget.

Methods Employed

Gener8 designed and developed an innovative product. First, a serpentine wire heater replaced the inefficient resistive heaters. Second, the chamber array was changed from a linear lab slide based design to a radial pattern with a 3D fluidic path. Lastly, we employed a novel light source, light pipe, and optical detector to provide a very high quality, low-cost device. The solution developed was subsequently patented by the client.

Solution

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Expertise Employed

- Fluidics design and testing
- Optics design and development
- Thermal simulation and testing
- High-volume consumable development
- Electronics design
- Embedded firmware engineering
- Design for manufacturability
- Project Management

This test, originally developed for the Flu virus, later became the first FDA approved sample to result in-home test for Covid-19.

