



Light. Insight. Life.



## Volpi optical technology powers fully-integrated, low-cost point-of-care molecular diagnostic system

### CASE STUDY

**Client:**  
Quidel

**Website:**  
[www.quidel.com](http://www.quidel.com)

**Industry:**  
Point-of-Care

**Solution/Application:**  
Molecular Diagnostics

### Overview

Quidel came to Volpi to contribute to the development of its Savanna® qPCR “sample-to-answer” molecular diagnostic system.

Quidel’s goals for Volpi were to collaborate in developing an instrument that:

- Was designed for low-volume and CLIA-waived settings
- Could run either traditional PCR or HDA assays for samples that do not require extraction
- Delivered ultrafast detection to reduce the TAT of the Savanna® assays
- Provides multiplexing capability through multiple channels and chambers
- Had the smallest possible footprint
- Was competitively priced (BOTH the instrument AND its cartridges) to increase access to consistent, reliable, fast sample-to-answer testing



Quidel Savanna®

### Approach

Our engagement began with a series of consulting workshops with Quidel to establish goals, objectives and timelines. Volpi proceeded with developing conceptual designs and then moving to proof-of-concept through multiple stages:

1. Proof of new sensor concept for minimal filter size
2. 1st integrated electronics version
3. 1st prototype design with integrated fiber cabling
4. Improved housing robustness
5. Design engineering for lean manufacturing at scale



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## Optical Module Development

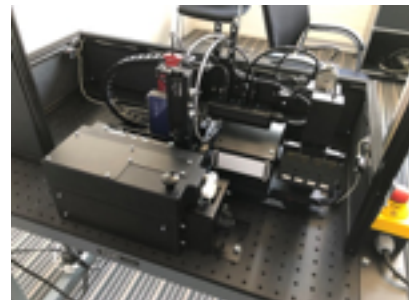
The optical module we are developing allows the readout of up to four different fluorescence channels in order to process multiplex PCR assays:

- Fully integrated electronics and microcontroller
- Firmware smart functions: LED current control, temperature error warnings, data failure warnings – and more
- Analytical sensitivity and specificity for diagnosis of single DNA or RNA molecules
- 4-Plex detection in each of 4 spatially separated detection windows
- Minimum size detector design
- Cost-effective fiber-based excitation
- Integrated FW for data pre-validation



## Tester Development

Volpi then developed an end-of-line test system used for quality control and for LED power calibration of each optical module manufactured.



QUIDEL



*Collaborating with Volpi has been highly rewarding for Quidel. We appreciate Volpi's expertise, determination and speed in optoelectronics measurement module design, development and industrialization. The development teams are working together very effectively, and we look forward to expanding the collaboration.*

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