SCiO Molecular Sensor from Consumer Physics: Mobile Spectrometer Dongle: Complete Teardown Analysis

Description:
For a long time, spectral analysis of materials has been limited to academic research. Everyday application of this type of analysis could bring new interactions in areas including food, fitness and medication. Starting with a crowdfunding campaign, and following the path of companies like FLIR, Consumer Physics, which was formerly Verifood Ltd., has created the first dongle molecular sensor, the SCiO Spectrometer. Thanks to big data and cloud technology, the dongle spectrometer claims to take the spectral fingerprint of any substance and quantify or identify any compound.

Consumer Physics is the first to bring spectrometry to consumers. Unlike other spectrometers, Consumer Physics produces a very simple package based on a tiny spectrometer head, with an area of 13 mm x 19 mm.

The SCiO Spectrometer integrates a 1.2 M pixel monochromatic CMOS image sensor from ON Semiconductor, a white LED from OSRAM and a bespoke filter/lens array. The LED is coupled to a reflector in the illumination module, which shines light on the analyzed substance, whose molecules absorb specific wavelengths. The received light in the spectrometer module is filtered and broken up into different wavelengths by the various lenses. Finally, the image sensor gives an instant response from the analyzed substance.

To provide spectral analysis, SCiO’s distinguishing feature eliminates the optical network usual in spectrometers, replacing it with a bespoke Fabry-Perot filter. All data processing is done by a chipset developed and produced by Analog Devices on a high-density printed circuit board.

Based on a complete teardown of the SCiO Spectrometer, the report provides technology and cost analysis with a detailed focus on the spectrometer head. Complete cost analysis is provided, fully disclosing the potential for mass adoption of the component.

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- Estimation of the Selling Price

Sensor Module Report

Overview / Introduction

Company Profile

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- Filter and lens array view, dimensions and cross-section
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- Temperature Sensor Module

Spectrometer Head Manufacturing Process Flow

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- CMOS Image Sensor Cost
- CIS, filter and microlens front-end cost, CIS wafer and die cost
- Lens & Filter Array Cost
- Lens and filter front-end cost, front-end cost per process step, die cost and assembly cost
- Spectrometer Head Final Assembly and Component Cost

Estimated Price Analysis

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