

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.

Petitioner,

v.

MASIMO CORPORATION,

Patent Owner.

IPR2020-01714
Patent 10,631,765

SECOND DECLARATION OF CAROL PETERSON

Masimo Ex. 2023

I, Carol Peterson, declare as follows:

1. I have personal knowledge of the facts set forth herein.
2. I am a research librarian at the law firm of Knobbe, Martens, Olson & Bear, LLP.
3. On 21 June 2021, I accessed the following uniform resource locator (“URL”) using Microsoft Edge:

https://www.ieice.org/publications/proceedings/summary.php?iconf=ITC-CSCC&session_num=P1&number=P1-32&year=2008

4. Exhibit 2024 is a true and accurate copy of a printout of the above URL on 21 June 2021. Below is a screenshot of a top portion of the webpage at the above URL on 21 June 2021.

The screenshot shows the IEICE Proceedings website. At the top left is the IEICE logo and the text "The Institute of Electronics, Information and Communication Engineers (IEICE) 電子情報通信学会". The navigation bar includes "IEICE Proceedings", "Home", "Search", and "Link". A "Login" button is on the right. The main heading is "IEICE Proceeding Series". Below this is a "Conference List" sidebar with items like APCC, APNOMS, APSITT, EMC, EMC Sapporo & APEMC 2019, EMTS, EXAT, ICETC, ICTF, ISAP, and ISITA. The main content area is titled "Summary" and contains the following text:

International Technical Conference on Circuits/Systems, Computers and Communications
2008
Session Number:P1
Session:
Number:P1-32
Measurement Site and Applied Pressure Consideration in Wrist Photoplethysmography
Eun Geun Kim, Hyun Heo, Ki Chang Nam, Young Huh,
pp.-
Publication Date:2008/7/7
Online ISSN:2188-5079
DOI:10.34385/proc.39.P1-32
[PDF download \(1.3MB\)](#)

Summary:
The objective of this study is to describe preliminary evaluation of a new optical reflectance sensor module with air pressure cuff. In order to improve PPG signals from the wrist as an example of wearable PPG, the optical reflectance sensor module includes two identical photodiodes and a pair of red and infrared LED. The sensor module was packaged inside of a cuff to demonstrate the effects of pressure applied to reflectance probe at the radial artery in the wrist. PPG signals with large amplitude were measured when the induced cuff pressure was close to mean blood pressure. This result will be applied to development of a wrist type healthcare device.

5. Also on 21 June 2021, I accessed a document available at the link indicated by at the “PDF download (1.3MB)” located at the URL listed in paragraph 3 of this declaration. This link directed Microsoft Edge to the following URL:

https://www.ieice.org/publications/proceedings/bin/pdf_link.php?fname=p1129_P1-32.pdf&iconf=ITC-CSCC&year=2008&vol=39&number=P1-32&lang=E

6. Exhibit 2017 is a true and accurate copy of the document available via the link in paragraph 5 of this declaration. Below is a screenshot of a top portion of the document.

The 23rd International Technical Conference on Circuits/Systems,
Computers and Communications (ITC-CSCC 2008)

Measurement Site and Applied Pressure Consideration in Wrist Photoplethysmography

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Abstract: The objective of this study is to describe preliminary evaluation of a new optical reflectance sensor module with air pressure cuff. In order to improve PPG signals from the wrist as an example of wearable PPG, the optical reflectance sensor module includes two identical photodiodes and a pair of red and infrared LED. The sensor module was packaged inside of a cuff to demonstrate the effects of pressure applied to reflectance probe at the radial artery in the wrist. PPG signals with large amplitude were measured when the induced cuff pressure was close to mean blood pressure. This result will be applied to development of a wrist type healthcare device.

1. Introduction

It is well established that recordings of the beat-to-beat variations in heart rate can be a useful diagnostic technology in cardiovascular medicine [1]. Although the majority of applications use ECG as the sensing mechanism or cardiac dynamics, it has been noted that photoelectric

overcome these limitations Dassel et al. applied pressure on the probe to increase the accuracy of reflectance pulse oximetry at the forehead[14].

Measuring with high-quality data on the wrist is also difficult and often requiring the application of pressure to the sensor in order to reduce the physical contact between the sensor and the wrist[16]. Furthermore, sensor configuration and power consumption play a important role in the design of a wearable bio -instrumentation device[17].

To implement wrist wearable healthcare device, we have developed an optical reflectance sensor module that includes an array of two identical photodiodes and a pair of red and infrared LED. The sensor module was packaged inside of a cuff to demonstrate the effects of pressure applied to reflectance probe at the radial artery in the wrist.

The objective of this study is to describe preliminary evaluation of a new optical reflectance sensor module with air pressure cuff, in order to improve PPG signals from the wrist area as an example of wearable PPG.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: June 21, 2021

By: /Carol Peterson/
Carol Peterson