


**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent of: Jeroen Poeze et al.  
U.S. Patent No.: 10,588,554 Attorney Docket No.: 50095-0013IP1  
Issue Date: March 17, 2020  
Appl. Serial No.: 16/544,713  
Filing Date: August 19, 2019  
Title: MULTI-STREAM DATA COLLECTION SYSTEM FOR  
NONINVASIVE MEASUREMENT OF BLOOD  
CONSTITUENTS

**SECOND DECLARATION OF DR. THOMAS W. KENNY**

I hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code.

Dated: August 30, 2021

By:  \_\_\_\_\_

Thomas W. Kenny, Ph.D.

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## I. Introduction

1. I have been retained on behalf of Apple Inc. to offer technical opinions relating to U.S. Patent No. 10,588,554 (“the ’554 Patent”) in the present case (IPR2020-01538). In this Second Declaration, I provide opinions related to Patent Owner’s Response (Paper 24) and Dr. Madisetti’s supporting declaration (Ex. 2004).

2. In addition to the materials listed in my First Declaration (APPLE-1003), I have also reviewed the following materials:

- Paper 8: Institution Decision;
- Paper 23: Patent Owner’s Response (“POR”);
- Ex. 2004: Declaration of Dr. Madisetti;
- Ex. 2006-2009: Transcripts of my prior depositions;
- APPLE-1039: Excerpts of Eugene Hecht, *Optics* (2nd Ed. 1990), pages 79-143, 211-220;
- APPLE-1040: Eugene Hecht, *Optics* (2nd Ed. 1990);
- APPLE-1041: Deposition Transcript of Dr. Vijay Madisetti in IPR2020-01520, IPR2020-01537, IPR2020-01539, Day 1 (August 1, 2021);
- APPLE-1042: Deposition Transcript of Dr. Vijay Madisetti in IPR2020-01520, IPR2020-01537, IPR2020-01539, Day 2 (August 2, 2021);

- APPLE-1043: Deposition Transcript of Dr. Vijay Madiseti in IPR2020-01536, IPR2020-01538 (August 3, 2021);
- APPLE-1044: “Refractive Indices of Human Skin Tissues at Eight Wavelengths and Estimated Dispersion Relations between 300 and 1600 nm,” H. Ding, et al.; Phys. Med. Biol. 51 (2006); pp. 1479-1489 (“Ding”);
- APPLE-1045: “Analysis of the Dispersion of Optical Plastic Materials,” S. Kasarova, et al.; Optical Materials 29 (2007); pp. 1481-1490 (“Kasarova”);
- APPLE-1046: “Noninvasive Pulse Oximetry Utilizing Skin Reflectance Photoplethysmography,” Y. Mendelson, et al.; IEEE Transactions on Biomedical Engineering, Vol. 35, No. 10, October 1988; pp. 798-805 (“Mendelson-IEEE-1988”);
- APPLE-1049: Eugene Hecht, Optics (4th Ed. 2002).

3. Counsel has informed me that I should consider these materials through the lens of one of ordinary skill in the art related to the '554 Patent at the time of the earliest possible priority date of the '554 Patent (July 3, 2008, hereinafter the “Critical Date”) and I have done so during my review of these materials. I have applied the same level of ordinary skill in the art described in my prior declaration,

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