IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	Jeroen Poeze et al.	
U.S. Patent No.:	10,624,564	Attorney Docket No.: 50095-0023IP1
Issue Date:	April 21, 2020	
Appl. Serial No.:	16/725,292	
Filing Date:	Dec. 23, 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: <u>October 27, 2021</u>   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. 10,624,564 ("the '564 Patent") in the present case (IPR2020-01713). 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 reviewed several additional documents and references including:

- Paper 7: Institution Decision;

- Paper 14: Patent Owner's Response ("POR");

- Ex. 2004: Declaration of Dr. Madisetti;

- Ex. 2006-2009: Transcripts of my prior depositions;

- APPLE-1051: Eugene Hecht, Optics (2nd Ed. 1990);

- APPLE-1052: Eugene Hecht, Optics (4th Ed. 2002);

- APPLE-1053: Deposition Transcript of Dr. Vijay Madisetti in IPR2020- 01536, IPR2020-01538 (August 3, 2021);

- APPLE-1054: Deposition Transcript of Dr. Vijay Madisetti in IPR2020- 01520, IPR2020-01537, IPR2020-01539, Day 1 (August 1, 2021);

- APPLE-1055: Deposition Transcript of Dr. Thomas W. Kenny in IPR2020-01520, IPR2020-01536, IPR2020-01537, IPR2020-01538, IPR2020-01539, Day 2 (September 18, 2021);

- APPLE-1056: Deposition Transcript of Dr. Vijay Madisetti in IPR2020- 01520, IPR2020-01537, IPR2020-01539, Day 2 (August 2, 2021);

- APPLE-1057: "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-1058: "Analysis of the Dispersion of Optical Plastic Materials," S. Kasarova, et al.; Optical Materials 29 (2007); pp. 1481-1490 ("Kararova");

- APPLE-1059: "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"); and

- APPLE-1060: U.S. Pat. No. 6,198,951 ("Kosuda").

3.   Counsel has informed me that I should consider these materials through the lens of a person of ordinary skill in the art (POSITA) related to the '564 Patent at the time of the earliest possible priority date of the '564 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, which I have been informed was also adopted by the Board in the Institution

Decision. APPLE-1003, [0021]-[0022]; Institution Decision, 11-12.

4.   I have no financial interest in the party or in the outcome of this proceeding. I am being compensated for my work as an expert on an hourly basis. My compensation is not dependent on the outcome of these proceedings or the content of my opinions.

5.   In writing this declaration, I have considered the following: my own knowledge and experience, including my work experience in the fields of mechanical engineering, computer science, biomedical engineering, and electrical engineer; my experience in teaching those subjects; and my experience in working with others involved in those fields. In addition, I have analyzed various publications and materials, in addition to other materials I cite in my declaration.

6.   My opinions, as explained below, are based on my education, experience, and expertise in the fields relating to the '564 Patent. Unless otherwise stated, my testimony below refers to the knowledge of one of ordinary skill in the fields as of the Critical Date, or before.

II.   Ground 1

7.   As I explained at length in my first declaration, a POSITA "would have found it obvious to modify the [Aizawa] sensor's flat cover…to include a lens/protrusion…similar to Ohsaki's translucent board 8, so as to [1] improve adhesion between the user's wrist and the sensor's surface, [2] improve detection efficiency, [3] and protect the elements within the sensor housing." APPLE-1003,

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