Docket No.: 0107131.00696US1
Filed on behalf of Intel Corporation
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UNITED STATES PATENT AND TRADEMARK OFFICE

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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Intel Corporation
Petitioner

v.

ParkerVision, Inc.
Patent Owner

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Case IPR2020-01265

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# DECLARATION OF VIVEK SUBRAMANIAN, PH.D.
# U.S. PATENT NO. 7,110,444
# CHALLENGING CLAIMS 1, 3, 5



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I, Vivek Subramanian, declare as follows:

## I. INTRODUCTION

1. My name is Vivek Subramanian. I am a Professor of Microtechnology at the École polytechnique fédérale de Lausanne (EPFL) (also known as the Swiss Federal Institute of Technology in Lausanne) in Switzerland. Until recently, I was also a professor of Electrical Engineering and Computer Sciences at the University of California, Berkeley. As of July 1, 2020, I have become an adjunct professor at UC Berkeley upon completion of my move to EPFL.

2. I have been retained as an expert in this proceeding by counsel for Intel Corporation. I have been asked for my expert conclusions regarding the validity of claims 1, 3, and 5 of U.S. Patent No. 7,110,444 (the "'444 Patent") (Ex. 1001-'444). For the reasons set forth below, it is my conclusion that claims 1, 3, and 5 of the '444 patent are invalid.

## II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

3. My qualifications are stated more fully in my curriculum vitae, which is attached as Exhibit A. Below is a summary of my education, work experience, and other qualifications.

4. I received a bachelor's degree *summa cum laude* in electrical engineering from Louisiana State University in 1994. I received M.S. and Ph.D.

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degrees in electrical engineering, in 1996 and 1998, respectively, from Stanford University.

5. Throughout the course of my education, including my B.S., M.S., and Ph.D. degrees, I was involved in designing and implementing wireless and high-speed analog systems. For example, during my PhD, I designed RF CMOS radios, including the transistor level design, simulation, layout, and characterization of the same.

6. After completing my Ph.D., I held multiple appointments simultaneously between 1998 and 2000. I served as a Consulting Assistant Professor in the Electrical Engineering Department of Stanford University. I also served as a Visiting Research Engineer in the Department of Electrical Engineering and Computer Sciences at the University of California, Berkeley, where my research focused on 25nm metal oxide semiconductor field effect transistor (MOSFET) design and fabrication. I worked on technologies for high-performance transistor processes, and I published several papers as a direct outcome of this technology development.

7. In 2000, I became an assistant professor at the University of California, Berkeley in the Department of Electrical Engineering & Computer Sciences. In 2005, I was promoted to the position of tenured Associate Professor, and in 2011, I was promoted to full Professor. In 2018, I became a full Professor of

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