UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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APPLE INC. AND MICROSOFT CORPORATION
Petitioners

v.

Neodron, Ltd.
Patent Owner

_____

Case Nos. IPR2020-00998; IPR2020-01000
U.S. Patent No. 8,749,251

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DECLARATION OF DR. TONY GIVARGIS

I, Tony Givargis, hereby declare the following:

I.   INTRODUCTION

1.   I, Tony Givargis, have been retained by counsel for Petitioners as a technical expert in the above-captioned case. Specifically, I have been asked to render certain opinions in regard to the concurrently filed IPR petitions[1] with respect to U.S. Patent No. 8,749,251 (the "'251 Patent"). I understand that the Challenged Claims are claims 1-20. My opinions are limited to those Challenged Claims.

2.   My compensation in this matter is not based on the substance of my opinions or the outcome of this matter. I have no financial interest in Petitioners. I am being compensated at an hourly rate of $500 for my analysis and testimony in this case.

3.   In reaching my opinions in this matter, I have reviewed the following materials:

- Exhibit 1001 - U.S. Patent No. 8,749,251 ("*the '251 Patent*")
- The '251 Patent File History
- Stay Orders, W.D. Tex.

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[1] I understand that Petitioners have filed two separate IPR petitions challenging the validity of all claims of the '251 Patent. For reference herein, the petition filed in IPR2020-00998 will be referred to as the "102(b) Petition" and the petition filed in IPR2020-01000 will be referred to as the "Priority Petition."

- Microsoft's Computer Dictionary ("*Microsoft Computer Dictionary 4th Ed.*")

- Barron's Dictionary of Computer and Internet Terms ("*Barron's Computer Dictionary*")

- Touchscreens 101: Understanding touchscreen technology and design ("*Touchscreens 101*")

- U.S. Patent No. 8,599,150 (the "*'150 Patent*")

- U.S. Patent No. 9,632,628 (the "*'628 Patent*")

- U.S. Patent No. 9,823,784 (the "*'784 Patent*")

- U.S. Patent No. 9,024,790 (the "*'790 Patent*")

- *ITC Markman Order*

- U.S. Patent No. 6,058,485 to Koziuk, et al. ("*Koziuk*")

- U.S. Patent No. 5,283,559 to Kalendra, et al. ("*Kalendra*")

- Quantum Research Group QT110 Data Sheet ("*QT110*")

- U.S. Patent Pub. No. 2005/0121980 to Bruwer ("*Bruwer*")

- Quantum Research Group QT60161 Data Sheet ("*QT60161*")

- Affidavit from Chris Butler at the Internet Archive – QT110

- Affidavit from Chris Butler at the Internet Archive – QT61061

- U.S. App. No. 12/179,769 (the "'769 Parent Application")

- Provisional Application No. 60/952,053 ("*Provisional Application*")

- '366 Parent Patent File History

- U.S. Pat. Pub. 2007/0076897 (the "*'897 Publication*")

- U.S. Patent Publication No. 2009/0027068 to Philipp, et al. ("the *'068 Publication*")

- U.S. Patent Publication No. 2007/0109276 to Kim et al. ("*Kim*")

- U.S. Pat. No. 5,730,165 (the "*'165 Patent*")

- U.S. Pat. No. 6,466,036 (the "*'036 Patent*")

- U.S. Pat. No. 6,452,514 (the "*'514 Patent*")

- Renesas's pulse-width modulation regulator ISL6534 ("*ISL6534*")
- U.S. Patent No. 3,979,240 to Ghezzo ("*Ghezzo*")

A.   Background and Qualifications

4.   I am a Professor in the department of Computer Science at the University of California, Irvine (UCI) since July of 2001. I served as the Associate Dean in the School of Information and Computer Sciences at UCI from 2011 to 2016. I am currently, serving as the Vice Chair of the department of Computer Science at UCI. I graduated Cum Laude with a Bachelor of Science in Computer Science in 1997 and PhD in Computer Science in 2001 from the University of California, Riverside. My PhD thesis was entitled "*System-Level Exploration for Pareto-Optimal Configurations in Parameterized System-on-a-Chip*." It received the School's Best Thesis Award that year.

5.   My research interests are generally directed at various aspects of the design of Embedded Systems. Embedded Systems are computing devices that operate within a larger system and include things such as consumer electronics, handheld devices, office equipment, industrial equipment, medical devices, autonomous and self-driving vehicles, and many other types of systems. Embedded systems are characterized as having rich sensing capabilities (e.g., keypads and touch sensitive input devices, heat/pressure sensors, etc.), actuation capabilities (e.g., displays, robotic arms, etc.) and heavy control logic (e.g., programmable embedded

processors, dedicated processing elements and extensive software logic). More specifically, my research focuses on software for Embedded Systems, real-time systems, Internet of Things devices, mobile and handheld devices, ML/AI control algorithms for Cyber Physical Systems, compilers for embedded software and code transformations techniques for efficient software to hardware migration.

6.   In addition to research, I exclusively teach the embedded systems courses at UCI both at the undergraduate as well as the graduate courses. My upper division Embedded Systems courses (CS 145 and CS 145L) are immensely popular with yearly enrollments exceeding 350 students. In these courses, students build a number of Embedded Systems from ground up out of components, including keypads and touch sensitive input devices. Additionally, they program the compute elements of their systems with various algorithms and application logic in order to solve a problem. I also teach the graduate embedded software course (CS245) that covers more advanced topics related to Embedded Systems design, including modeling, design and validation of complex devices.

7.   I have co-authored two textbooks on Embedded Systems design that are widely used in academia. In 2011, I received the prestigious ASEE's Frederick Emmons Terman Award for having authored these textbooks and advanced higher education in the areas of Embedded Systems. I have published over 100 peer-reviewed and archived conference and journal papers. I have 13 issued US Patents

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