

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE, INC.,  
Petitioner,

v.

PARTHENON UNIFIED MEMORY ARCHITECTURE LLC,  
Patent Owner.

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Case IPR2016-01135  
Patent 5,812,789

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**Declaration of Mitchell A. Thornton, Ph. D., P.E.**

## **I. Introduction**

1. I am over the age of eighteen (18) and otherwise competent to make this declaration.

2. My name is Mitchell Aaron Thornton. I am offering this declaration in the matter listed above on behalf of Parthenon Unified Memory Architecture LLC and at the behest of their attorneys Ahmad, Zavitsanos, Anaipakos, Alavi & Mensing P.C. I am being compensated at my usual rate and my compensation is not dependent on any opinions that I may take in this matter, any testimony, or any intermediate or final resolution in the matter.

3. I understand that the Board has issued an institution Decision in the above-captioned IPR concluding that the Petitioner has established a reasonable likelihood of success with respect to the following grounds (collectively “Instituted Grounds”):

- a. Obviousness of claims 1–5 and 12–14 over Bowes, TMS, and Thomas;
  - b. Obviousness of claims 6 and 8 over Bowes, TMS, Thomas, and Gove;
  - c. Obviousness of claim 7 over Bowes, TMS, Thomas, and Ran; and
  - d. Obviousness of claim 11 over Bowes, TMS, Thomas, and Celi.
4. This declaration is directed to an analysis of these Instituted Grounds.

## **II. My Background and Qualifications**

5. I earned a Bachelor of Science degree in Electrical Engineering from Oklahoma State University in 1985. In 1990, I earned a Masters of Science degree in Electrical Engineering from the University of Texas at Arlington. In 1993, I earned a Masters of Science degree in Computer Science from Southern Methodist University. I earned a Ph.D. in Computer Engineering from Southern Methodist University in 1995. I am a Licensed Professional Engineer in the states of Texas, Mississippi, and Arkansas. I also hold a Commercial General Radiotelephone Operator License (GROL) with Ship Radar endorsement issued by the Federal Communications Commission (FCC).

6. I am currently the Acting Chair of the Department of Computer Science and Engineering at Southern Methodist University. My academic rank is Cecil H. Green Chair of Engineering and Professor in the Department of Computer Science and Engineering and in the Department of Electrical Engineering at Southern Methodist University. Prior to 2002, I served as a faculty member at Mississippi State University in the Department of Electrical and Computer Engineering from 1999 through 2002. I served as a faculty member at the University of Arkansas from 1995 through 1999 in the Department of Computer Systems Engineering. In my university positions, my responsibilities are research, teaching, and providing service in my profession. My teaching and research area of

expertise is generally in the area of computer engineering where I specialize in hardware design for information processing systems.

7. In addition to my academic rank of professor, I am also the Research Director of the Darwin Deason Institute for Cyber Security at Southern Methodist University. The Institute mission is to advance the science, policy, application and education of cyber security through basic and problem-driven, interdisciplinary research. As Research Director, I am responsible for the coordination and oversight of all research projects within the auspices of this multi-million dollar endowed research Institute that is comprised of several principal investigators and their associated research teams. In this role, I am routinely involved with several different state-of-the-art projects regarding the technical aspects of information processing system processes, methods, software, and hardware.

8. Prior to my academic career, I was employed in the commercial sector as an engineer. I was employed full-time at E-Systems, Inc. (now L3 Communications) in Greenville, Texas from 1986 through 1991 and resigned from my position as Senior Electronic Systems Engineer in 1991 to pursue full-time graduate studies in Computer Science and Computer Engineering. My duties at E-Systems involved the design, analysis, implementation, and test of a variety of different electronic systems including various information processing systems centered around signal processing, data transmission and processing, and

communications systems. The communications systems I was involved with processed a variety of different types of signals including data, audio, and video systems. These systems were comprised of components such as receivers, transmitters, computers, and special purpose circuitry.

9. During the time I was in graduate school pursuing the Ph.D. degree, I also worked part-time and full-time during the summer of 1992 at a commercial integrated circuit (IC) design company named the Cyrix Corporation. At Cyrix, I was a member of a design team that ultimately produced a microprocessor that is compatible with the Intel Pentium. My duties included the design of the bus controller and memory interface circuitry for this IC.

10. My practice and research covers a range of topics centered around hardware design and analysis including secure circuit and embedded system design, electronic design automation (EDA) methods, and algorithms for quantum, classical digital systems, and large systems design. I have also maintained an independent professional engineering practice since 1993 as a sole proprietor that is a registered engineering firm in the state of Texas.

11. I am a named inventor on four (4) issued patents and two (2) patent applications under consideration at the USPTO. I have authored or coauthored over 200 scholarly publications in the fields of electrical engineering and computer science.

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