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.

UUSI, LLC dba NARTRON
Patent Owner

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Case IPR2019-00360
Patent No. 5,796,183

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**DECLARATION OF DR. DARRAN CAIRNS
IN SUPPORT OF PATENT OWNER'S PRELIMINARY RESPONSE**

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I, Darran Cairns, declare as follows:

1.   My name is Dr. Darran Cairns. I am a Director of Program Operations and Faculty Member in the School of Computing and Engineering at the University of Missouri Kansas City. I am also an Adjunct Professor of Mechanical and Aerospace Engineering at West Virginia University, where I have served on the faculty since 2006.

2.   I have been retained by UUSI, LLC d/b/a/ Nartron ("Patent Owner" or "Nartron") as an independent expert consultant in this proceeding before the Patent Trial and Appeal Board ("PTAB" or "Board").

3.   I have been asked to review and opine as to Apple's Petition for Inter Partes Review, Case IPR2019-00359 of U.S. Patent No. 5,796,183 ("the '183 Patent") (the "Petition"), and the Declaration of Dr. Phillip Wright submitted in support of that Petition. I also have been asked to explain the technology described and the invention claimed in U.S. Patent No. 5,796,183 and the two Reexamination Certificates issued for that patent. Finally, I have been asked to consider and describe the prior art references asserted in the IPR.

4.   I am being compensated at a rate of $490/hour for my work. I have no other interest in this proceeding. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this proceeding.

I. BACKGROUND AND QUALIFICATIONS

5. As stated above, I am a Director of Program Operations and Faculty Member in the School of Computing and Engineering at the University of Missouri Kansas City, and I am also an Adjunct Professor of Mechanical and Aerospace Engineering at West Virginia University. I was an Associate Professor with Tenure at West Virginia University until August 2014.

6. I hold an undergraduate degree in Physics (1995) and Ph.D. in Materials Science and Engineering (1999) from the University of Birmingham in the United Kingdom. From 1998 to 2001, I was a postdoctoral research associate in the Display Laboratory at Brown University. During my time at the University of Birmingham, I performed research related to optical fibers and optical fiber sensors and worked closely with engineers at Pirelli Cables. During my time at Brown University, I performed research on optoelectronic and display devices including flexible electronics, conformable displays, encapsulated liquid crystal devices, and touch sensors.

7. At West Virginia University my research focused on the fabrication of flexible electronic devices. My work was funded by both federal agencies, including the National Science Foundation, NASA, the Air Force Office of Sponsored Research, and the Department of Energy, and private companies, including EuropTec USA, Grote Industries, Kopp Glass, Eastman Chemical and

Articulated Technologies. I have worked closely with engineers at each of these companies and assisted them in developing and commercializing electronic devices including electronic lighting for automotive use; and flexible backlights for displays.

8.   In my own research program, I am developing patented technologies on functional coatings for electronic and energy applications. I am a named inventor on 11 issued U.S. patents in the field of touch sensors, displays, and liquid crystal materials.

9.   Prior to joining the faculty at West Virginia University, I worked for five years as a Research Specialist at 3M Touch Systems. My research there focused on capacitive touchscreen applications. My work at 3M included the development of patented and proprietary technologies on capacitive touch sensors.

10.   I am a member of the Society of Information Display (SID), the Institute of Physics (IOP) and the American Society of Mechanical Engineers.

11.   My students have been awarded prestigious fellowships for work performed in my laboratory including NSF Graduate Fellowships (3 students), NDSEG Fellowship (1 student) and the RUBY graduate Fellowship (1 student).

12.   My curriculum vitae documents more than 79 scientific publications in journals, books, and peer-reviewed conferences, as well as invited presentations

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