

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.

QUALCOMM INCORPORATED,

Patent Owner

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Case IPR2018-01281

U.S. Patent No. 8,768,865

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**DECLARATION OF JOHN VILLASENOR**

Apple Inc. v. Qualcomm Incorporated  
IPR2018-01281

## A. Qualifications

1. My name is John Villasenor. I am a professor at UCLA. I have been retained by Qualcomm Incorporated to provide opinions in the *inter partes* review proceedings IPR2018-01281 (the ‘1281 proceeding) and IPR2018-01282 (the ‘1282 proceeding) challenging U.S. Patent No. 8,768,865 (the ‘865 Patent).

2. My work focuses on innovative, high-performance communications, networking, media processing, and computing technologies and their broader implications. Since well before the respective priority dates of the ‘865 Patent, I have performed research in areas including image processing, machine learning, and delivering content to mobile devices. For example, I have also done research in machine learning, with substantial experience developing algorithms that adapt in response to changing characteristics in the environment as reflected, for example, through data measured through sensors. In addition, I have performed research in relation to mobile devices since the 1990s. This research included multiple aspects of mobile devices, including wireless communications, sensing information (such as orientation) on mobile devices, and methods for delivering content to mobile devices, including considerations such as the selection of type of content for transmission to the mobile device.

3. I received my B.S. in Electrical Engineering from the University of Virginia in 1985, and M.S. and Ph.D. in Electrical Engineering from Stanford University in 1986 and 1989, respectively.
4. While at Stanford, I concentrated my research on digital signal processing and communications.
5. Between 1990 and 1992, I worked for the Jet Propulsion Laboratory in Pasadena, CA, where I helped to develop techniques for imaging and mapping the earth from space. Since 1992, I have been on the faculty of the Electrical Engineering Department of the University of California, Los Angeles (UCLA). Between 1992 and 1996, I was an Assistant Professor; between 1996 and 1998, an Associate Professor; and since 1998, I have been a full Professor.
6. For several years starting in the late 1990s, I served as the Vice Chair of the Electrical Engineering Department at UCLA. I also hold an appointment in the Department of Public Policy within the UCLA School of Public Affairs. In addition, I teach in the UCLA Anderson School of Management.
7. Since joining the UCLA faculty in 1992, my research has addressed software, algorithms, hardware, networking, protocols, and other aspects of systems and devices that acquire, store, process, transmit, and display information.
8. I am an inventor on approximately 20 issued and pending U.S. patents in areas including signal processing, data compression, communications, and

cybersecurity. I have published over 150 articles in peer-reviewed journals and academic conference proceedings.

9. In addition to my work at UCLA, I am a nonresident senior fellow at the Brookings Institution in Washington, D.C. Through Brookings I have examined a wide range of topics at the technology/policy intersection including cybersecurity, wireless mobile devices and systems, intellectual property, financial inclusion for “unbanked” populations, digital media policy, “drones,” critical infrastructure security, driverless cars, and digital currencies and emerging payment methods. I have published articles and commentary related to technology policy in venues including Billboard, the Brookings Institution, the Chronicle of Higher Education, Fast Company, Forbes, the Huffington Post, the Los Angeles Times, Scientific American, Slate, and the Washington Post.

10. My attached curriculum vita (Ex. 2006) details my over expertise and experience in the field of computer graphics and image processing.

**B. Materials reviewed**

11. I have reviewed each Petition submitted in each of the ‘1281 and ‘1282 proceedings, as well the Patent Owner Preliminary Response submitted in each of the ‘1281 and ‘1282 proceedings.

12. I have reviewed the ‘865 Patent that is included as Exhibit 1001 in each of the ‘1281 and ‘1282 proceedings, U.S. Provisional Application No. 61/434,400,

which incorporated by reference by the '865 Patent, that is included as Exhibit 2001 in each of the '1281 and '1282 proceedings, and the prosecution history for the '865 Patent, excerpts of which are included as Exhibit 1002 in each of the '1281 and '1282 proceedings.

13. I have reviewed each declaration of Dr. Allen, which is Ex. 1003 in the '1281 proceeding and Ex. 1021 in the '1282 proceeding.

14. I have reviewed each Institution Decision entered by the Panel in each of the '1281 and '1282 proceedings.

15. I have reviewed the transcript of Dr. Allen's deposition conducted as part of the '1281 and '1282 proceedings.

16. A complete listing of the documents I reviewed is as follows:

| Proceeding      | Pr/ Ex | Title   |
|-----------------|--------|---|
| 1281 Proceeding | 2      | Petition  |
| 1281 Proceeding | 6      | Patent Owner Preliminary Response   |
| 1281 Proceeding | 7      | Institution Decision  |
| 1281 Proceeding | 1001   | U.S. Pat. No. 8,768,865   |
| 1281 Proceeding | 1002   | Excerpts of '865 Patent Prosecution History   |
| 1281 Proceeding | 1003   | Allen Declaration   |
| 1281 Proceeding | 1005   | Wang  |
| 1281 Proceeding | 2001   | U.S. Provisional Application No. 61/434,400<br>(Incorporated by Reference by the '865 Patent) |
| 1281 Proceeding | 2003   | Deposition of James Allen (April 25, 2019)  |
| 1282 Proceeding | 2      | Petition  |
| 1282 Proceeding | 6      | Patent Owner Preliminary Response   |
| 1282 Proceeding | 7      | Institution Decision  |
| 1282 Proceeding | 1011   | Louch (U.S. 8,676,224)  |
| 1282 Proceeding | 1021   | Allen Declaration   |

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