

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
HTC CORPORATION AND HTC AMERICA, INC.,
ZTE (USA) INC.,
Petitioners

v.

INVT SPE LLC,
Patent Owner

Case No. IPR2018-01476
U.S. Patent No. 7,764,711

DECLARATION OF BRANIMIR VOJCIC

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Patent 7,764,711

I, BRANIMIR VOJCIC, hereby declare as follows:

1. I am competent to testify, and if called upon during an *Inter Partes* Review (IPR) proceeding, I would do so. If called upon as a witness, I can competently testify to the truth of each statement herein.
2. I was asked to provide an opinion on the grounds asserted in IPR2018-01476, regarding U.S. Patent No. 7,764,711 (“’711 Patent”) (Ex. 1001), statements made in the Petition related to those grounds, and exhibits in support of those grounds.
3. My opinion is based upon my knowledge and experience, and my review of the ’711 Patent, the Petition, and exhibits in support of the Petition.

I. BACKGROUND

4. I am an expert in wireless technology and other areas of telecommunications, signal processing, and electrical engineering. I am presently a Professor Emeritus of Engineering and Applied Science at The George Washington University. I retired from the university in May 2015, where I was a member of the faculty since September 1, 1991. In addition, I have served as a consultant for a number of companies in the wireless communications industry in various technology areas. I have also served on numerous committees and as a reviewer and editor for several journals, conferences, and organizations.
5. I am presently President of Xplore Wireless, LLC, a small

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telecommunication consulting company. I am also a co-founder, Director, CEO and CTO of LN2, a startup in the telecommunication space.

6. I received my Diploma of Engineering, Master of Science, and Doctor of Science degrees in Electrical Engineering from the University of Belgrade in Yugoslavia in 1981, 1986, and 1989, respectively. The primary focus of my Doctor of Science studies was on Code Division Multiple Access (CDMA) and spread spectrum communications technologies.

7. In 1991, I joined The George Washington University as an Assistant Professor and was promoted to Associate Professor and Professor in 1997 and 2000, respectively. From 2001 to 2004, I served as the Chairman of the Electrical and Computer Engineering Department at The George Washington University. During my tenure at The George Washington University, until May 2015, I taught many different courses on communications theory and networks, wireless communications, CDMA, and I was a course director for a number of courses in communications. I have supervised students mostly in the areas of communications and coding theory, wireless communications/networks, CDMA (including IS-95, CDMA2000, WCDMA/HSDPA/HSUPA) and OFDM/LTE and have been a thesis director for a number of Doctor of Science candidates, who now have successful careers in academia, industry, and government.

8. My research in the areas I just mentioned has been supported by the

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communications industry and various Government agencies, such as Advanced Research Project Agency (ARPA), National Science Foundation (NSF), and National Security Agency (NSA). Much of this research concerns communications theory, performance evaluation, modeling wireless networks, multi-user detection, adaptive antenna arrays, and ad-hoc networks.

9. I have authored or co-authored numerous journal and conference papers, contributed to various books, and co-authored a text book on CDMA, entitled “The cdma2000 System for Mobile Communications,” Prentice Hall, 2004. I also served as a co-editor of a book on wireless communications, entitled “Multiaccess, Mobility and Teletraffic in Wireless Communications, Volume III,” Kluwer Academic Publishers, Norwell, Massachusetts, 1998. My CV includes a detailed listing of my publications.

10. I have also received awards for my work. In 1995, I received the prestigious National Science Foundation Faculty Early CAREER Development Award. The award is given annually by NSF to a select group of young professors nationwide to promote excellence in teaching and research.

11. I have served as a consultant for numerous companies in the wireless communications industry in technology areas, in the areas of 2G/3G/4G mobile technologies, Wireless LANs, new generation broadcast systems, advanced mobile satellite systems and other aspects of modern communication systems. I have also

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taught academic courses as well as short courses for the industry and government on various aspects of communications in the areas of 2G, 2.5G, 3G and 4G cellular standards, such as CDMA2000 1xRTT, CDMA2000 Evolution Data Optimized (EVDO), Wideband Code Division Multiple Access (WCDMA) and LTE.

12. I am a Senior Member of the IEEE and was an Associate Editor for IEEE Communications Letters and Journal on Communications and Networks. I served as a member of technical program committees, as a session organizer for many technical conferences and workshops, and as a reviewer of technical papers for many journals and conferences.

13. I am a co-inventor of U.S. Patent No. 6,523,147, entitled “Method and Apparatus for Forward Error Correction Coding for an AM In-Band On-Channel Digital Audio Broadcasting System,” US Patent No. 8,595,590 B1, entitled “Systems and Methods for Encoding and Decoding Check-Irregular Non-Systematic IRA Codes,” and applications, “Joint Source-Channel Decoding with Source Sequence Augmentation”, US 20140153654 A1, Jun 5, 2014, “Systems and Methods for Advanced Iterative Decoding and Channel Estimation of Concatenated Coding Systems”, US 20140153625 A1, Jun 5, 2014, “Advanced Decoding of High/Medium/Low Density Parity Check Codes”, PCT/US13/72883, and International Application Number PCT/CA01/01488, entitled “Multi-User Detector For Direct Sequence - Code Division Multiple Access (DS/CDMA)

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