Jonathan Wells, Ph.D., M.B.A.

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Wireless Communications Expertise

- Cellular Networks (2G, 3G, 4G, 5G, IS-95, GSM, GPRS, EDGE, UMTS, CDMA, WCDMA, HSPA, LTE and LTE-Advanced)
- Cellular Infrastructure (Handsets, Base Stations, Backhaul and RANs)
- Wireless LANs (Wi-Fi and Bluetooth)
- Wireless Standards, Rules and Regulations (3GPP, 3GPP2, IEEE, FCC, ETSI, CEPT)
- Radio Frequency (RF), Microwave and MM-Wave Devices, Systems and Networks
- RF Design, including RF Assemblies, Components and Integrated Circuits (ICs, MMICs)
- Intellectual Property, Patent Analysis and Litigation Support

Professional Summary

Dr. Wells has over 30 years of wireless communications experience gained from working in three continents. He is currently an independent consultant providing expertise on cellular technologies, wireless devices, network infrastructure and wireless rules and regulations to a client base of attorneys, intellectual property organizations, investment and research institutions, public listed and private companies. Dr. Wells has over 40 academic and commercial publications and presentations, and is lead inventor on several patents. He is Senior Member of the IEEE and is author of "Multi-Gigabit Microwave and Millimeter-Wave Wireless Communications," Artech House, 2010.

Employment History

2007 to present AJIS Consulting, Pleasanton, CA Independent Consultant

Provide independent technical consulting on wireless communications and emerging wireless fields.

- Technical expert support of 2G, 3G, 4G and 5G cellular and wireless patent litigation.
- Analysis of cellular and mobile wireless patents and infringing equipment.
- Cellular and wireless technology technical and industry analysis for companies, analysts and investment institutions. Research and publication of analyst reports.
- Wireless product development and marketing strategies.
- Specialized technical workshops on various wireless technologies; including cellular networks, mm-wave radios, security sensors and short range radios.
- Specialized global regulatory tasks and product approvals.

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2005 to 2007 GigaBeam Corporation, Herndon, VA

Director Product Management and Global Regulatory Affairs

Responsible for product strategy for industry-transforming high data rate wireless product.

- Initiated market development in over 40 countries including in Europe, Canada, Caribbean, Latin America, Middle East and Asia.
- Participated and drove standard development in FCC, CEPT and ETSI technical meetings.

2000 to 2004 Stratex Networks (now Aviat Networks), San Jose, CA

Director Product Development

Responsible for global product development of high-end digital microwave radios primarily for cellular backhaul applications.

- Led RF/microwave development team of 35 engineers based in two continents.
- Technical leadership of flagship Eclipse product, shipping over 250,000 units.
- Technical management of overseas manufacturing subcontractors.

1998 to 2000 Adaptive Broadband (now GE Digital Energy), Rochester, NY

1999-2000: Director Wideband Products, 1998-9: Engineering Group Leader

Full responsibility for the Terrestrial Infrastructure Group, providing telecommunications products for cellular and private network applications.

- P&L responsibility for \$4M wireless division.
- Responsible for the development of a family of digital radios and associated switching / multiplexing equipment.

1994 to 1998 MAS Technology (now Aviat Networks), Wellington, New Zealand

1995-98: RF Group Manager, 1994-95: Senior RF Design Engineer

Responsible for RF hardware development for cellular and telecommunications applications.

- Developed three generations of wireless transmission, switching and multiplexing products.
- Design and sustaining responsibility for satellite ground station terminals.
- Responsible for company's European regulatory approvals.

1993 to 1994 Matra Marconi Space, Portsmouth, UK Senior Design Engineer

- Developed GaAs MMIC mixer and MIC transmitter board for two satellite payloads.
- Theoretical analysis and modeling of low noise VCOs.

1990 to 1992 University of Bath, Bath, UK Post Doctoral Research Officer

- Fabricated novel quantum amplifiers in clean room environment.
- Developed computer models to predict semiconductor device performance.

1987 to 1990 British Aerospace, Filton, Bristol, UK Engineer (part time)

Designed and fabricated novel mixer devices, to support PhD research.

1985 to 1986 **Plessey Research, Caswell, UK** Engineer (1 year placement)

Developed high speed fiber optic transmitter / receiver devices.

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Education

- 1998 M.B.A., Massey University, New Zealand
 - Awarded with Distinction (top 10% of class)
- 1991 Ph.D., University of Bath, United Kingdom
 - Thesis: "Design and optimisation of a millimetre-wave balanced mixer"
 - Sponsored by British Aerospace PLC, Bristol, UK
- 1987 B.Sc. Physics with Physical Electronics, University of Bath, United Kingdom
 - Awarded with First Class Honours, graduated third in class
 - Final year project: "Fibre optic interferometer for location of disturbances"

University Instruction

- 2014 Intellectual Property: Patent Law, Prof. Mark Lemley, Stanford Law School, Stanford University, CA, USA
- 2004 AeA/Stanford Executive Institute for Management of High-Technology Companies, Stanford Graduate School of Business, Stanford University, CA, USA

Non-Confidential Expert Witness Experience

Aug 2018 to Present	<i>Uniloc v. Samsung</i> , 2:18-cv-00040, 41, 42, 44 Case: Four patent cases related to two cellular and two Wi-Fi patents. Role: Technical expert for defendant.
July 2018 to Present	Ericsson v. <u>Intellectual Ventures</u> , IPR2018-01185, 1289 Case: Two <u>Inter Partes</u> Reviews of two wireless communication patents. Role: Technical expert for patent owner.
July 2018 to Present	Ericsson v. <u>Intellectual Ventures</u> , IPR2018-01380 Case: <u>Inter Partes</u> Review of wireless communication patent. Role: Technical expert for patent owner.
Nov 2017 to Nov 2018	IP Bridge v. TCL Communications, 1:15-cv-00634-JFB-SRF Case: Patent case related to two 4G/LTE patents. Role: Testifying expert for plaintiff. Provided Expert Report. Deposed. Testified at trial.
Nov 2017 to Present	Huawei v. Optis Wireless, IPR2018-00653, 655, IPR2018-00807 Case: Three Inter Partes Reviews related to two 4G/LTE patents. Role: Testifying expert for petitioner. Provided multiple declarations. Deposed.
Oct 2017 to Dec 2017	Sharp v. <u>Hisense</u> , ITC Inv. No. 337-TA-1072 Case: ITC hearing related to two Wi-Fi patents. Role: Consulting expert for respondent.

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Aug 2017 to Aug 2018	Optis Wireless v. <u>Huawei</u> , 2:17-cv-00123-JRG Case: Patent case related to three cellular patents. Role: Testifying expert for defendant. Provided two Expert Reports and multiple declarations. Deposed. Testified at trial.
Aug 2017 to Aug 2017	Securus v. <u>Global Tel*Link</u> , PGR2017-00005 Case: Post grant review proceeding related to one wireless communication patent. Role: Technical expert for patent owner. Provided declaration.
June 2017 to Present	<u>Huawei</u> v. Maxell, IPR2018-00251 Case: <i>Inter Partes</i> Review related to wireless communication patent. Role: Testifying expert for petitioner. Provided declaration. Deposed.
June 2017 to Dec 2017	Hitachi Maxell v. <u>Huawei</u> , 5:16-cv-00178-RWS Case: Patent case related to three cellular and cellular / Wi-Fi patents. Role: Testifying expert for defendant. Provided declaration.
Nov 2016 to Present	Apple v. Qualcomm, 3:17-cv-00108 Case: Case related to licensing of cellular and wireless patents. Role: Testifying expert for plaintiff. Provided Expert Report and declaration. Deposed twice.
Nov 2016 to Aug 2018	Tektronix v. Rohde & Schwarz, ITC Inv. No. 337-TA-1104 Case: ITC hearing related to two radio frequency test and measurement equipment patents. Role: Testifying expert for respondent. Provided Expert Report.
Apr 2016 to Nov 2017	<u>Huawei</u> v. T-Mobile, 2:16-cv-00055, 2:16-cv-00056 Case: Patent case related to five cellular and cellular / Wi-Fi handover patents. Role: Testifying expert for plaintiff. Provided two Expert Reports and multiple supplements. Deposed twice.
Feb 2016 to July 2016	Unwired Planet v. Huawei and <u>Samsung</u> , UK High Court, HP-2014-000005 Case: UK patent court case related to four European 2G, 3G and 4G/LTE cellular communication patents. Role: Testifying expert for defendant. Provided two Expert Reports.
Jan 2016 to April 2017	Apple, Microsoft et al v. Evolved Wireless, IPR2016-00981, IPR2016-01177, IPR2016-01185, IPR2016-01208/01209, IPR2016-01228/01229 Case: Inter Partes Reviews of five wireless communication patents. Role: Technical expert for petitioners. Provided five declarations. Deposed four times.
July 2015 to June 2016	Ericsson v. <u>Intellectual Ventures</u> , IPR2015-01367 Case: <u>Inter Partes</u> Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.

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July 2015 to Feb 2016	Core Wireless v. <u>LG, Google</u> et al, 2:14-cv-00911 and 00912 Case: Patent case related to location using cellular devices. Role: Testifying expert for defendants. Provided Expert Report.
May 2015 to May 2016	Adaptix v. Ericsson et al, 6:14-cv-00501, 00502 and 00503, 6:15-cv-00042 Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff. Provided two Expert Reports and multiple declarations.
May 2015 to Dec 2015	Adaptix v. Alcatel-Lucent et al, 6:15-cv-00041 Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff.
April 2015 to Dec 2015	Ericsson v. <u>Apple</u> , ITC Inv. No. 337-TA-952 Case: ITC hearing related to Bluetooth and cellular / Wi-Fi device patents. Role: Testifying expert for respondent. Provided two Expert Reports and two Witness Statements. Deposed. Testified at hearing.
Dec 2014 to Sept 2015	Ericsson v. <u>Intellectual Ventures</u> , IPR2014-01471 Case: <u>Inter Partes</u> Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Dec 2014 to Sept 2015	Ericsson v. <u>Intellectual Ventures</u> , IPR2014-01412 Case: <u>Inter Partes</u> Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Nov 2014 to Present	<u>Regents of the University of Minnesota</u> v. AT&T et al, 0:14-cv-4666 Case: Patent case related to five 4G/LTE communication patents. Role: Consulting expert for plaintiff.
Oct 2014 to Aug 2015	Ericsson v. <u>Intellectual Ventures</u> , IPR2014-01330 Case: <u>Inter Partes</u> Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Sept 2014 to May 2015	Ericsson v. <u>Intellectual Ventures</u> , IPR2014-00963 Case: <u>Inter Partes</u> Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Sept 2014 to Oct 2014	Ericsson v. <u>TCL Communications</u> , 2:14-cv-677 Case: Patent case related to a 4G/LTE communication patent. Role: Consulting expert for defendant.
Sept 2014 to Sept 2014	Ericsson v. <u>Intellectual Ventures</u> , IPR2014-00958 Case: <u>Inter Partes</u> Review of a wireless communication patent. Role: Technical expert for patent owner.
Jan 2014 to Aug 2014	<u>Cell and Network Selection</u> v. AT&T et al, 6:13-cv-00403 Case: Patent case related to a 4G/LTE communication patent. Role: Testifying expert for plaintiff.

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