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

533 Peters Ave, Suite 204 Pleasanton, CA 94566, USA

Phone: +1 925 200 5124

Email: jonathan@ajisconsulting.com

Web: www.ajisconsulting.com



Wireless Communications Expertise

- Cellular Networks (2G, 3G, 4G, 5G, IS-95, GSM, EDGE, UMTS, CDMA, WCDMA, HSPA, LTE, LTE-Advanced, NR)
- 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 35 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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Curriculum Vitae: Dr. Jonathan Wells +1 (925) 200 5124

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)
- Thesis: "Venture Capital: Does It Exist In New Zealand?"

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 and Science and Engineering Research Council (SERC), 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
- AeA/Stanford Executive Institute for Management of High-Technology Companies, Stanford Graduate School of Business, Stanford University, CA, USA

Expert Witness Experience

Represented <u>underlined</u> party.

May 2020 to Aug 2020	AT&T v. <u>KAIFI</u> , IPR2020-00889 Case: <i>Inter Partes</i> Review of one cellular patent. Role: Consulting expert for patent holder.
Mar 2020 to Sept 2020	Samsung v. Bell Northern Research, IPR2020-00675, 00676, 00697, 00698 Case: Four Inter Partes Reviews of three cellular patents. Role: Testifying expert for petitioner. Provided multiple declarations.
Mar 2020 to Present	<i>Pinn v. Apple, Google, and Samsung</i> , 8:19-cv-1805, 1840, and 1856, C.D. Cal Case: Patent case related to three Bluetooth patents. Role: Testifying expert for defendants. Provided multiple declarations, two expert reports. Deposed.
Feb 2020 to April 2020	Uniloc v. <u>Samsung</u> , 2:19-cv-00259, E.D. Tex Case: Patent case related to Bluetooth patent. Role: Testifying expert for defendant. Provided declaration.
Jan 2020 to Sept 2020	Apple v. Optis, IPR2020-00465 Case: Inter Partes Review of one 4G/LTE patent. Role: Testifying expert for petitioner. Provided declaration.

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Dec 2019 to Present	Sanyo v. <u>Intel</u> , C.A. No. 2018-0723-MTZ, Court of Chancery, Del Case: Contract dispute related to wireless devices. Role: Testifying expert for defendant. Provided two expert reports. Deposed.
Nov 2019 to Present	<u>Overhead Door</u> v. Chamberlain Group, ITC Inv. No. 337-TA-1209 Case: ITC hearing related to two wireless transmission and reception patents. Role: Testifying expert for complainant.
Nov 2019 to Dec 2019	<u>LG Electronics</u> v. Bell Northern Research, IPR2020-00318 Case: Inter Partes Review of Wi-Fi patent. Role: Testifying expert for petitioner. Provided declaration.
Nov 2019 to Dec 2019	Bell Northern Research v. <u>LG Electronics</u> , 3:18-cv-02864, S.D. Cal Case: Patent case related to two Wi-Fi patents. Role: Testifying expert for defendant.
Sept 2019 to Aug 2020	ZTE, Coolpad v. Bell Northern Research, IPR2019-01319, 01320, 01365 Case: Three Inter Partes Reviews of three cellular patent. Role: Testifying expert for petitioner. Provided three declarations.
Sept 2019 to Aug 2020	Bell Northern Research v. <u>Coolpad, ZTE</u> , 3:18-cv-01783, 01786, S.D. Cal Case: Patent case related to three cellular patents. Role: Testifying expert for defendant. Provided expert report. Deposed.
July 2019 to Sept 2019	Harris v. <u>Huawei</u> , 2:18-cv-004390JRG, 2:19-cv-00222, E.D. Tex Case: Patent case related to 4G/LTE patents. Role: Testifying expert for defendant. Provided declaration.
June 2019 to Aug 2020	Optis, Unwired Planet v. <u>Apple</u> , 2:19-cv-00066, E.D. Tex, HP-2019-000006 Case: Patent case related to six 4G/LTE patents. Role: Testifying expert for defendant. Provided declaration and three expert reports. Deposed. Testified at trial.
June 2019 to June 2019	<u>TC Tech</u> v. Sprint, 1:16-cv-00153, D. Del Case: One cellular patents. Role: Consulting expert for plaintiff.
April 2019 to July 2019	Samsung v. Sharp, no case numbers Case: Three Inter Partes Reviews of cellular patents. Role: Consulting expert for petitioner.
April 2019 to Oct 2019	<u>Huawei</u> v. Bell Northern Research, IPR2019-01172, 01174, 01175, 01185, 01186, and 01439 Case: Six <i>Inter Partes</i> Reviews of cellular, Wi-Fi and general wireless patents. Role: Testifying expert for petitioner. Provided six declarations.
April 2019 to Oct 2019	Bell Northern Research v. <u>Huawei</u> , 3:18-cv-01785, S.D. Cal Case: Patent case related to eight cellular, Wi-Fi and general wireless patents. Role: Testifying expert for defendant. Provided two declarations.

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Mar 2019 to Mar 2019	Cell Trans v. <u>LG Electronics</u> , 3:18-cv-01955, S.D. Cal Case: Patent case related to one cellular / Wi-Fi patent. Role: Testifying expert for defendant.
Jan 2019 to Present	<i>Uniloc v. Microsoft</i> , 8:18-cv-2053, 2054, 2224, C.D. Cal Case: Patent cases related to multiple wireless patents. Role: Testifying expert for defendant. Provided declaration.
Dec 2018 to Mar 2019	DSS v. <u>Apple</u> , 4:14-cv-05330, N.D. Cal Case: Patent case related to one Bluetooth patent. Role: Consulting expert for defendant.
Nov 2018 to April 2019	Qualcomm v. <u>Apple</u> , 37-2017-00041389, Sup. Ct. Cal Case: Case related to trade secret misappropriation. Role: Testifying expert for defendant. Provided two declarations.
Nov 2018 to Dec 2018	Sprint v. <u>Intellectual Ventures</u> , IPR2018-01764, 1765 Case: Two <i>Inter Partes</i> Reviews of two wireless communication patents. Role: Technical expert for patent owner.
Nov 2018 to Feb 2019	Maxell v. <u>Huawei</u> , 5:18-cv-00033, E.D. Tex Case: Patent case related to three cellular and cellular / Wi-Fi patents. Role: Testifying expert for defendant. Provided declaration. Deposed.
Aug 2018 to June 2019	<i>Uniloc v. Samsung,</i> 2:18-cv-00040, 41, 42, 44, E.D. Tex Case: Four patent cases related to four cellular, Wi-Fi and Bluetooth patents. Role: Technical expert for defendant. Provided multiple declarations and two expert reports. Deposed twice.
July 2018 to April 2020	<u>Sol IP</u> v. AT&T, Sprint and Verizon, 2:18-cv-00526, 527 and 528, E.D. Tex Case: Three patent cases related to twenty 4G/LTE cellular and seven Wi-Fi patents. Role: Testifying expert for plaintiff. Provided multiple declarations and three expert reports. Deposed.
July 2018 to June 2019	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 June 2019	Ericsson v. <u>Intellectual Ventures</u> , IPR2018-01380 Case: <u>Inter Partes</u> Review of wireless communication patent. Role: Consulting expert for patent owner.
Nov 2017 to Apr 2019	<u>Huawei</u> v. Optis Wireless, IPR2018-00653, 655 Case: Two Inter Partes Reviews related to 4G/LTE patent. Role: Testifying expert for petitioner. Provided multiple declarations. Deposed twice.
Nov 2017 to Nov 2018	<u>Huawei</u> v. Optis Wireless, IPR2018-00807 Case: <i>Inter Partes</i> Reviews related to 4G/LTE patent. Role: Testifying expert for petitioner. Provided declaration.

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