



DR. RAY W. NETTLETON

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Dr. Nettleton is a consultant and expert witness in wireless technologies and networking. His career has included roles as an entrepreneur, corporate officer, international businessperson, engineer, educator, author, lecturer, and researcher. He is a life member of the IEEE.

Expert Witness

- Expert witness in patent infringement and other civil, regulatory and criminal matters
- IP litigation firms include Nixon Peabody, Wilmer Hale, Kecker Van Nest, Latham Watkins, McKool Smith, Orrick, Hogan & Hartson, Freeborn & Peters, Patton Boggs, Kenyon & Kenyon, Finnegan Henderson, Alston Bird, Workman Nydegger, Ropes & Gray, Baker Botts, Wilson Sonsini, Dechert, Foley Lardner, Quinn Emmanuel, Munger Tolles Olson, and Hogan Lovells.
- Provided expert witness testimony to Government hearings in Colombia, Brazil, New Zealand, Poland, UK, Ireland, South Africa, Philippines, and the FCC

International telecommunications businessperson & consultant

- Consulting clients include Ball Wireless, Milcom Technologies, MCI, Avante! de Mexico, United International Holdings, Wireless Spectrum Inc., Vesuvius Inc., Superconducting Core Technologies, iSherpa, Sequel, Motorola, NASA, U S Navy & Air Force, and others
- Performed business and technical feasibility and due diligence, technical and market strategy, and regulatory affairs consulting in the UK, Mexico, Brazil, Chile, Ecuador, Bolivia, Colombia, Argentina, South Africa, most of Europe, Korea, India, China, Japan, Philippines, etc.

Entrepreneur and Corporate Officer

- Co-founder and Chief Technology Officer, Formus Communications, an international wireless CLEC with license coverage exceeding 200 million pops in Europe

Innovative telecommunications engineer & Researcher

- Awarded the first two patents in CDMA technology for cellular telephone systems, issued in 1978 (stemming from PhD thesis research) and ultimately leading to the worldwide adoption of CDMA for 3G cellphone technology.
- Conducted research in system performance, power control and code design for CDMA, and in dynamic channel allocation for FDMA and TDMA systems.
- Established the first LMDS cellular propagation and interference trials (Phoenix, Arizona)
- Created the Boulder Industry PCS Test Bed and conducted trials with multiple vendors
- Designed the first 60GHz radio modem to use a Fast Fourier Transform-based algorithm to track very wide Doppler dynamics created by fighter aircraft motion

Educator, Author, Lecturer

- Professor Adjunct, University of Colorado – Boulder, Interdisciplinary Telecommunications Program and the Colorado Center for Astrodynamics Research
- Taught electrical engineering at Michigan State University, University of Maryland, Johns Hopkins University, and University of Denver
- Over 85 articles in industry publications, conference proceedings and technical journals

EXPERIENCE

February 1994 – Present: CONSULTANT; Clients ranging from Fortune 500 to nascent start-ups. Sample assignments:

- Expert witness in intellectual property litigation and criminal matters (see appendix for public domain details.) Expert witness to Government wireless telecom-related hearings including the International Trade Commission and the Federal Communication Commission. See appendix for details.
- New product development for Pfizer Animal Health, Inc.
- Technical and Regulatory Analysis for Wilson Electronics Inc.
- Regulatory engineering support to wireless network planning for Hawaiian Telcom
- Provided technology and network consulting to Velocom, a major CLEC in Argentina, Brazil and Uruguay
- Advised Military Commercial Technologies (MILCOM) on two potential investments relating to the commercialization of military technology
- Wrote Wireless Services research report for RHK, a Silicon Valley telecom consulting house
- Advised Ball Wireless on future market strategy
- Network and wireless link analysis for ISCO International
- Investment advisor to Venture Capital Companies iSherpa (Denver) and Sequel (Boulder)
- Exposed fatal flaws in MCI's proposed acquisition of Nextel stock (Nextel used the iDEN technology) and shut down the transaction
- Advised MCI on the technology and economics of LMDS and LEO satellite systems
- Created wireless local loop plan for Avantel de Mexico
- Performed technical due diligence for United International Holdings on the acquisition of Wireless Ventures International of Brazil (later acquired by Nextel International)
- Wrote marketing plan "Cellular base station receiver front ends" for SCT
- Re-wrote network design plan for Motorola iDEN system in Beijing, China
- Wrote "Smart Convolution" fast computer algorithm to evaluate intermodulation products in a multi-tenant radio tower environment, for UniSite

April 2002 – present: ASSOCIATE PROFESSOR (DEPARTMENT CHAIR, NOW ADJUNCT), Interdisciplinary Telecommunications Program, College of Engineering and Applied Science, University of Colorado – Boulder. The Program offers a graduate degree in Interdisciplinary Telecommunications, combining instruction in the technical, economic, legal, regulatory and business aspects of the telecommunications industry. It also offers joint degrees with the College of Engineering, the Graduate School of Business, and the School of Law. Also teach a course at the Colorado Center for Astrodynamics Research

Teach courses in: local area networks, public networks, satellite, and wireless communications technologies.

Performed research in: Ad Hoc Antenna Arrays, ad hoc network addressing, and core network aspects of cellular / Wi-Fi handoff.

October 1996 – December 2000: CO-FOUNDER, SENIOR VICE PRESIDENT & CHIEF TECHNOLOGY OFFICER, Formus Communications Inc., a \$1B international broadband connectivity and IP solutions company with license population coverage of 200 million. Responsible for technology policy, selection of network vendors and architectures, advising national telecommunications regulators. Chief spokesman at conferences. Regular strategy advisor in Formus Board meetings.

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- One of three-executive team responsible for acquisition of Fixed Wireless Access Licenses in: USA, Argentina, Colombia, Peru, Uruguay, Ecuador, Norway, Ireland, Finland, Denmark, Poland, Luxembourg, Belgium, Spain, Germany, Switzerland, and New Zealand
 - Also participated in planning for businesses in South Africa, Malaysia, Singapore, Thailand, South Korea, Taiwan and the Philippines.

April 1991 - February 1994: DIRECTOR & DISTINGUISHED MEMBER, TECHNICAL STAFF, U S WEST Advanced Technologies, Inc., the R&D arm of U S WEST Communications (formerly acquired by Qwest, now CenturyLink). Directed 50 professionals in engineering, mathematics, computer science, economics etc.

- Directed creation of plans and new services to enter the wireless market at 1.9GHz
- Produced plans for Wireless Local Loop to enter new markets abroad, to answer competitive threats at home, and to solve the "held-order" problems of un-served customers
- Performed technical "due diligence" studies on wireless-related investment opportunities

April 1989 - April 1991: SENIOR ASSOCIATE, Booz | Allen | Hamilton, Inc., a major technology and business-consulting house. Provided technical leadership to 28 professionals working on satellite communications. Built consulting business in cellular, personal and satellite communications; managed proposals, marketing and consulting projects.

- Brought in four new contracts to the firm totaling \$1.5M
- Gave expert witness testimony before a hearing of the New Zealand Commerce Commission concerning a license dispute. The Commission found in favor of our client (First City Great Britain Ltd.)
- Advised on cellular spectrum regulatory plans for Booz | Allen's clients Oftel, the British telecommunications regulating board, and Austel, its Australian equivalent
- Designed and performed ground and airborne proof-of-concept tests. Wrote and presented technical sections of American SkyCell's pleadings before the FCC
- Performed spacecraft interference analyses and wrote analysis software for the NASA Spectrum Manager

November 1986 - April 1989: PROJECT MANAGER, Stanford Telecommunications, Inc., a satellite communications manufacturing and consulting company (now part of Alcatel). Supervised seven professionals performing mathematical modeling, simulation and analysis of satellite communications systems.

- Built the analysis group from myself to seven, increasing the NASA funding level of one task by 400% and of a second by 100%
- Performed interference analyses and wrote analysis software for various NASA scientific spacecraft

July 1985 - October 1986: PRINCIPAL ENGINEER, McCreary Research, Inc., a military communications consulting firm. Responsible for technical analysis of various U S Navy communication systems

- Authored communications plans and performed interference analyses for Navy satellite programs

July 1983 - July 1985: MANAGER, Amecom Division of Litton Systems, Inc. (now part of Northrup Grumman), a telecommunications equipment and services provider to the U S Armed Forces. Supervised R&D in classified Government programs.

- Designed a 60GHz digital modem using a Fast Fourier Transform algorithm for demodulation and tracking of the very wide Doppler dynamics resulting from fighter aircraft motion

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- Designed signal processing algorithms and developed software for a 200MHz-bandwidth optical film recorder used for electronic intelligence (ELINT) purposes

1979 – 1983: ASSISTANT PROFESSOR of Electrical Engineering and Systems Science, Michigan State University. Taught graduate and undergraduate courses in communications, signal processing and signal theory, and probability and stochastic processes.

- Won research grants from the National Science Foundation and Hitachi. Performed and supervised research into power control and composite code design for CDMA cellular systems
- Supervised PhD thesis "Power Control and Interference Management in a Spread Spectrum Cellular Mobile Radio System", by Hossein Alavi, 1984

EDUCATION

- Ph.D.** Purdue University, EE/Communications, December 1978
Thesis topic: "Spectral Efficiency in Land-Mobile Communications: A Spread-Spectrum Approach", supervised by Dr. George R. Cooper.
- M.S.E.E.** Purdue University, June 1976
- B.Tech.** University of Dayton, Magna cum Laude, June 1974

U.S. PATENTS

- 4,222,115** "Spread Spectrum Apparatus for Cellular Mobile Communication Systems". George R. Cooper, co-inventor
- 4,189,677** "Demodulator Unit for Spread Spectrum Apparatus Utilized in a Cellular Mobile Communications System". George R. Cooper and David P. Grybos, co-inventors

These patents have been cited in 291 other patents in the interval 1979 to 2014.

PUBLICATIONS

Reports for Client or Internal Use

1. "Wireless equipment recommendations for Brazil and Argentina", for Velocom, Inc., June 2001
2. "Wireless Strategy Options", for Ball Aerospace commercial wireless division, April 2001
3. "Local Loop Replacement: A Report on Technology, Regulation, Economics and Business Issues", confidential client, September 1995
4. "A Primer on Low Earth Orbiting Satellites", for MCI, January 1995.
5. "Avantel Deployment Program Plan", for Avantel de Mexico, December 1994.
6. "Spectrum Policy Choices for Mexico", white paper for Avantel de Mexico and the SCT (Mexico's regulatory body), November 1994.
7. "Nextel Technology Assessment", due diligence report for MCI, June 1994
8. "Wireless Approaches to Video and Broadband," white paper for U S WEST, January 1994.
9. "PCS Overview and Strategies," white paper for U S WEST, Fall 1993.
10. "Wireless Approaches to Fixed Loop Provisioning," white paper for U S WEST, Fall 1993.
11. "Opportunities in the Mobile Radio Marketplace," prepared for Hughes Network Systems, Germantown, Maryland, December 3, 1990.

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12. "Orbital Aspects of Interference among S-Band Data Relay Satellite User Spacecraft," Prepared under NASA Contract, December 1989.
 13. "Potential Interference between ATDRSS and DSCS," Prepared under NASA Contract, March 10, 1989.
 14. "Comments on Interference Effects from Japanese DRTS Spacecraft at 170 degrees," Prepared under NASA Contract, December 13, 1988.
 15. "FDMA Performance of the TDRS K_u Band Transponder," Technical Memo to Code 530, prepared under contract to NASA.
 16. "S-Band Frequency Sharing Among Research and Applications Satellites," 8th Annual Meeting of the Space Frequency Coordination Group, November 9-15, 1988, Buenos Aires, Argentina. Prepared under NASA Contract.
 17. "Properties of TDRSS Pseudonoise Sequences," STI/TR880141, September 1988. Technical memo to the Space Network Interoperability Panel. (NASA, ESA, NASDA.) Prepared under NASA contract, September 1988.
 18. "Simultaneous Access of the two KSA Services of One TDRS by STS and SSF," Prepared under NASA contract, August 6, 1988.
 19. "Naval UHF SATCOM Systems Spectral Assessment." Prepared under contract to Space and Naval Warfare Systems Command, Navy Space Project Office, September 1985.
 20. "UHF Follow-On Satellite Communication Package Specification Analysis." Prepared under contract to Space and Naval Warfare Systems Command, Navy Space Project Office, September 1985.
 21. "Comparison of Risk in Services Offered by Two Computer Disaster Recovery Companies," Prepared under contract to Manufacturers Hanover Bank, January 1985.
 22. "Anti-Jam Properties of Slow Frequency-Hopping Signals." Litton Amecom White Paper, proprietary, August 1983.
 23. "Civil Applications of Spread Spectrum, Phase II, Volume 2; Composite Sequences for Pseudonoise Signaling." Prepared under contract to Hitachi Central Research Laboratories, July 1982.
 24. "Civil Applications of Spread Spectrum, Phase II, Volume 1; Frequency Hopping Sequences." Prepared under contract to Hitachi Central Research Laboratories, January 1982.
 25. "Spectral Efficiency in Land-Mobile Communications: A Spread-Spectrum Approach," technical report TR-EE 78-44, Purdue University, prepared under NSF contract. A reprint of the author's Ph.D. thesis, December 1978. With George R. Cooper.

Publications, Presentations and Reports in the Public Domain

26. "Push to Talk over Cellular (PoC): Business Opportunities and Challenges" published by Mindcommerce, February 2008

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27. "Solving the Last Mile Problem with Centimeter-Wave Fixed Broadband Wireless", multiclient report published by RHK, Fall 2001
 28. "Ultrawideband Interference and Pulse Repetition Frequency", *ex parte* comments of the WCA, Docket 98-153, *in the matter of modifying the Part 15 rules for ultrawideband emissions*, August 2001
 29. "Eliminating the Truck Roll Problem in BWA", WCAI Conference Wireless Now!, Boston, MA, June 27-30, 2001
 30. "Millimeter Wave Equipment Outlook II", IWPC conference Millimeter Wave Supply Chain Summit, Washington, D.C., April 2001
 31. "Broadband Wireless Access in Europe", KC Global Conference on Broadband Access, Amsterdam, October 23rd 2000
 32. "The Outlook for Multipoint Broadband Wireless Access", Keynote speech at the Broadband Solutions Conference, Dallas, April 10th 2000;
 33. "Formus and Multipoint Systems", IBC Broadband Summit at the Dorchester, London, April 17th 2000;
 34. "Formus and Multipoint Systems", Convergence 2000 conference in Brussels, May 22nd 2000;
 35. "Economics of Broadband Wireless Access", IBC Broadband Conference in Stockholm, June 15th 2000;
 36. "What Service Providers Want", Wireless Communications Association's WCA2000 at the New Orleans Convention Center, July 11th 2000.
 37. "Standards in BWA", Wireless Communications Association's WCA2000 at the New Orleans Convention Center, July 10th 2000.
 38. "Millimeter Wave Equipment Outlook", IWPC conference Millimeter Wave Supply Chain Summit, New Orleans Convention Center, July 9th 2000.
 39. "Formus and Fixed Wireless Access", Private and Wireless Conference 99, Denver Convention Center, September 1999
 40. "Formus and Fixed Wireless Access", RAWCON 99, Marriot Denver South, August 1999.
 41. "Formus and Fixed Wireless Access", WCA 1999 at the New Orleans Convention Center, July 1999.
 42. "LMDS: Its Competitors and Complements", International Institute for Research Broadband Wireless Conference, Phoenix, Arizona, December 1998
 43. "LMDS: The Target Markets", International Institute for Research Broadband Wireless Conference, December 1998
 44. "LMDS and Point-to-Multipoint Technology", Shorecliff Broadband Wireless Conference, May 1998
 45. "LMDS and Point-to-Multipoint Technology", COMDEX '98, April 1998

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46. "REACH: A High-Performance Cellular Base Station Front End", Wireless Personal Communications Technologies and Services, SPIE Conference, Philadelphia, PA, October 1995
 47. "Post Auction Stress Syndrome", RCR, September 1995. With Dr. Pierre Dogan
 48. "The Future of Wireless", invited address to the Wireless World '94 conference, a gathering of CEOs and investors in Latin American cellular, private radio and paging concerns, sponsored by Motorola, Orlando, Florida, November 15th 1994.
 49. "PCS in the USA and in the World," invited tutorial at the International Telecommunications Symposium, Rio de Janiero, August 22 1994.
 50. Special Issue on Personal Communications, Volumes 1 and 2, IEEE Journal on Selected Topics in Communications, August 1993. Invited guest co-editor with Drs. Chuang, Fukada, Andersen.
 51. "U S WEST's Trial Portfolio," PIMRC Conference, Yokahama, Japan, October 13th 1993.
 52. "Personal Communications in the Banking Industry," Banking '93 Conference, New Orleans, May 25th 1993.
 53. "Personal Communications and U S WEST," Keynote Address, National Wireless & Radio Engineers Conference, Denver, CO, June 1 - 4, 1992.
 54. "Preventing Dominance in the Cellular Mobile Telephone Market," report on behalf of First City for the September 11 - 12, 1990 hearings, New Zealand Commerce Commission
 55. "Traffic Statistics in a Self-Organizing Cellular Telephone Scheme," 40th IEEE Conference on Vehicular Technology, May 6-9, 1990, Orlando, FL
 56. "Comments on the Goeken Filing of August 8, 1989," part of the Reply Comments of American Sky Cell Corporation in the matter of Docket 88-96, October 10, 1989, Federal Communications Commission, Washington, D.C.
 57. "A High-Capacity Assignment Method for Cellular Mobile Telephone Systems," 39th IEEE Conference on Vehicular Technology, May 1-3, 1989, San Francisco, CA.
 58. "Spectrally Efficient Mobile Communications via Dynamic Resource Management; *ex parte* Comments on Docket 84-1231," before Federal Communications Commission, 24 April 1986. With Jerry Schloemer and Leo Aubel.
 59. "Airborne Tactical EHF Communications." Milcom '85, Boston, October 1985. Classified **SECRET**.
 60. "ELINT Signal Processing for the Bragg Cell Recorder," presented at the 1985 Symposium on Electronic Intelligence, National Security Agency, May 14th, 1985. With T. Hubin. Classified **SECRET**.
 61. "Terrestrial Radio Links." Section 49.1 of Handbook of Modern Electrical and Electronic Engineering. Edited by Charles Belove, Wiley, 1986.
 62. "Acquisition and Tracking for Frequency-Hopping HF Communications." URSI meeting, Boulder, CO., January 1984.

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63. "Power Control for a Spread Spectrum Cellular Mobile Communications system with Shadow Fading." Conference Record of ICC '83, San Diego, CA, November-December 1983. With Hossein Alavi.
 64. "Spread-Spectrum Principles for Multiple-Access Systems." Invited tutorial paper for First Canadian Domestic and International Satellite Communications Conference, Ottawa, Canada, June 15-17, 1983.
 65. "Spectrum Efficient Cellular Mobile Communications." Tutorial paper for 33rd Annual Vehicular Technology Conference, Toronto, Ontario, May 25-27, 1983, Session C2.
 66. "Power Control for a Spread Spectrum Mobile Radio System." 33rd Annual Vehicular Technology Conference, Toronto, Ontario, May 25-27, 1983, Session C4. With H. Alavi.
 67. "Cellular Mobile Communications; the Great Multiplier." With George R. Cooper, IEEE Spectrum, April 1983.
 68. "Reply Comments on FCC Docket 81-413, 'Authorization of Spread Spectrum and Other Wideband Emissions not Presently Provided for in the FCC Rules and Regulations.'" Presented *ex parte* to the FCC as an official policy document of the IEEE. Co-authored with Gaylord K. Huth, George R. Cooper and John P. Costas, and reprinted in IEEE Communications Magazine 21:2, March 1983, pp. 59-63.
 69. "Downstream Power Control for a Spread Spectrum Cellular Mobile Radio System." Conference Record of Globecom '82, Miami, FL, December 1982, Volume 1, Paper A3.5. With H. Alavi.
 70. "New Developments in Mobile Radio." Tutorial notes for National Telesystems Conference, NTC '82, Galveston, TX, November 7-10, 1982.
 71. "Addressing and Modulation for Frequency-Hopping Multiple Access." Conference Record of MILCOM '82, Boston, MA, October 17-20 1982, Paper 35.4.
 72. "Performance of a Frequency-Hopped, Differentially-Modulated Spread Spectrum Receiver in a Rayleigh Fading Channel." IEEE Transactions on Vehicular Technology, Special Issue on Spread Spectrum Mobile Radio, VT-30:1, pp. 14-28, February 1981.
 73. "Pros and Cons of Spread Spectrum in Mobile Radio." Published in *New Concepts in Multi-User Communications*, proceedings of the NATO Advanced Research Institute given at Norwich, England, August 1980, published in 1981 by Sijthoff and Noordhoff, Netherlands. Edited by J. Skwartzinski.
 74. "Traffic Theory and Interference Management for a Spread Spectrum Cellular Mobile Radio System." Conference Record of ICC '80, Seattle, WA, June 1980, Paper 24.5.
 75. "Spread Spectrum in Mobile Radio: A Progress Report." Industrial Communications 16, April 18 1980, pp. 9-11.
 76. "Traffic Loads in a Spread Spectrum Cellular Land Mobile Radio System." Conference Record of MIDCON '80, Session 15, Paper 3, Chicago, IL, November 6-8, 1979, Electrical and Electronics Exhibitions, Inc.
 77. "Spread Spectrum in a Fading, Interference Limited Environment." With George R. Cooper, Conference Record of ICC '79, Boston, MA, June 10-13, 1979.

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78. "Spread Spectrum for Personal Communication." With George Cooper, Conference Record of the IEEE 29th Vehicular Technology Conference, Arlington Heights, IL, March 27-30, 1979 pp. 1-6.
 79. "Cellular Land Mobile Radio: Why Spread Spectrum?" With George R. Cooper and David P. Grybos, IEEE Communications Magazine, V. 17:2, pp. 12-24 March 1979.
 80. "Spectral Efficiency of Spread Spectrum Land Mobile Communication Systems." With George R. Cooper, Conference Record of INTELCOM/79, Dallas, TX, Horizon House International, February 26 - March 2, 1979.
 81. "A Spread Spectrum Technique for High-Capacity Mobile Communications." With George R. Cooper, IEEE Transactions on Vehicular Technology, special issue on emerging 900 MHz technologies, VT-27:4, November 1978, pp. 264-275.
 82. "Error Performance of a Spread Spectrum Mobile Communications System in a Rapidly Fading Environment." With George R. Cooper, Conference Record of the National Telecommunications Conference, NTC '77, Los Angeles, CA, December 5-7, 1977, Paper 35-5.
 83. "Mutual Interference in Cellular LMR Systems: Narrowband and Broadband Techniques Compared." With George R. Cooper, Conference Record of MIDCON '77, Session 9, Paper 5, Chicago, IL, November 8-10, 1977. Electrical and Electronics Exhibitions, Inc.
 84. "Theoretical Upper Bounds on Spectral-Spatial Utilization in a Cellular Land Mobile Communication System." With George R. Cooper, presented at the IEEE 1977 International Symposium on Information Theory, Cornell University, Ithaca, NY, October 10-14, 1977. Published in abstract form only.
 85. "A Spread Spectrum Technique for High Capacity Mobile Communications." With George R. Cooper, Conference Record of the 27th Vehicular Technology Conference, Orlando, FL, March 16-18, 1977, pp. 98-103.

APPENDIX 1: EXPERT WITNESS SUMMARY 2011-2016¹

1. UNITED STATES DISTRICT COURT FOR NEW JERSEY

High Point SARL vs. T-Mobile

Case no. 2:12-cv-01453-DMC-JAD, *2012- ongoing*

Client: High Point SARL, represented by Dechert. Consulting. CDMA patents

2. US DISTRICT COURT NORTHERN DISTRICT OF ILLINOIS EASTERN DIVISION

US vs. Huanjan Jin

Case no. 80 CR 192, (Theft of trade secrets and economic espionage), *2010-2011 concluded*

Client: Federal Defender Program, Chicago. Prepared expert disclosure, testified at trial. iDEN technology.

3. UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLORADO

CellPort vs. Peiker

Civil Action No. 09-CV-01007-MSK-MJW, *2010-2013 concluded*

Client: CellPort, represented by Hutchinson Black & Cook. Product testing, report, deposition. Vehicular handset cradle patents.

4. UNITED STATES INTERNATIONAL TRADE COMMISSION WASHINGTON DC

Nokia vs. Apple

Investigation No. 337-TA-771, *2011- concluded*

Client: Nokia, represented by Alston Bird. Pre-litigation consultations. Smartphone, positioning and dual-RAT patents

5. U. S. DISTRICT COURT FOR THE DISTRICT OF DELAWARE, WILMINGTON DIVISION

Nokia vs. Apple

Case no. 09 CV 791, *2011- concluded*

Client: Nokia, represented by Alston Bird. Pre-litigation consultations. Battery saving, dual mode cellular, determination of external connected device, Bluetooth patents.

6. UNITED STATES INTERNATIONAL TRADE COMMISSION WASHINGTON DC

Sony vs. LG

Investigation no. 337-TA-758, *2011- concluded*

Client: Sony, represented by Kenyon & Kenyon. Product testing and expert report. HDPSA cell change, adaptive voice codec, modulation patents.

¹ In this section “*dates*”, “*ongoing*” and “*concluded*” refer to my professional involvement with the matter. The actual disposition of each case is publicly available at www.pacer.gov (except for Arbitrations, Tribunals, Australia, Netherlands and Canada cases)

7. STATE OF SOUTH CAROLINA COURT OF COMMON PLEAS SEVENTH JUDICIAL CIRCUIT

Joseph & Beverly Tonkovic vs. E.J. Pope & Son, Carl Bryson & Sons, et al

Cases no. 10-CP-42-3212 and 11-CP-42-0872, 2011- *concluded*

Client: Tonkovic, represented by Michael E Spears, PA. Pre-trial consulting. Cellphone location.

8. UNITED STATES INTERNATIONAL TRADE COMMISSION WASHINGTON DC

HTC vs. Apple

Investigation No. 337-TA-72, 2012- *concluded*

Client: HTC, represented by Finnegan, Henderson, Farabow, Garrett & Dunner. Prepared test plan. Battery saving patents.

9. UNITED STATES PATENT & TRADEMARK OFFICE

Reexamination of US Patent 5,958,006

Docket no. 357037US91RX, 2011- *concluded*

Client: Motorola, represented by Ropes & Gray. Prepared declarations. Data compression patent.

10. UNITED STATES DISTRICT COURT WESTERN DISTRICT OF WISCONSIN

Motorola Mobility & General Instrument vs. Microsoft

Case nos. 10-cv-00699, (*transferred to Western District of Washington*), 10-cv-00700, 2012-*ongoing*

Client: Motorola Mobility, represented by Ropes & Gray. Pre-litigation consulting. Optimized messaging patent.

11. UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF FLORIDA

Motorola Mobility & General Instrument vs. Microsoft

Case no. 10-cv-24063, 2012- *ongoing (transferred to Western District of Washington)*

Client: Motorola Mobility, represented by Ropes & Gray. Pre-litigation consulting. Messaging patent.

12. ORANGE COUNTY, CA SUPERIOR COURT

Orange County vs. Murphy & Krasnoperov

Case no. 07NF2970, 2011, *concluded [pro bono]*

Client: Charles Anthony Murphy, represented by Molfetta & Wasserman. Technical consulting. Cell phone location.

13. STATE OF IOWA DISTRICT COURT 8TH DISTRICT

State v. Christopher Pullman

Cause no. FECR 316896, 2012- *concluded*

Client: Office of the State Public Defender. Non-testifying technical consulting. Cellphone location.

14. ONTARIO SUPERIOR COURT OF JUSTICE COMMERCIAL LIST [CANADA]

Commissioner of Competition v Chatr Wireless and Rogers Communications

Case no. CV-10-8993-00CL, 2012- *concluded*

Client: Commissioner of Competition, Canada, Represented By Lenczner Slaght Royce Smith Griffin. Prepared expert report. False advertising – dropped call statistics.

15. UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF CALIFORNIA

ViaSat et al v. Space Systems/Loral et al

Case No. 3:12-cv-00260-H-WVG – 2012- *ongoing*

Client: ViaSat represented by Quinn Emanuel. Pre-litigation consulting. Satellite patents.

16. U. S. DISTRICT COURT, EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION

Apple v Samsung

Case no. 12-cv-000630-LHK, 2012- *concluded*

Client: Samsung represented by Quinn Emanuel. Pre-litigation consulting. 3Gpp HSPA patents.

17. UNITED STATES DISTRICT COURT, NORTHERN DISTRICT OF ILLINOIS

Cisco et al v Innovatio IP Ventures

Case no. 11-cv-9308, 2011- *ongoing*

Client: Innovatio IP Ventures. Site inspection, code review. Prepared expert report, rebuttal expert report. Deposed. Testified at trial. IEEE 802.11 patents.

18. U. S. DISTRICT COURT, EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION

Mosaid v Marvell et al

Case no. 2:11cv179, 2011- 2013, *concluded*

Client: Mosaid, represented by McKool Smith. Prepared expert report. IEEE 802.11 patents.

19. UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF CALIFORNIA

Apple v Motorola Mobility

Case no. 3:12cv00355, 2012- *concluded*

Client: Motorola Mobility, represented by Winston Strawn. Prepared expert report. Breach of contract.

20. SUPERIOR COURT OF CALIFORNIA, COUNTY OF ORANGE

People v Ronald Jordan

Case No. 11HF2340, 2013-, *concluded [pro bono]*

Client: Ronald Jordan, represented by Robison Harley. Testified at trial. Location of cell phone.

21. U. S. DISTRICT COURT NORTHERN DISTRICT OF CALIFORNIA, SAN FRANCISCO DIV.

Barnes & Noble et al v LSI Corp & Agere Systems

Case No. 11-CV-02709-EMC-LB, 2012-2014, *concluded*

Client: LSI, represented by Fenwick & West. Reviewed code, prepared declaration

22. U. S. DISTRICT COURT NORTHERN DISTRICT OF TEXAS, DALLAS DIVISION

MTel vs. RIM

Civil Action No. 3:12-CV-1652-M, 2013-, *ongoing*

Client: MTel, represented by Reed & Scardino – related to cellular messaging and simulcasting. Infringement analysis. Testified at deposition.

23. U. S. DISTRICT COURT EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION

MTel vs. Sprint Nextel

Case No. 2:12-cv-832-JRG-RSP, 2013-2014, *concluded*

Client: MTel, represented by Reed & Scardino – related to cellular messaging and simulcasting. Infringement analysis, prepared declaration

24. U. S. DISTRICT COURT EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION

MTel vs. Apple

Case No. 2:13-cv-258-JRG-RSP, 2013-2014, *concluded*

Client: MTel, represented by Reed & Scardino – related to cellular messaging and simulcasting. Prepared reports, testified in depositions and at trial

25. U. S. PATENT & TRADEMARK OFFICE, PATENT TRIAL & APPEAL BOARD

NEC IPR vs. CCE

Case No. 2:13-cv-258-JRG-RSP, 2014, *concluded*

Client: NEC, represented by Morgan Lewis – related to cellular neighbor cell information. Inter Partes Review of U. S. Patent no. 6,819,923. Prior art analysis, prepared Expert Declaration under 37 C.F.R. § 1.1328

26. U. S. DISTRICT COURT EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION

MTel vs. Samsung

Case No. 2:13-cv-258-JRG-RSP, 2013-2015, *concluded*

Client: MTel, represented by Reed & Scardino – related to cellular messaging. Prepared reports, testified in depositions and at trial

27. FEDERAL COURT OF AUSTRALIA, NEW SOUTH WALES, GENERAL DIVISION

Voxson Pty Ltd. vs. Telstra Corporation et al

Case No. NSD2436, 2013- *ongoing*

Client: Voxson, represented by Dibbs Barker – related to mobile location technologies. Infringement analysis, prepared declaration

28. INTERNATIONAL COURT OF ARBITRATION, INTERNATIONAL CHAMBER OF COMMERCE

Interdigital Communications Inc. et al vs. Huawei et al

Case No. 20171/RD, 2014- *concluded*

Client: Interdigital, represented by Wilson Sonsini – infringement damages related to wireless patent portfolio. Prepared report, testified at deposition and in tribunal.

29. U. S. PATENT AND TRADEMARK OFFICE, PATENT TRIAL & APPEAL BOARD

Inter Partes Review of U. S. Patent 6,819,923

Trial Number: IPR2014-01131, 2014- *concluded*

Client: ZTE and HTC, represented by Pillsbury (*ongoing*). Prior art analysis, prepared Expert Declaration under 37 C.F.R. § 1.1328

30. U. S. DISTRICT COURT, DISTRICT OF DELAWARE

M2M Solutions LLC vs. Sierra Wireless

Case No. 12-030-RGA, 2012- *ongoing*

Client: M2M Solutions, represented by Foley Lardner – related to wireless monitoring devices. Prepared report

31. U. S. DISTRICT COURT, DISTRICT OF DELAWARE

M2M Solutions LLC vs. Enfora/Novatel

Case No. 12-032-RGA, 2012- *ongoing*

Client: M2M Solutions, represented by Foley Lardner – related to wireless monitoring devices. Prepared report, testified at deposition

32. U. S. DISTRICT COURT, DISTRICT OF DELAWARE

M2M Solutions LLC vs. Motorola / Telit

Case No. 12-033-RGA, 2012- *ongoing*

Client: M2M Solutions, represented by Foley Lardner – related to wireless monitoring devices.
Prepared report, testified at deposition

33. ICDR, INTERNATIONAL ARBITRATION TRIBUNAL

Clear Talk (DBA) vs. ZTE

Case No. ICDR N 50 198 T 00174 13, 2012-2014, *concluded*

Client: ZTE, represented by Hogan Lovells – Fraud and Breach of Contract. Prepared reports,
testified in deposition and at the arbitration hearing.

34. U. S. DISTRICT COURT, EASTERN DISTRICT OF WASHINGTON

Clear Talk (DBA) vs. ZTE

Case No. 12-CV- 110-TOR, 2015, *concluded*

Client: ZTE, represented by Hogan Lovells – Fraud and Breach of Contract. Pre-trial consultation.

35. THE HAGUE DISTRICT COURT, NETHERLANDS

ZTE Netherlands B.V. vs. Vringo Infrastructure Inc.

Case No. C/09/481474 / HA ZA 15-100, 2015 *concluded*

Client: ZTE Netherlands BV, represented by Brinkhof – related to the validity of European patent
no. EP 1186119 B2. Prepared reports, attended hearing in The Hague.

36. SUPERIOR COURT OF THE STATE OF CALIFORNIA COUNTY OF RIVERSIDE

People of CA vs. Diana Garcia

Case No. INF1500067, 2016 *concluded [pro bono]*

Client: Diana Garcia, represented by Bosky Kathuria. Location of cell phone
