DR. RAY W. NETTLETON

12605 JULIAN POINT
BROOMFIELD, CO 80020
720 227 9080 OFFICE
720 229 0524 FAX
303 466 5618 HOME
303 809 4223 MOBILE
ray@raynettleton.com
www.raynettleton.com

Dr. Nettleton has been a leader in the telecommunications industry for some 44 years, as an entrepreneur, corporate officer, international businessperson and consultant, engineer, educator, author, lecturer, researcher, and expert witness.

Expert Witness

- Expert witness in several patent infringement lawsuits – see appendix
- Provided expert witness testimony to Government hearings in Colombia, Brazil, New Zealand, Poland, UK, Ireland, South Africa, Philippines, and the FCC
- Ex Parte presentations to FCC staff and Commissioners on behalf of clients and IEEE

International telecommunications businessperson & consultant

- Consulting clients include Ball Wireless, Milcom Technologies, MCI, Avantel 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 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, 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

- Technical advisor and analyst to Evox, Inc., a startup specializing in novel spectrum spreading waveforms
- Established the first LMDS cellular propagation and interference trials (Phoenix, Arizona)
- Created the Boulder Industry PCS Test Bed and conducted trials with multiple vendors
- Awarded the first two patents in CDMA technology for cellular telephone systems, issued in 1978 (stemming from PhD thesis research)
- 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 & Researcher

- Associate Professor Adjunct, University of Colorado – Boulder, Interdisciplinary Telecommunications Program
- Taught electrical engineering at Michigan State University, University of Maryland, Johns Hopkins University, and University of Denver
- Conducted research in system performance, power control and code design for CDMA
- Lectured in various training programs for client company employees
- 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:

- New product development for Pfizer Animal Health, 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 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)
- 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
- **Expert witness** in U. S. intellectual property litigation (see appendix for public domain details.) Expert witness to Government wireless telecom-related hearings including the International Trade Commission and the Federal Communication Commission.

April 2002 – Present: ASSOCIATE PROFESSOR 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.

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

Perform 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.

- One of three-executive team responsible for acquisition of Fixed Wireless Access Licenses in:

- USA (through participation in the WNP consortium – now owned by XO)
- Argentina, Colombia, Peru, Uruguay (now owned by Velocom)
- Ecuador (now sold)
- Norway, Ireland, Finland, Denmark, Poland, Luxembourg, Belgium
- Spain (through participation in the Abrared consortium)
- Germany and Switzerland (through wholly owned subsidiary Callino)
- New Zealand (sold to Clear Communications)

- Also participated in planning for businesses in South Africa, Malaysia, Singapore, Thailand, 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 (now Qwest). 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 unserved 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., 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
- 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

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.

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. “Solving the Last Mile Problem with Centimeter-Wave Fixed Broadband Wireless”, multiclient report to be published by RHK, Fall 2001

27. "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

28. "Eliminating the Truck Roll Problem in BWA", WCAI Conference Wireless Now!, Boston, MA, June 27-30, 2001

29. "Millimeter Wave Equipment Outlook II", IWPC conference Millimeter Wave Supply Chain Summit, Washington, D.C., April 2001

30. "Broadband Wireless Access in Europe", KC Global Conference on Broadband Access, Amsterdam, October 23rd 2000

31. "The Outlook for Multipoint Broadband Wireless Access", Keynote speech at the Broadband Solutions Conference, Dallas, April 10th 2000;

32. "Formus and Multipoint Systems", IBC Broadband Summit at the Dorchester, London, April 17th 2000;

33. "Formus and Multipoint Systems", Convergence 2000 conference in Brussels, May 22nd 2000;

34. "Economics of Broadband Wireless Access", IBC Broadband Conference in Stockholm, June 15th 2000;

35. "What Service Providers Want", Wireless Communications Association's WCA2000 at the New Orleans Convention Center, July 11th 2000.

36. "Standards in BWA", Wireless Communications Association's WCA2000 at the New Orleans Convention Center, July 10th 2000.

37. "Millimeter Wave Equipment Outlook", IWPC conference Millimeter Wave Supply Chain Summit, New Orleans Convention Center, July 9th 2000.

38. "Formus and Fixed Wireless Access", Private and Wireless Conference 99, Denver Convention Center, September 1999

39. "Formus and Fixed Wireless Access", RAWCON 99, Marriot Denver South, August 1999.

40. "Formus and Fixed Wireless Access", WCA 1999 at the New Orleans Convention Center, July 1999.

41. "LMDS: Its Competitors and Complements", International Institute for Research Broadband Wireless Conference, Phoenix, Arizona, December 1998

42. "LMDS: The Target Markets", International Institute for Research Broadband Wireless Conference, December 1998

43. "LMDS and Point-to-Multipoint Technology", Shorecliff Broadband Wireless Conference, May 1998

44. "LMDS and Point-to-Multipoint Technology", COMDEX '98, April 1998

45. "REACH: A High-Performance Cellular Base Station Front End", Wireless Personal Communications Technologies and Services, SPIE Conference, Philadelphia, PA, October 1995

46. “Post Auction Stress Syndrome”, RCR, September 1995. With Dr. Pierre Dogan

47. “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.

48. “PCS in the USA and in the World,” invited tutorial at the International Telecommunications Symposium, Rio de Janiero, August 22 1994.

49. 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.

50. "U S WEST's Trial Portfolio," PIMRC Conference, Yokahama, Japan, October 13th 1993.

51. "Personal Communications in the Banking Industry," Banking '93 Conference, New Orleans, May 25th 1993.

52. "Personal Communications and U S WEST," Keynote Address, National Wireless & Radio Engineers Conference, Denver, CO, June 1 - 4, 1992.

53. "Preventing Dominance in the Cellular Mobile Telephone Market," report on behalf or First City for the September 11 - 12, 1990 hearings, New Zealand Commerce Commission

54. "Traffic Statistics in a Self-Organizing Cellular Telephone Scheme," 40th IEEE Conference on Vehicular Technology, May 6-9, 1990, Orlando, FL

55. "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.

56. "A High-Capacity Assignment Method for Cellular Mobile Telephone Systems," 39th IEEE Conference on Vehicular Technology, May 1-3, 1989, San Francisco, CA.

57. "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.

58. "Airborne Tactical EHF Communications." Milcom '85, Boston, October 1985. Classified **SECRET**.

59. "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**.

60. "Terrestrial Radio Links." Section 49.1 of Handbook of Modern Electrical and Electronic Engineering. Edited by Charles Belove, Wiley, 1986.

61. "Acquisition and Tracking for Frequency-Hopping HF Communications." URSI meeting, Boulder, CO., January 1984.

62. "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.

63. "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.

64. "Spectrum Efficient Cellular Mobile Communications." Tutorial paper for 33rd Annual Vehicular Technology Conference, Toronto, Ontario, May 25-27, 1983, Session C2.

65. "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.

66. "Cellular Mobile Communications; the Great Multiplier." With George R. Cooper, IEEE Spectrum, April 1983.

67. "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.

68. "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.

69. "New Developments in Mobile Radio." Tutorial notes for National Telesystems Conference, NTC '82, Galveston, TX, November 7-10, 1982.

70. "Addressing and Modulation for Frequency-Hopping Multiple Access." Conference Record of MILCOM '82, Boston, MA, October 17-20 1982, Paper 35.4.

71. "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.

72. "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. Skwirtzinski.

73. "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.

74. "Spread Spectrum in Mobile Radio: A Progress Report." Industrial Communications 16, April 18 1980, pp. 9-11.

75. "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.

76. "Spread Spectrum in a Fading, Interference Limited Environment." With George R. Cooper, Conference Record of ICC '79, Boston, MA, June 10-13, 1979.

77. "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.

78. "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.

79. "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.

80. "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.

81. "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.

82. "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.

83. "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.

84. "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: EXPERT WITNESS & CONSULTING SUMMARY

1. UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE WILMINGTON

ISCO International, Inc., Plaintiff, v. Conductus, Inc. and Superconductor Technologies, Inc., Defendants

Civil Action No. 01-487 (GMS) *concluded*

Client: ISCO International, represented by Morgan Finnegan. Prepared expert reports, gave deposition

Contact John T. Moehringer, jmoehringer@morganfinnegan.com, (212) 415-8646

2. UNITED STATES DISTRICT COURT NORTHERN DISTRICT OF ILLINOIS EASTERN DIVISION CHICAGO

Westell Technologies, Inc., Plaintiff, v. Hyperedge Corporation, Defendant

Civil Action No. 02-C-3496 *concluded*

Client: Westell Technologies, represented by McDonnel Boehnen. Prepared expert reports, conducted laboratory tests, gave deposition

Contact Marcus Thymian, thymian@mbhb.com (312) 913-0001

3. UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF NEW YORK

Cellularvision Technology & Telecommunications, Inc., Plaintiffs, v. WIC Amalco, Inc., Canwest Global Communications Corp., and Shaw Communications Inc., Defendants

Civil Action No. 01-CV-4094 (BCC) (DFE) *concluded*

Client: Cellularvision Technology & Telecommunications represented by Nixon Peabody Prepared expert reports, gave deposition

Contact Frank Ryan, fryan@nixonpeabody.com (212) 940-3000

4. SPECTRUM EVALUATION FOR WIRELESS NETWORK IN HAWAII

Engineering assignment: *Concluded*

Client: Hawaiian Telcom

5. EVALUATION OF A PATENT PORTFOLIO

Intellectual Property assignment: *Concluded*

Client: Wong Cabello, representing Alcatel Inc.

6. RADIO COVERAGE PLANNING AND ENGINEERING FOR MOVING A RADIO TOWER

Engineering assignment: *Concluded*

Client: Clear Creek County, Colorado

7. UNITED STATES DISTRICT COURT EASTERN DISTRICT OF TEXAS BEAUMONT DIVISION

Finisar Corporation, Plaintiff, v. DIRECTV, Defendant

Cause No. 1:05-cv-00264, *concluded*

Client: Finisar, represented by Workman Nydegger Prepared expert reports, gave deposition

Contact C J Veverka, CVeverka@WNLaw.com (801) 533-9800

8. UNITED STATES INTERNATIONAL TRADE COMMISSION WASHINGTON DC

In the matter of certain baseband processor chips and chipsets, transmitter and receiver (radio) chips, power control chips, and products containing same, including cellular telephone handsets; Broadcom, Complainant; Qualcomm, Respondent

Investigation no. 337-TA-543, *ongoing*

Client: Broadcom, represented by Wilmer Hale Prepared expert reports, conducted laboratory tests, gave deposition, testified in court

Contact James Dowd, James.Dowd@wilmerhale.com (202) 942-8433

9. UNITED STATES DISTRICT COURT CENTRAL DISTRICT OF CALIFORNIA SOUTHERN DIVISION

Qualcomm, Inc. plaintiff, v. Broadcom Inc, defendant

Civil Action No. 05-CV-1392 B (BLM), *ongoing*

Client: Broadcom, represented by Wilmer Hale. Prepared expert reports

Contact: Dan Esrick, Daniel.Esrick@wilmerhale.com (617) 526 6529

10. UNITED STATES DISTRICT COURT CENTRAL DISTRICT OF CALIFORNIA SOUTHERN DIVISION

Qualcomm, Inc. plaintiff-in-counterclaim, v. Broadcom Inc, defendant-in-counterclaim

Civil Action No. SACV05-467-JVS (RNBx), *ongoing*

Client: Broadcom, represented by Wilmer Hale. Prepared expert reports

Contact Gregory Noonan, Gregory.Noonan@wilmerhale.com (650) 858-6034

11. UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF TEXAS HOUSTON DIVISION

TIP Systems LLC et. al., Plaintiff, v. Phillips & Brooks / Gladwin et. al.

Civil Action No. H-04-3718, *ongoing*

Client: TIP Systems, represented by Obermayer. Prepared expert reports, conducted laboratory tests on accused equipment, gave deposition

Client: Texas Inmate Phones, represented by Obermayer Rebmann Maxwell & Hippel LLP

Contact: Mark Styron, MStyronTIP@aol.com, (281) 998-7825

12. UNITED STATES DISTRICT COURT EASTERN DISTRICT OF TEXAS MARSHALL DIVISION

Goldenbridge Technologies, Inc., plaintiff, v. Lucent & Nokia, joint defendants

Civil Action No. 2-05CV-151-LED, *ongoing*

Client: Lucent, represented by Latham Watkins. Prepared expert reports

Contact: Sean Pak, Sean.Pak@lw.com, (213) 891-7836

13. UNITED STATES DISTRICT COURT CENTRAL DISTRICT OF CALIFORNIA SOUTHERN DIVISION

Qualcomm, Inc. plaintiff, v. Broadcom Inc, defendant

Civil Action No. Case No. 06-CV-0660 B (AJB), *ongoing*

Client: Broadcom, represented by Keker & van Nest. Prepared expert reports

Contact: Ben Hur, BHur@kvn.com (415) 391-5400

14. NEW PRODUCT DEVELOPMENT FOR A PET TRACKING COLLAR

Engineering assignment: *Ongoing*

Client: Pfizer Animal Health, Inc.

15. NEW PRODUCT DEVELOPMENT FOR A COVERT RADIO COMMUNICATION SYSTEM

Engineering assignment: *Ongoing*

Client: Evox, Inc.