James A. Proctor Jr.

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EDUCATION

Georgia Institute of Technology, Atlanta, Georgia — M.S. Electrical Engineering
Graduated: September 1992
Interests: Digital Signal Processing, Communications, Optics

The University of Florida, Gainesville, Florida — B.S. Electrical Engineering
Graduated: May 1991
Minor Studies: Business
Honors & Activities: PI ETA SIGMA Honor Society
ALPHA LAMBDA DELTA Freshman Honor Society
ETA KAPPA NU National Electrical Engineering Fraternity

Skills & Achievements

- Successfully led Qualcomm / WiDeFi integration efforts resulting in a new product effort within Qualcomm related to the 3G/4G Market
- Co-founded WiDeFi and successfully raised >$14M of venture funding
- Generated intellectual property and product strategy leading to the acquisition of two companies (WiDeFi, and Tantivy Communications), contributing to > $100M of revenue
- Performed extensive customer and industry business development to provide support for innovative product definition, requirement definition, and customer support for business plan and forecasts (Qualcomm, WiDeFi, and Tantivy Communications)
- Led and coached many R&D teams to refine and de-risk innovative wireless concepts
- Led cross functional product teams to deliver high volume ready prototypes
- Ability to balance market, programmatic, and technical concerns and refine clear strategy and actionable plans
- Generated >320 issued US Patents Currently and >700 international patent publications
- Have spoken at numerous public events: industry, venture, and technical
- Strong communication and technical skills

Work Experience

Proctor Consulting, LLC — **December 2008 - Present**

- Early stage market and technology strategy
  - Interim CTO/Team Member, business development/validation
  - Roadmap / IP development
  - Advisory Board Member
- Technical / Market Consultant
  - Fastback Networks, Audigence, Peregrine Semiconductor
- Intellectual property portfolio analysis within the communications market space
  - Market / Product Applicability, Claims Chart Development and Analysis, Valuation
  - Expert Witness Consulting in Wireless Communications (WiFi, 2G-GSM, 3G-C2K/WCDMA, 4G/LTE and associated networks)

Proxicom Wireless. Co-Founder, Managing Director — **November 2011 – Present**

- Proximity based mobile technology utilizing a centralized trusted third party
- Development of foundational Intellectual Property (12+ US Patents)
- Enabling technology applicable to a variety of proximity based applications including highly secure: Mobile Payments, Electronic Coupons and Loyalty, Rating and Reviews, Social Commerce

Qualcomm Inc., Principal Engineer (Consulting) **October 2007 - October 2009**

- Technical and Business development leadership of a consumer level 3G wireless repeater product concept based upon WiDeFi's technology during the integration
- Provided technical leadership in architecture development
    - Defined initial architecture approach for the wireless repeater concept based upon WiDeFi's technology
    - Worked with technical team to refine approach and achieve "key proof points"
- Performed Business Development with International Wireless Operators
    - Worked closely with business development from ESG and QCT divisions
    - Developed bottoms up forecast with the top international wireless operators for consumer repeater products.
    - Refined product features to meet carrier's requirements
- Market Analysis to estimate Market Size and Competitive Landscape
- Named inventor on 44+ Issued or pending patents for Qualcomm on wireless repeater concepts

WiDeFi, Inc., EVP/CTO, and Co-Founder, Director **August 2005 - October 2007**

- Focused on aligning WiDeFi's technology and product roadmaps to customer and market drivers
    - Strategic and Technical Marketing, Product Definition
    - Market Analysis to estimate Market Size and Competitive Landscape
    - Collaborated with customers and internal team to define and pursue product/customer opportunities (Retail Wi-Fi, Mesh Repeater, VoiP over Wi-Fi Repeater, Cellular Repeaters, Wi-Max Repeaters, In-Building Distribution Systems)
    - Customer Development from initial contact, joint testing, first purchase order, to new product introduction
    - Contributed to and managed WiDeFi's IP portfolio
    - Pursued fund raising from corporate and venture capital communities

WiDeFi, Inc., President, CEO, and Co-Founder, Director **July 2002 - August 2005**

- Led WiDeFi from inception to the recruitment of an expansion-stage CEO.
- Principal duties:
    - Direct Fundraising of initial seed and Series A Venture Capital
    - General Management (Finance, Business Administration, Legal/Contracts and Organizational Development/Recruiting)
    - Coordination of Board of Directors and Investors
    - Sales (WiDeFi was Cash Flow positive prior to venture investment)

Tantivy Communications **April 1998 - June 2002**
Director of Strategic and Technical Marketing

- Business Development/Technical Due Diligence
- Represented Tantivy in a wide range of Wireless Broad Band Industry Conferences
- Intellectual Property Management and Strategy
    - Represented Tantivy's Patents and their value to External Companies
    - Performed Validity, Infringement, and Value Analysis of Tantivy Patents for non-Tantivy products
- Industry Standards Representation for 3G Technologies
    - TIA/3GPP2, Over 15 Technical Contributions/Papers
    - T1P1 (3GPP Member)
- Project Management of an International Technology Transfer Team (S Korea)
- Performed System Architecture and Analysis

Spectrian, **Advanced Development and Technical Marketing** **1995 - April 1998**

- Interfaced with NORTEL/Qualcomm's Product Management
- Performed Advanced Technology Development/Systems Analysis

Harris Corp. GCSD, **September 1992 - 1995**
Senior Engineer Signal Processing Section, Modems Group

Georgia Tech Research Institute, CSITL **June 1991 - August 1992**

Harris Corp.. ISD, Electro-optics, Co-op **May 1990 - August 1990**
- Acousto-optic signal processing

Standards Development

- Participated in architecting "Internet CDMA" (I-CDMA)
- Jointly led establishment of the Committee T1, working group T1P1.4 "WWINA" standardization effort, which stands for "Wireless Wideband Internet Access"
  - T1 Approved this system as the T1.723-2002 standard
- ATIS approved as **ATIS0700723-2002 I-CDMA Spread Spectrum Systems Air Interface Standard**
- Participated in 3GPP2 Standards Developments (including 15+ technical contributions)

Intellectual Property

- More than 320 Issued U.S. Patents
- More than 700 Issued or Pending International Patent Applications (WIPO)
- Patents Cited at the USPTO more than 6000 times
- 55+ Patents Assigned to Intel
- 45+ Patents Assigned to Qualcomm
- 16+ Patents designated as "Standards Essential" for UMTS (WCDMA)
- 6+ Patents designated as "Standards Essential" for LTE

Testifying Expert Experience

SPH Am., LLC v. Acer, Inc., 09CV02535-CAB MDD, 2012 WL 1344515 (S.D. Cal. Apr. 18, 2012).
Testifying Expert offering opinions on validity for the defense. The technology related to WCDMA modulation techniques. Resulted in settlement prior to trial.

WI-LAN USA, INC. and WI-LAN INC. v. ELEFONAKTIEBOLAGET LM ERICSSON and ERICSSON INC., Case No. I:12-23569-Civ (S.D. FL)
Testifying expert offering opinions on infringement for the defense. The technology involved LTE "contention free" handover (CFRA), and Media Access Control (MAC) layer messaging for Quality of Service (QOS). Resulted in a summary judgement finding of non-infringement for the defense, and settlement after appeal.

U.S. ETHERNET INNOVATIONS, LLC. V. STMICROELECTRONICS, INC.,
Civil Action No. 6:12-cv-4181-MHS-JDL
Testifying expert offering opinions on both validity and infringement for the defense. The technology related to Ethernet devices. Resulted in settlement prior to trial.

UNWIRED PLANET. V. SQUARE, INC.,
Case No. 3:13-CV-00579-RCJ-WGC, DISTRICT OF NEVADA,
Case CBM2014-00156, Case IPR2014-01164, Case IPR2014-01165, UNITED STATES PATENT TRIAL AND APPEAL BOARD,

Provided testimony related to claim construction, and validity for the defense. The technology was related to location based services (LBS). The case resulted in a finding by the Patent Trial and Appeal Board of unpatentability of all asserted claims.

PRISM TECHNOLOGIES LLC. V. T-MOBILE USA, INC., Case No. 12-CV-124

Testifying expert at trial, and deposition offering opinions on both validity and infringement for the defense. The technology was related to SIM/USIM/ISIM based authentication in UMTS, LTE, and IMS networks. The case resulted in a jury verdict of non-infringement.

FASTVDO LLC. V. AT&T Mobility LLC, AT&T Services, Inc., and Apple Inc.,
Case No. 3:16-cv-00385-H-WVG

Engaged by Apple as the testifying expert offering opinions on infringement for the defense. The technology was related to Forward Error Correction (FEC) and voice codecs in GSM and WCDMA standards, including detailed FEC performance simulations. The case was concluded based upon an IPR outcome finding unpatentable subject matter by the PTAB.

BLACKBERRY LIMITED V. BLU PRODUCTS, INC.,
Case No.: 16-23535-CIV-MORENO

Engaged by Blackberry as the testifying expert offering opinions on infringement for the plaintiff. The technology involved WCDMA and battery saving techniques in Radio Resource Control (RRC) states. The case was settled between the parties prior to trial.

CELLULAR COMMUNICATIONS EQUIPMENT LLC V. AT&T Inc., and Apple Inc.
Case No.: 2:15-cv-00576-RWS-RSP

Engaged engaged by Apple as the testifying expert offering opinions on validity and benefits of the alleged inventions for the defense. The technology involved Media Access Control (MAC) messaging for LTE (Power Headroom Reporting) and LTE Advanced (CSI reporting for Carrier Aggregation). The case resulted in summary judgement for the defense.

GENERAL ACCESS SOLUTIONS, LTD. v. Sprint Corporation et al.
Civil Action No. 2:16-cv- 00465 (E.D. Tex.) and PTAB Proceedings (IPR2017-01885 (Patent 7,173,916 B2) IPR2017-01887 (Patent 6,891,810 B2) IPR2017-01889 (Patent 7,230,931 B2),

Engaged by Sprint to provide expert testimony relating to claim construction, and validity for the defense before the Patent Trial and Appeal Board (PTAB) relating to an Inter Partes Review petition, providing multiple expert declarations, and deposition testimony. The technology related to Adaptive Modulation and Coding (AMC) in a wireless system; Adaptive Beamforming, Sectorization, and Multi-Input Multi-Output (MIMO). All trials were instituted by the PTAB Board, with a finding of all petitioned claims unpatentable for two of the three patents.

TC TECHNOLOGY LLC. V., Sprint Corporation and Sprint Spectrum, L.P
Case 1:16-cv-00153-RGA

Engaged by Sprint to provide expert testimony relating to validity and infringement by the defense, in the district of Delaware. The technology related to OFDMA and SC-FDMA use in the LTE uplink, for multiplexing transmissions from different UEs utilizing mutually exclusive OFDM subcarriers. The matter is currently pending.

Mobility Workx, LLC v T-Mobile US, Inc.
Civil Action No. 4:17-cv-00567-ALM
Retained by the defendant, and provided declarations and deposition for claim construction, engaged for both invalidity and non-infringement analysis and testimony. This matter relates to LTE handover, and Mobile IP. The case was settled between the parties prior to trial.

Mobility Workx, LLC v Cellco Partnership d/b/a Verizon Wireless
Case No. 4:17-cv-872-ALM
Retained by the defendant, engaged for both invalidity and non-infringement analysis and testimony. This matter relates to LTE handover, and Mobile IP. The case further related to 3GPP compliance testing techniques. This matter was resolved during trial preparation.

Uniloc USA, Inc., et al. v. Apple Inc.
No. 18-cv-158 and 18-cv-161, engaged by Apple as a technical and testifying expert. This matter relates to Quality of Service aspect of 3G UMTS (WCDMA), and the request and allocation of uplink resources in LTE. The matter was stayed, pending result of PTAB IPR Trial.

Wi-LAN v. LG,
Case No. Case No.: 3:18-cv-01577-H-BGS
Engaged by LG as a technical and testifying expert. The technology involved LTE "contention free" handover (CFRA), Media Access Control (MAC) layer messaging for bandwidth management and Quality of Service (QOS). This matter was resolved.

Fractus, S.A. v. Sprint Communications Company, L.P. et al.,
Civil Action No. 2:18-cv-00135 (E.D. Tex.), Engaged by Sprint and Verizon Wireless as a technical and testifying expert for invalidity. The technology involved design aspects of antenna element placement in multiband antenna arrays for use at cellular base stations. This matter was resolved.

Wilson Electronics, LLC v.Cellphone-Mate,Inc. dba SureCall,
Case No. 2:17-cv- 00305-DB (District of Utah)
Retained by the Wilson Electronics, and engaged for both invalidity and non-infringement analysis and testimony in both district court and in ITU proceedings. This matter relates to cellular multi-band wireless signal boosters / repeaters. This matter was resolved.

Sol IP, LLC v Joint Defense Group (AT&T, Ericsson, Nokia, Sprint, Verizon)
Civil Action No. 2:18-cv-00526 (E.D. Tex.)
Retained by each of the defendants, and engaged to provide testimony relating to infringement of the asserted claims for 8 of the asserted patents. The subject matter related to random access, paging, resource allocation, and carrier aggregation in LTE. The matter was resolved.

Polaris PowerLED Technologies, LLC v. TCL Corporation, et al., C.D. California Civil Action No.: 8:20-cv-00127-JVS-DFMBGL Ref. No.: 16725-7 and 16725-8
Engaged by TCL and Hisense to provide expert testimony in district court and to provide a declaration as an expert in an Inter Party Review (IPR) proceeding before the U.S Patent Trial and Appeals Board. The subject matter related to power supply circuitry for use in backlight displays and U.S. Pat. No 11,011,752. The IPR was instituted, and the proceedings were terminated following settlement.

SmartSky Networks v. Wireless Systems Solutions, LLC; DAG Wireless Solutions, et al., M.D. North Carolina (Case No. 1:20-cv-00834-NCT-LPA), and related arbitration proceedings
Engaged by SmartSky to provide expert testimony related to a trade secret dispute in district court, and an arbitration proceeding. The technology related to air to ground internet service for aircraft using a proprietary LTE derived system including airborne radios and ground stations allowing for increased range and velocity beyond that which can be provided by standards based LTE systems. The system includes advanced UE and eNodeB architectures, and modified LTE protocols. I provided expert reports and declarations in both district court and arbitration. I further provided live testimony before an arbitration panel. The arbitration panel found in favor of SmartSky, resulting achieving a successful injunction against WSS/DAG.

Dali Wireless v. JMA Wireless, Civil Action 1:99-mc-09999
Engaged by JMA Wireless to provide several declarations as an expert in an Inter Party Review (IPR) proceeding before the U.S Patent Trial and Appeals Board, and further testimony relating to the district course cases. The subject matter related to in-building wireless signal distribution systems utilizing digital network (CPRI / IP packetized) interfaces and as well as LTE eNodeB architectures. This matter was resolved.

Dali Wireless v. Corning Optical Communications LLC, No. 3:20-cv-06469 (N.D. Cal.) and Dali Wireless, Inc. v. Corning Incorporated et al., No. 6:20-cv-00827 (W.D. Tex.)
Engaged by Corning to provide several declarations as an expert in an Inter Party Review (IPR) proceeding before the U.S Patent Trial and Appeals Board and further testimony relating to the district course cases. The subject matter related to distributed antenna systems for in-building wireless signal distribution as well as intercell frequency reuse and interference management techniques. This matter remains pending.

Flexiworld Technologies, Inc. v. Amazon.com, Inc., et al., Case No. 6:20-cv-00553-ADA,
Engaged by Amazon to provide testimony for district court matter in the Western District of Texas. The matter related to approaches for mobile devices to utilize Bluetooth to interface with smart speakers and servers, allowing for the request of content to be played by an output device (speaker) based upon specific requests, including in some cases voice requests. This matter was transferred to another district and remains pending.

WSOU Investments, LLC d/b/a Brazos Licensing and Development v. Huawei Technologies Co., Ltd. et al., 6:20-cv-00544 (W.D. Tex.)
Engaged by Huawei to provide expert testimony in district court. The matter related to LTE protocols and signaling, Hybrid ARQ, and scheduling of retransmissions relative to new transmissions from a UE to an eNodeB. I provided a claim construction declaration, prior to the matter being resolved.

Ericsson, Inc. IPR petition of 7,532,865, (TOT Power Control, S.L, Patent Owner)
Engaged by Ericsson, Inc. to provide a declaration as an expert in an Inter Party Review (IPR) proceeding before the U.S Patent Trial and Appeals Board, relating to US. Pat. No. 7,532,865. The matter involved “outer loop” power control techniques in WCDMA systems or other mobile devices.

Sierra Wireless et al, IPR petition of 7,215,653 (Sisvel, Patent Owner).
Engaged by Sierra Wireless to provide a declaration as an expert in an Inter Party Review (IPR) proceeding before the U.S. Patent Trial and Appeals Board, relating to US. Pat. No. 7,215,653. This matter involved the control of uplink data rates and power control in a CDMA system called 1xEV-DO developed within the 3GPP2 standards, in which I personally participated. The IPR was instituted by the PTAB, and remains pending.

KAIFI LLC v. T-Mobile US, Inc. et al., Case No. 2:20-cv-281-JRG (E.D. Tex.)
Engaged by T-Mobile to provide expert testimony for both (in)validity and (non)infringement for a district court matter in the Eastern District of Texas. The matter involved a mobile device’s roaming between an outdoor cellular / LTE networks and an indoor Wi-Fi network. It further included approaches for the LTE core network to perform the selection of transmission paths of VoLTE and VoWiFi signals involving the LTE core (EPC), including the ePDG, and IMS networks. This matter settled.

KAIFI LLC v. Verizon Wireless. et al., Civil Action No. 2:20-cv-00280-JRG (E.D. Tex.)
Engaged by Verizon to provide expert testimony relating to (in)validity for a district court matter in the Eastern District of Texas. The matter involved a mobile device's roaming between an outdoor cellular / LTE networks and an indoor Wi-Fi network. It further included approaches for the LTE core network to perform the selection of transmission paths of VoLTE and VoWiFi signals involving the LTE core (EPC), including the ePDG, and IMS networks. This matter settled.

NEO Wireless, LLC v. DELL Technologies Inc. and DELL Inc., Case No. 6:21-cv-024-ADA (W.D. Tex.)
Engaged by Dell to provide expert testimony relating to claim construction, (in)validity and (non)infringement in the Western District of Texas, Waco Division. The matter involved LTE and 5G devices and standards aspects including signaling aspect associated with: OFDM/OFDMA, resource scheduling and frame structures, random access and ranging, transmit diversity and beamforming signaling. This matter remains pending.

American Patents v. Xerox., Case No. 6:21- cv-636-ADA, (W.D. Tex.)
Engaged by Xerox to provide expert testimony relating to claim construction, (in)validity and (non)infringement in the Western District of Texas, Waco Division. The matter involved IEEE802.11 (WiFi) based systems relating to a number of patents, including Time and frequency synchronization in multi-input, multi-output (MIMO) systems, the assessment and management of interference in 802.11 systems. This matter was resolved.

TurboCode, v. Dell Technologies Inc. and Dell Inc., Case No. Civil Action No. 6:21-cv-359 (W.D. of Tex.)
Engaged by Dell to provide expert testimony relating to claim construction, (in)validity and (non)infringement in the Western District of Texas, Waco Division. The matter involved 3G / WCDMA use and implementations of Turbo Coding in wireless transmission and reception. This matter remains pending.

XR Communications d/b/a Vivato Technologies v. Microsoft Corporation, Case No: 6:21-cv-695 (WDTX)
Engaged by Microsoft to provide expert testimony relating to claim construction, (in)validity and (non)infringement in the Western District of Texas. The matter involved the use of transmit beamforming, channel estimation and diversity techniques in IEEE802.11n, 802.11AC, and 802.11AX systems (WiFi). This matter remains pending.

Finesse Wireless, LLC v. AT&T Mobility LLC; Cellco Partnership d/b/a Verizon Wireless; Nokia of America Corporation; Ericsson Inc., Case No. 2:21-CV-00063-JRG (E.D. TX).
Engaged by Nokia to provide expert testimony relating to claim construction, (in)validity and (non)infringement in the Eastern District of Texas. The matter involved aspects of LTE and 5G infrastructure relating to the cancelation of radio frequency intermodulation distortion produced in a transmitter from the receiver of the same base station, and involving both passive intermodulation (PIM) and active intermodulation from Power amplifiers (PA). This matter remains pending.

GODO KAISHA IP BRIDGE v Ericsson and Nokia Case No. 2:21-CV-213-JRG, Case No. 2:21-CV-215-JRG (E.D. TX).
Engaged by Nokia and Ericsson to provide expert testimony relating to claim construction, (in)validity and (non)infringement in the Eastern District of Texas. The matter involved aspects of LTE and 5G infrastructure relating to the channel state information (CSI/CQI) configuration and triggering for periodic and aperiodic, wideband and sub-band reports from LTE/NR UEs. This matter remains pending.

List of Issued U.S. Patents

United States Pat. No.	Title
5,550,549	Transponder system and method
5,687,196	Range and bearing tracking system with multipath rejection
5,898,338	Adaptive digital predistortion linearization and feed-forward correction of RF power amplifier
5,929,704	Control of RF error extraction using auto-calibrating RF correlator
5,949,283	Adaptive digital predistortion linearization and feed-forward correction of RF power amplifier
5,960,047	System and method for transmitting information signals
6,078,216	Aliased wide band performance monitor for adjusting predistortion and vector modulator control parameters of RF amplifier
6,100,843	Adaptive antenna for use in same frequency networks
6,212,220	Method and apparatus for creating non-interfering signals using non-orthogonal techniques
6,222,832	Fast Acquisition of traffic channels for a highly variable data rate reverse link of a CDMA wireless communication system
6,239,756	Antenna array with housing
6,301,291	Pilot symbol assisted modulation and demodulation in wireless communication systems
6,304,215	Method of use for an adaptive antenna in same frequency networks
6,362,790	Antenna array structure stacked over printed wiring board with beamforming components
6,388,999	Dynamic bandwidth allocation for multiple access communications using buffer urgency factor
6,396,456	Stacked dipole antenna for use in wireless communications systems
6,400,317	Method and apparatus for antenna control in a communications network
6,404,386	Adaptive antenna for use in same frequency networks
6,421,336	Variable rate orthogonally coded reverse link structure
6,448,938	Method and apparatus for frequency selective beam forming
6,452,913	Fast acquisition of traffic channels for a highly variable data rate reverse link of a CDMA wireless communication system
6,456,835	Arbitration method for high power transmissions in a code division multiple access system
6,473,036	Method and apparatus for adapting antenna array to reduce adaptation time while increasing array performance
6,515,635	Adaptive antenna for use in wireless communication systems
6,518,920	Adaptive antenna for use in same frequency networks
6,542,481	Dynamic bandwidth allocation for multiple access communication using session queues
6,545,990	Method and apparatus for a spectrally compliant cellular communication system
6,545,994	Access probe acknowledgment including collision detection to avoid oversetting initial power level
6,563,809	Subscriber-controlled registration technique in a CDMA system
6,600,456	Adaptive antenna for use in wireless communication systems
6,614,776	Forward error correction scheme for high rate data exchange in a wireless system
6,678,260	System and method for maintaining wireless channels over a reverse link of a CDMA wireless communication system
6,707,804	Fast acquisition of traffic channels for a highly variable data rate reverse link of a CDMA wireless communication system
6,785,323	Variable rate coding for forward link
6,788,268	Method and apparatus for frequency selective beam forming
6,792,290	Method and apparatus for performing directional re-scan of an adaptive antenna
6,801,564	Reverse link correlation filter in wireless communication systems
6,804,223	Reverse link pilot integrated with block codes
6,873,293	Adaptive receive and omnidirectional transmit antenna array
6,888,504	Aperiodic array antenna
6,888,807	Applying session services based on packet flows
6,894,653	Low cost multiple pattern antenna for use with multiple receiver systems
6,904,079	Access channel structure for wireless communication system
6,911,879	Electronic phase shifter with enhanced phase shift performance
6,917,581	Use of orthogonal or near orthogonal codes in reverse link
6,917,642	Method for using a non-orthogonal pilot signal with data channel interference cancellation

6,925,070	Time-slotted data packets with a preamble
6,928,064	Fast acquisition of traffic channels for a highly variable data rate reverse link of a CDMA wireless communication system
6,933,887	Method and apparatus for adapting antenna array using received predetermined signal
6,937,562	Application specific traffic optimization in a wireless link
6,940,842	System and method for maintaining wireless channels over a reverse link of a CDMA wireless communication system
6,941,152	Wireless subscriber network registration system for configurable services
6,954,448	Alternate channel for carrying selected message types
6,956,840	Power control protocol for highly variable data rate reverse link of a wireless communication system
6,973,140	Maximizing data rate by adjusting codes and code rates in CDMA system
6,989,797	Adaptive antenna for use in wireless communication systems
6,992,546	Electronic phase shifter with enhanced phase shift performance
7,002,902	Method and system for economical beam forming in a radio communication system
7,006,428	Method for allowing multi-user orthogonal and non-orthogonal interoperability of code channels
7,006,483	Qualifying available reverse link coding rates from access channel power setting
7,009,559	Method and apparatus for adapting antenna array using received predetermined signal
7,015,773	Electronic phase shifter with enhanced phase shift performance
7,034,759	Adaptive receive and omnidirectional transmit antenna array
7,072,316	Subscriber-controlled registration technique in a CDMA system
7,079,523	Maintenance link using active/standby request channels
7,092,430	Method for using a non-orthogonal pilot signal with data channel interference cancellation
7,113,786	Antenna adaptation to manage the active set to manipulate soft hand-off regions
7,145,964	Maximizing data rate by adjusting codes and code rates in CDMA system
7,176,844	Aperiodic array antenna
7,184,417	Power control protocol for highly variable data rate reverse link of a wireless communication system
7,187,904	Frequency translating repeater with low cost high performance local oscillator architecture
7,200,134	Wireless area network using frequency translation and retransmission based on modified protocol messages for enhancing network coverage
7,215,297	Adaptive antenna for use in wireless communication systems
7,218,623	Coded reverse link messages for closed-loop power control of forward link control messages
7,221,664	Transmittal of heartbeat signal at a lower level than heartbeat request
7,224,685	Method of detection of signals using an adaptive antenna in a peer-to-peer network
7,227,907	Antenna adaptation comparison method for high mobility
7,230,935	Physical layer repeater with selective use of higher layer functions based on network operating conditions
7,233,627	Method for searching pilot signals to synchronize a CDMA receiver with an associated transmitter
7,233,771	Non-frequency translating repeater with downlink detection for uplink and downlink synchronization
7,253,783	Low cost multiple pattern antenna for use with multiple receiver systems
7,272,169	Reverse link correlation filter in wireless communication systems
7,289,827	Method and apparatus for performing directional re-scan of an adaptive antenna
7,308,285	Antenna adaptation in a time division duplexing system
7,366,154	Forward error correction scheme for high rate data exchange in a wireless system
7,394,791	Multi-detection of heartbeat to reduce error probability
7,425,928	Method and apparatus for frequency selective beam forming
7,426,241	Variable rate coding for forward link
7,428,263	Method for using a non-orthogonal pilot signal with data channel interference cancellation
7,433,340	Staggering forward and reverse wireless channel allocation timing
7,447,187	Reverse link pilot integrated with block codes
7,463,200	Directional antenna configuration for TDD repeater
7,463,201	Aperiodic array antenna

7,480,280	Fast acquisition of traffic channels for a highly variable data rate reverse link of a CDMA wireless communication system
7,483,473	Access channel structure for wireless communication system
7,496,072	System and method for controlling signal strength over a reverse link of a CDMA wireless communication system
7,502,351	Alternate channel for carrying selected message types
7,502,424	Maximizing data rate by adjusting codes and code rates
7,528,789	Adaptive antenna for use in wireless communication systems
7,529,264	Use of orthogonal or near orthogonal codes in reverse link
7,551,663	Use of correlation combination to achieve channel detection
7,580,674	Intelligent interface for controlling an adaptive antenna array
7,586,880	Method of detection of signals using an adaptive antenna in a peer-to-peer network
7,592,969	Multiple-antenna device having an isolation element
7,593,380	Variable rate forward error correction for enabling high performance communication
7,602,749	Fast acquisition of traffic channels for a highly variable data rate reverse link of a CDMA wireless communication system
7,613,227	Reverse link correlation filter in wireless communication systems
7,701,903	Power control protocol for highly variable data rate reverse link of a wireless communication system
7,733,285	Integrated, closely spaced, high isolation, printed dipoles
7,746,830	System and method for maintaining wireless channels over a reverse link of a CDMA wireless communication system
7,773,566	System and method for maintaining timing of synchronization messages over a reverse link of a CDMA wireless communication system
7,787,408	Wireless repeater with master/slave configuration
7,826,437	Variable rate coding for enabling high performance communication
7,889,702	Time-slotted data packets with a preamble
7,893,889	Multiple-antenna device having an isolation element
7,907,513	Superimposed composite channel filter
7,907,891	Physical layer repeater utilizing real time measurement metrics and adaptive antenna array to promote signal integrity and amplification
7,911,985	Automatic gain control and filtering techniques for use in on-channel repeater
7,911,993	Method and apparatus for allowing soft handoff of a CDMA reverse link utilizing an orthogonal channel structure
7,916,772	Method for searching pilot signals to synchronize a CDMA receiver with an associated transmitter
7,936,728	System and method for maintaining timing of synchronization messages over a reverse link of a CDMA wireless communication system
7,936,736	Enforcing policies in wireless communication using exchanged identities
7,944,845	Application specific traffic optimization in a wireless link
7,990,904	Wireless network repeater
8,023,885	Non-frequency translating repeater with downlink detection for uplink and downlink synchronization
8,027,642	Transmission canceller for wireless local area network
8,045,536	Forward error correction scheme for high rate data exchange in a wireless system
8,059,727	Physical layer repeater configuration for increasing MIMO performance
8,060,009	Wireless local area network repeater with automatic gain control for extending network coverage
8,068,474	Variable rate coding for enabling high performance communication
8,072,944	Staggering forward and reverse wireless channel allocation timing
8,072,958	Reverse link pilot integrated with block codes
8,078,100	Physical layer repeater with discrete time filter for all-digital detection and delay generation
8,089,913	Physical layer repeater with selective use of higher layer functions based on network operating conditions
8,090,359	Exchanging identifiers between wireless communication to determine further information to be exchanged or further services to be provided
8,090,616	Visual identification information used as confirmation in a wireless communication
8,095,067	Frequency translating repeater with low cost high performance local oscillator architecture
8,111,645	Wireless local area network repeater with detection
8,116,239	Use of a filterbank in an adaptive on-channel repeater utilizing adaptive antenna arrays

8,116,749	Protocol for anonymous wireless communication
8,121,535	Configuration of a repeater
8,122,134	Reducing loop effects in a wireless local area network repeater
8,134,980	Transmittal of heartbeat signal at a lower level than heartbeat request
8,139,546	System and method for maintaining wireless channels over a reverse link of a CDMA wireless communication system
8,155,096	Antenna control system and method
8,175,120	Minimal maintenance link to support synchronization
8,194,783	Variable rate coding for a forward and reverse link
8,204,140	Subscriber unit and method for variable forward error correction (FEC) decoding
8,238,912	Non-intrusive detection of enhanced capabilities at existing cellsites in a wireless data communication system
8,259,687	Dynamic bandwidth allocation for multiple access communications using buffer urgency factor
8,259,744	Use of orthogonal or near orthogonal codes in reverse link
8,265,630	Antenna adaptation to manage the active set to manipulate soft hand-off regions
8,274,954	Alternate channel for carrying selected message types
8,285,201	Wideband echo cancellation in a repeater
8,315,294	Method for searching pilot signals to synchronize a CDMA receiver with an associated transmitter
8,321,542	Wireless channel allocation in a base station processor
8,358,969	Feedback delay control in an echo cancellation repeater
8,363,590	Physical layer repeater with roaming support based on multiple identifiers
8,369,277	Signaling for wireless communications
8,369,842	Exchanging identifiers between wireless communication to determine further information to be exchanged or further services to be provided
8,370,955	Enforcing policies in wireless communication using exchanged identities
8,374,592	Exchanging identifiers between wireless communication to determine further information to be exchanged or further services to be provided
8,385,305	Hybrid band intelligent backhaul radio
8,385,818	Delay control to improve frequency domain channel estimation in an echo cancellation repeater
8,385,896	Exchanging identifiers between wireless communication to determine further information to be exchanged or further services to be provided
8,385,913	Using a first wireless link to exchange identification information used to communicate over a second wireless link
8,422,540	Intelligent backhaul radio with zero division duplexing
8,437,329	Variable rate coding for enabling high performance communication
8,437,330	Antenna control system and method
8,463,255	Method and apparatus for a spectrally compliant cellular communication system
8,467,353	Time-slotted data packets with a preamble
8,467,363	Intelligent backhaul radio and antenna system
8,477,665	Method in a wireless repeater employing an antenna array for interference reduction
8,498,234	Wireless local area network repeater
8,502,733	Transmit co-channel spectrum sharing
8,503,926	IQ imbalance compensation in interference cancellation repeater using a zero-IF radio architecture
8,509,268	Minimal maintenance link to support sychronization
8,509,835	Reverse link initial power setting using effective radiated power message to compute path loss
8,521,862	Wireless channel allocation in a base station processor
8,526,401	Power control protocol for highly variable data rate reverse link of wireless communication system
8,537,656	Method for compensating for multi-path of a CDMA reverse link utilizing an orthogonal channel structure
8,542,623	Use of RF reference in a digital baseband interference cancellation repeater
8,553,610	Interference cancellation repeater incorporating a non-linear element
8,559,379	Method and apparatus for mitigating oscillation between repeaters
8,576,805	Subscriber-controlled registration technique in a CDMA system
8,582,552	Maintaining a maintenance channel in a reverse link of a wireless communications system

8,599,906	Closed form calculation of temporal equalizer weights used in a repeater transmitter leakage cancellation system
8,605,702	Maintaining a maintenance channel in a reverse link of a wireless communications system
8,619,837	Use of adaptive antenna array in conjunction with an on-channel repeater to improve signal quality
8,630,211	Hybrid radio architecture for repeaters using RF cancellation reference
8,638,839	Intelligent backhaul radio with co-band zero division duplexing
8,638,877	Methods, apparatuses and systems for selective transmission of traffic data using orthogonal sequences
8,649,418	Enhancement of the channel propagation matrix order and rank for a wireless channel
8,676,131	Method and apparatus for allowing soft handoff of a CDMA reverse link utilizing an orthogonal channel structure
8,687,606	Alternate channel for carrying selected message types
8,709,092	Periprosthetic fracture management enhancements
8,737,343	Coded reverse link messages for closed-loop power control of forward link control messages
8,755,360	Method and apparatus for a spectrally compliant cellular communication system
8,755,473	Method and apparatus for detecting rapid changes in signaling path environment
8,774,079	Repeater techniques for multiple input multiple output utilizing beam formers
8,787,248	Method in a wireless repeater employing an antenna array including vertical and horizontal feeds for interference reduction
8,790,321	Apparatus, system, and method for harvesting improved bone graft material with reamer-irrigator-aspirator (RIA) device
8,792,458	System and method for maintaining wireless channels over a reverse link of a CDMA wireless communication system
8,811,367	Qualifying available reverse link coding rates from access channel power setting
8,824,442	Intelligent backhaul radio with adaptive channel bandwidth control
8,830,977	Reverse link pilot integrated with block codes
8,842,642	Transmitting acknowledgement messages using a staggered uplink time slot
8,849,186	Repeater communication using inserted low power sequences
8,849,698	Exchanging identifiers between wireless communication to determine further information to be exchanged or further services to be provided
8,861,429	Selective carrier amplification in a wireless repeater
8,885,688	Control message management in physical layer repeater
8,897,340	Enhancement of the channel propagation matrix order and rank for a wireless channel
8,908,654	Dynamic bandwidth allocation for multiple access communications using buffer urgency factor
8,937,874	Adjusting repeater gains based upon received downlink power level
8,942,216	Hybrid band intelligent backhaul radio
8,948,235	Intelligent backhaul radio with co-band zero division duplexing utilizing transmitter to receiver antenna isolation adaptation
8,958,457	Channel structure for a wireless communication system
8,964,909	Maximizing data rate by adjusting codes and code rates
8,989,762	Advanced backhaul services
9,014,118	Signaling for wireless communications
9,019,930	Coded reverse link messages for closed-loop power control of forward link control messages
9,020,009	Inserted pilot construction for an echo cancellation repeater
9,020,621	Network based media enhancement function based on an identifier
9,038,129	Enforcing policies in wireless communication using exchanged identities
9,042,400	Multi-detection of heartbeat to reduce error probability
9,135,612	Proximity detection, virtual detection, or location based triggering of the exchange of value and information
9,161,164	Exchanging identifiers between wireless communication to determine further information to be exchanged or further services to be provided
9,179,240	Transmit co-channel spectrum sharing
9,185,604	Qualifying available reverse link coding rates from access channel power setting
9,210,616	Application specific traffic optimization in a wireless link
9,225,395	Antenna control system and method
9,226,295	Hybrid band radio with data direction determined by a link performance metric
9,237,209	Time-slotted data packets with a preamble

9,247,510	Use of correlation combination to achieve channel detection
9,252,857	Embedded control signaling for wireless systems
9,294,222	Variable rate coding for forward and reverse link
9,301,274	Minimal maintenance link to support synchronization
9,306,658	Method and apparatus for a spectrally compliant cellular communication system
9,306,703	Variable rate coding for enabling high performance communication
9,307,532	Signaling for wireless communications
9,325,398	Method for installing a backhaul radio with an antenna array
9,325,477	Alternate channel for carrying selected message types
9,345,523	Periprosthetic fracture management enhancements
9,363,759	Power control protocol for highly variable data rate reverse link of a wireless communication system
9,369,235	Maximizing data rate by adjusting codes and code rates
9,374,822	Method for installing a hybrid band radio
9,397,808	Reverse link pilot integrated with block codes
9,398,120	Time-slotted data packets with a preamble
9,456,376	Subscriber-controlled registration technique in a CDMA system
9,456,428	Method and apparatus for allowing soft handoff of a CDMA reverse link utilizing an orthogonal channel structure
9,460,433	Proximity detection, virtual detection, or location based triggering of the exchange of value and information
9,490,918	Zero division duplexing MIMO backhaul radio with adaptable RF and/or baseband cancellation
9,496,915	Use of orthogonal or near orthogonal codes in reverse link
9,497,761	Qualifying available reverse link coding rates from access channel power setting
9,522,066	Periprosthetic fracture management enhancements
9,525,923	Multi-detection of heartbeat to reduce error probability
9,554,061	Smart hub
9,555,169	Apparatus for harvesting improved bone graft material utilizing an implantable biodegradable filter
9,572,163	Hybrid band radio with adaptive antenna arrays
9,577,733	Method for installing a backhaul link with multiple antenna patterns
9,655,062	System and method for coordination of wireless maintenance channel power control
9,661,583	Reverse link initial power setting using effective radiated power message to compute path loss
9,686,713	Application specific traffic optimization in a wireless link
9,686,790	Signaling for wireless communications
9,713,019	Self organizing backhaul radio
9,713,157	Method for installing a backhaul link with alignment signals
9,775,115	Antenna control system and method
9,780,930	Communicating reference and data information in a wireless network
9,781,626	Wireless channel allocation in a base station processor
9,807,714	Minimal maintenance link to support synchronization
9,832,664	Receiving and transmitting reverse link signals from subscriber units
9,867,101	Method and apparatus for allowing soft handoff of a CDMA reverse link utilizing an orthogonal channel structure
9,872,196	Subscriber-controlled registration technique in a CDMA system
9,876,530	Advanced backhaul services
9,913,271	Qualifying available reverse link coding rates from access channel power setting
9,913,722	Periprosthetic fracture management enhancements
9,924,468	Antenna control system and method
9,936,500	Transmitting acknowledgement messages using a staggered uplink time slot
9,954,635	Variable rate coding for enabling high performance communication
9,974,116	Handoff to base station having enhanced capabilities
10,057,700	Smart hub

10,063,363	Zero division duplexing MIMO radio with adaptable RF and/or baseband cancellation
10,064,144	Use of correlation combination to achieve channel detection
10,129,888	Method for installing a fixed wireless access link with alignment signals
10,153,885	Alternate channel for carrying selected message types
10,204,357	Proximity detection, virtual detection, or location based triggering of the exchange of value and information
10,211,940	Use of orthogonal or near orthogonal codes in reverse link
10,237,760	Self organizing backhaul radio
10,284,253	Advanced backhaul services
10,286,123	Removable biocompatible substrate filter for a reaming and collection device
10,299,218	System and method for coordination of wireless maintenance channel power control
10,306,635	Hybrid band radio with multiple antenna arrays
10,356,782	Embedded control signaling for self-organizing wireless backhaul radio and systems
10,357,370	Periprosthetic fracture management enhancements
10,390,311	Maintaining a maintenance channel in a reverse link of a wireless communications system
10,638,468	Qualifying available reverse link coding rates from access channel power setting
10,687,161	Smart hub
10,687,950	Periprosthetic shoulder fracture repair
10,700,733	Advanced backhaul services
10,708,918	Electronic alignment using signature emissions for backhaul radios
10,735,979	Self organizing backhaul radio
10,736,110	Method for installing a fixed wireless access link with alignment signals
10,762,532	Proximity detection, virtual detection, or location based triggering of the exchange of value and information
10,805,887	Maintaining a maintenance channel in a reverse link of a wireless communications system
10,821,030	Apparatus and method for a temperature released adhesive structure for use with bandages
10,874,520	Combination intra-medullary and extra-medullary fracture stabilization with aligning arm
10,932,267	Hybrid band radio with multiple antenna arrays
10,966,201	Embedded control signaling for self-organizing wireless backhaul radio and systems
11,000,380	Combination intra-medullary and extra medullary fracture stabilization with aligning arm
11,013,605	Combination intra-medullary and extra medullary fracture stabilization with aligning arm
11,074,615	Efficient and secure communication using wireless service identifiers
11,219,527	Combination intra-medullary and extra-medullary fracture stabilization with aligning arm
11,238,499	Proximity detection, virtual detection, or location based triggering of the exchange of value and information
11,260,164	Negative pressure wound therapy dressing and related apparatus
11,303,322	Advanced backhaul services
11,310,614	Smart Hub
11,334,918	Exchanging identifiers between wireless communication to determine further information to be exchanged or further services to be provided
11,343,060	Zero division duplexing MIMO radio with adaptable RF and/or baseband cancellation
11,343,684	Self organizing backhaul radio
11,437,740	Removable biocompatible substrate filter for a reaming and collection device
11,44,344	Efficient and secure communication using wireless service identifiers
D532780	Wireless repeater housing