**Steven Shalash Frisco, TX 75035**

**PROFESSIONAL HIGHLIGHTS**

* Experience as Technical Project Materials Delivery and Staging Manager, Electrical and telecommunications engineer with experience in wireless and military telecommunications, industrial factory maintenance, R&D and Technical Training.
* Broad experience in the Telecom Industry working with major infrastructure vendors, consultants, and operators.
* I researched many AMI vendors including Itron for a 5G NR AMI to work in the 2.4-2,6 GHZ band unlike many others like Honeywell;
* Proficiency in 5G NR NSA, LTE, WiMAX, UMTS, GSM, CDMA, TDMA, CBRS, Smart Grid, P25, Tetra, DMR, NXDN, AMI, AMR & MW Backhaul Transmission Network & Metro Wireless Design. As well as FTTH/FTTB/FTTC Planning Engineering, Fiber Metro Ethernet, SONET & xWDM, HFC DOCSIS 3.x and 4.0, MAS-SCADA Wireless, DSL and PoE standards and network design.
* Capable and experienced in managing projects, teams, and procurement from a budgetary and time perspective.
* Demonstrated ability to communicate effectively at all organizational levels with both external and internal customers.
* Extensive experience in RF Network Design (coverage, frequency planning, model tuning, AFP & ACP).
* Skilled in Radio Network Optimization and Network Performance Improvement.
* Proficient in the use of major drive test and analysis tools. Familiar with numerous OSS and performance reporting platforms.
* Extensive RFP, RFI and RFQ experience.
* Accomplished at dimensioning networks dependent on Grade of Service (GOS), traffic, demographics, land use, equipment technology specifications and coverage requirements.
* Experienced in all aspects of NSB and Network Expansion including overlays, site audits and swap outs, zoning and planning commission board testimony and hearings and rehearsal preparations with telecommunications law firms.
* Tenable experience in FCC regulatory aspects especially: FCC BDC & CFR Title 47 – Telecommunications guidelines Parts (1, 13, 17, 20, 22, 24, 27, 59, 90 95, 96 & 101).
* FAA TOWAIR Determination and FCC ASR Registration.
* FCC Pre & Post EME MPE (controlled & uncontrolled) SAR limits for regulatory compliance as outlined in FCC: OET Bulletin 65, FCC 19-126, IEEE: Std C95.1, IC: IEEE Std C95.1 and the International ICNIRP Guidelines.
* Cell Tower Regulatory AM Detuning and Inter-modulation Studies, frequency coordination, extension agreements Proficient in the use of major drive test and analysis tools. Familiar with numerous OSS and performance reporting platforms. Familiar with CBRS planned shared Tiered Spectrum (Incumbent, Priority & General) and its management using SAS and ESC.
* Conversant with Core and RAN interfaces as well as statistical analysis post-processing tools used in performance optimization and NPI.
* Knowledgeable in analysis of and performing and analyzing antenna, jumper and coaxial RF feeder sweep testing for VSWR, DTF and PIM testing using RF sweep and PIM testers like the Anritsu Site Master cable & antenna analyzers, LMR Master and PIM Master.
* Practiced in using OPMs, VLFs, OTDRs, CPRI test OTDRs, Fiber Scope Video Inspection Probes and OSAs.
* Involved in diverse aspects of Optical Transport Networking (OTN) including: ODN PON (FTTH, FTTC, FTTP and Fiber Network Planning), Frame Relay and ATM, Ethernet MAN (Ethernet, EoSDH, EoSONET, EoMPLS or EoDWDM), SONET/SDH & PDH, CDWN, DWDM.
* Accomplished Scoping Engineer including site/tower/venue surveys, reviewing GC Scoping reports and interfacing with internals (PMs, Construction and EQE teams).

**TECHNICAL & SOFT SKILLS**

* Software: MS Office, Visio, MS Project, experience with VB especially VBA and SQL Queries, Alteryx Designer, GIT Bash for Windows, Confluence, JIRA and Smartsheet for Project Management, Teams & G Suite for Collaboration
* RF Planning & Optimization: AFP & ACP Tools; iBwave; Teoco (ASSET Suite); InfoVista (Planet -AIM, ACP, CA & CS); Forsk (Atoll); CelPlan (CellDesigner Suite); EDX Wireless (Signal Pro); Wavecall now part of Aircom (Wavesight, Accura, Out2InSight, WaveGuard).
* Microwave Transmission / Backhaul Planning: InfoVista (Ellipse); Forsk (Atoll Microwave); Pathloss 6.0; CelPlan (CellNetwork); EDX Wireless (Signal Pro FWA); Aviat Design; SAF Tehnika Path Calculator.
* Mapping & GEO Tools: Pitney Bowes (MapInfo, Vertical Mapper, MapBasic); Esri (ArcGIS); TatukGIS; QGIS; Blue Marble (Global Mapper), IQ Geo Platform - Network Manager Telecom (Insight/Pro) & OSPInsight, IQ Geo Inspection & Survey, Workflow Manager, Comsof Fiber & Net Revenue Optimizer.
* Call & Drive Test Data Collection & Analysis Tools: InfoVista TEMS Suite (Investigation, Pocket, Paragon, Sense); Accuver (XCAL, XCAL-MPM4, XCAL-Mobile & XCAP); Amdocs (Actix) Drive Test Analytics Suite; PCTEL Wideband Scanning Receivers; STI-9400 & Field Test 7; Qualcomm (QXDM Pro & QCAT); CommScope Invex3G Network Testing Tools; Grayson Wireless GSM Surveyor, IS-136 Surveyor, IS-136 Illuminator and PN Scanner; Keysight Nemo Outdoor Drive Test & Analyze Post Processing & Nemo WindCatcher Multi-Data Analytics Solution; NetScout (TrueCall, ISA); Device Monitoring & Analysis Tool (DMAT) tools for iOS and Android TRACE and Geo-spatial Visualization of 4G (LTE/VoLTE) and 5G (NR/VoNR) KPIs.
* Propagation Model Tuning and CW Drive Test Tools: TTM/TMR, R&S®TS8997 Wireless measurement system, for ETSI and FCC devices for ISM bands, Grayson Wireless Spectrum Tracker, PCTEL Wideband RF Scanners, BVSys (Dragon Dual-Band CW Transmitter & Gazelle Quad Receiver Sys).
* RF Test Equipment: Anritsu (Site Master, Cell Master & Cable Master, PIM Master), Spectrum Analyzers, Power & Watt Meters, VSWR Meters, Frequency Meters, Function Generators, Multimeters, Digital Levels, Azimuth Sighting Scopes, Compasses, Binoculars, CVT Rod, IKE & Spike Laser Survey Tools.
* Troubleshooting, Trending, Performance & KPI Monitoring Tools: Watchmark Metrica/Kingfisher Service Assurance Software Platform Kingfisher, Ekahau ePerf; LBNL iPerf / iPerf3; Mycom (Performance Management (NIMS-PrOptima and e-PrOptima) & Network Optimization (MyPrOptima); Amdocs/TTS OptPCS; Amdocs (Actix) Network Optimization Suite.
* Vendor BSS Interface Tools: Ericsson: Ericsson Network Manager (ENM); Ericsson WinFIOL 7.0; Ericsson Moshell (AMOS, RANOS, RNO CNA, NCS, FAS, MRR, CTR, and OPS), Nortel OMCR, CT2000, CT7000 (CT, CPT & Enhance CPT), and Siemens Radio Commander, NSN NetAct, Huawei M2000, Samsung BSM & LSMR.
* Regulatory Compliance Tools & Processes: FCC/FAA: Towair, Air Space, EME MPE Studies: RADHAZ (Roofview), RCC (ComSiteMPE) & Waterford Consultants (RoofMaster), FCC AM Query for Tower Detuning Compliance.
* Fully conversant in permitting including local zoning and land use rules. This included Standard Building Permits, Specific Use Permits, Right of Way rules including Network Node Permits. Permit Application Reviews, Setbacks, Stealthing and visual impact issues, Permitting for Federally controlled and Tribal Lands (national forests, reservations, etc.), Site Plans and Supporting Documents including 1As, 2Cs, FCC ASRs, FAA determinations, FCC NEPA rules (ESA, EIS, NHPA & TCNS), and requirements of other agencies including RUS, NTIA, FEMA, FirstNet, DHS, FRA, FTA & the OSMRE. Contractor Permitting obligations, County permitting requirements, Co-location and Permitting Fees.
* Inter-modulation Analysis and Interference Source Hunting Tools: RCC (ComSitePro 6.2) & UniSite (UNIstar), Interference Hunting: Anritsu (MX280007A & MA2700A and PIM Master); R&S (PR200, HE400).
* Operator Specific Tools: Beast, NSR (AT&T); Remedy, Insite, Iconectiv – Granite Zing, Aim and EDW (T-Mobile); ODEON (SPMC Network Service Investigation Tool) & Accruent (Siterra) (Sprint/VZW); NWF, Zite, spLTE, RTT, VPI, FUZE (VZW), Glance, Sprint Vision, Appian, Atlas, Capstan, PRTS, Patrol (Sprint)

**Training & Certifications:** a) OSHA 10 Construction Certification, Sept. 15, 2019, b) iBwave Design Professional Certification, online July 11, 2011; c) Award Solutions LTE RF Planning and Design Certification Workshop, Richardson TX, July 14, 2009; d) Atoll LTE Training, Forsk, Chicago IL, Sept. 2, 2009; e) Cassidian/Airbus Training: Tetra RF & Core, Tait partner training: 1. Radio Communication 101, 2. Introduction to P25 and 3. Introduction to DMR; f) Internal Huawei training for WiMAX and LTE product lines and EMS (M2000) platform April 2010; g) Bechtel Site Survey/Scoping Training 2008; h) WiMAX Forum Certified RF Network Engineer, July 31, 2007; i) SMU UNIX Shell Scripting Boot Camp 1998; j) Ericsson Certified Wireless Systems Design Engineer, 1995.

**Verizon Wireless Specific Training:** a) VZW GeoPlan (LTE, CDMA 1x, EVDO) Training for Design & Regulatory Compliance, b) OET Bulletin No. 65, Radio Frequency (RF) Safety and Awareness, Antenna Configuration Design Guide for RF Compliance, VZW Operating Procedures and Rules on RFE Compliance & VZW Signage and Demarcation Policy. c) Waterford Consultants in person RoofMaster Training RoofMaster Interface, Modeling and Interpreting results, d) VZW Zite & RTT Training, e) Siterra Phase I Refresh Training, f) Actix Classic, g) ELTP & VZWPI Training, h) Salesforce Sites Tracker, i) VZW RFDS Tool, j) VZAtoll Forsk General Features & General Features Update, k) VZAtoll Forsk LTE Features & LTE Features Update, l) VZAtoll Verizon Features, m) VZAtoll Verizon Addition Features related to Siterra, E911, FCC Contours, n).VZW FUZE Intro Training, p) NetScout – TrueCall VZW intro Training (Heat Maps – RSRP, CIQ, Drops, Serving Cell, Exporting; Reports – KPI, NE, Subs, Call Table, Top Device, Strip Chart, Histogram, Overshooting, Exporting & Drill Down, Thematic Maps; Massage Viewer. q) NetScout Iris Session Analyzer (ISA).

**B&V Training:** a) OSHA 10 – Construction, b) RF Safety Awareness, c) CVT Rod Tower, Pole and Power Line Surveys. d) IKE Analyze and Spike training from IKEGPS field survey & measurement tools. e) Utility Pole Birthmarks, comms space vs. power space, field pole inspections for EOL/Replacement issues, etc.

# **WORK HISTORY SUMMARY**

**(12/24 – 3/25) Technical Project Manager, UST (temporary short-term backfill contract. remote)**

**Focus TPM supporting Pre-EME (reports and mitigation recommendations) & Post (field measurements) EME for Macros, Small Cells and In-Building Venues of two main UST clients in the USA (Verizon & T-Mobile). Duties Included:**

* Customer Facing, Tracking & Progress Reporting. PO Quotes, EME Work Assignments, Scheduling, Invoicing for Work Completed and tracking delinquent payments from VZW with each of the local markets. Using VZW SPM and FUZE as well as internal UST Tracking Sheets.
* Effective cross team leadership sharing responses between three different client projects to clear existing deliverable backlog for similar but different deliverables between the projects jeopardizing existing relative to each client’s SLA.
* Internal Technical Support of Engineers performing Pre-EME Analysis and Post-EME Field Measurement Reports using the IXUS, Roof Master and iBwave Tools. In the last two months this has entailed Pre and Post EMEs for the NO Superdome & Convention Center venues for the upcoming Super Bowl for mmWave deployments and over 200 macro and small cell sites for mods and new builds across the USA for the three main cellular operators. Worked with clients to resolve ambiguity with information required to complete Pre-EME Analysis reports accurately and on time per the SLAs,
* Completed IXUS Technical Training for Pre-EME Analysis and Report Generation as well Quality checks.
* Supporting the team to complete Pre-EME Analysis and Report Quality checking and corrections.
* Tools and interfaces used for this work: Fuze, SPM, IXUS, Rave, Ibwave viewer, Roofmaster, Excel, Site Tracker, Magenta View.

# **Systems Support Engineer, Conch Technologies (contractor Lumen/CenturyLink Technologies, remote) (02/24 – 11/24)**

# **Focus Supporting of Lumen Quantum Fiber Wi-Fi 360 Wireless xPON provisioning and deployment in the field.**

* Remote call center Tier 1 support for PON Technicians calling in from the field to troubleshoot any problems related to provisioning, upgrades or services disconnection of Quantum Fiber Wi-Fi 360 Wireless xPON services.
* Navigating, investigating and updating various internal Lumen/Century Link databases (OPTIUS & ODEN) and customer relationship account tracking tools like Salesforce and xPON Configuration Management FTTx Tools from Calix and ADTRAN.

# **Technical Project Manager (RF/MW/PON/Materials Staging and Logistics), Monte R. Lee & Company, Oklahoma City, OK**

**(12/20 – 09/23)**

* Focus Supporting all MRL’s Clients for any requests related to Wireless Network and Microwave Transmission Backhaul, FTTx, OSP, Metro Ethernet, SONET, xWDM & Docsis: Including for 5G NR, LTE, VoLTE, UMTS, HSPA, CDMA, EVDO, GSM, EDGE, GPRS, WiMAX Wi-Fi, 5GHz LAA shared with Wi-Fi band, 60GHz Terragraph, Fixed Proprietary Wireless (Cambium, Ubiquity, etc.), MW Transmission, Metro Wireless, OTN: ODN PON (FTTH, FTTC, FTTP and FNP), Frame Relay and ATM, Ethernet MAN (Ethernet, EoSDH (EoSONET), EoMPLS or EoDWDM), SONET/SDH & PDH, CDWN, DWDM, DOCSIS 3.x & 4, DSL and PoE:
* Managing FCC Broadband Data Collection (BDC) for Fixed Wireless Access and Mobile Wireless for over five clients in Oklahoma, South Dakota, and Alaska in 2022 & 2023. This included:
* Developing detailed LTE & VoLTE minimum throughput link budgets and projected LAA boost in OK and SD for clients.
* Populating and uploading all required BDC data in the FCC Portal.
* Researched many AMI vendors including Itron for a 5G NR AMI to work in the 2.4-2,6 GHZ band
* Generating all required ArcGIS coverage heatmaps and uploading to FCC BDC portal using Atoll or SignalPro.
* Root cause analysis to correct and resubmit for error corrections until final acceptance verification form the FCC.
* FCC BDC Propagation Model Calibration using NetScout – TrueCall virtual drive test data.
* Design, deployment management and optimization of wireless telecommunication networks for the (700 MHz, 850 MHz, 1.9 GHz, 2.1 GHz, 2.5 GHz, 3.65 GHz, 5 GHz, 6 GHz, 11 GHz, 31 GHz, 21 GHz, 30 GHz & 60 GHz) Licensed and Unlicensed Bands for 5G NR NSA, 4G LTE, PtP, PtmP, CBRS, mmWave, long haul, high bandwidth, high throughput Microwave Transmission (with SONET, ATM, Ethernet, configurations), MAS-SCADA PLC (natural resources OK and TX) with PoE power and AMI Mesh/PtmP Meter Reading Networks (public utilities).
* Working with MRL clients facing both technical and financial issues related to the "rip and replace" initiative program, mandated by the FCC) and Congress to remove and replace telecommunications equipment from companies deemed a national security threat in which they also needed to upgrade from 3G and or 2G to 4G LTE including sectorization, existing Asset Scoping, Cost Control, Pre and Post Launch drive testing and KPI monitoring and working with the new OEMs to adjust 4G RF Performance Parameters, Dealt with Hosted Core and Satellite Backhaul issues in Alaska and LAA implementations to Boost GOS and for Traffic Offloading.
* Estimating costs and timelines for expanding, upgrading, and provisioning HFC DOCSIS 3.0 networks to DOCSIS 3.1.
* Preparation of Technical RF Expert Witness Testimony for court cases involving LTE, WiMAX and FWA.
* Completing FCC Form 477 annual reports for broadband, wired, wireless and VoIP services prior to the BDC.
* Preparation of Microwave Frequency Prior Coordination Notice (PCN) Request Forms.
* Bid Responses, Pre & Post FCC Auction Support for (RDOF, CBRS, CAF II, 2.5 GHz Rural Tribal Applications, etc.)
* Oversaw Propagation Model Calibration initiatives for clients including test equipment and contractor selection as well as result verification and final report generation using Atoll.
* In charge of in-house RF Design & GIS Tools including Atoll, EDX, Pathloss, iBwave, MapInfo, Global Mapper, QGIS.
* Acquiring GEO acquiring data (terrain, clutter, clutter heights and vector data) for client projects, dealing with GEO vendor quotes and selection.
* Managing NDA agreements with OEMs (Ericsson, Samsung, Cambium, CommScope, Aviat, BEC, NetScout, etc.).
* Mentoring and guiding new graduate team members to help with the RF/MW work as needed.
* Assisting others presenting at conferences including the CEO for CBRS and 5G.
* Working with the GIS Department on presentation quality maps for customer reports.
* Helping clients with RF questions especially related to drive test tools, FCC BDC, propagation Model Calibration, rip and replace, remote hosted core, 5G NR NSA and VoLTE deployment.
* Supporting MRL FTTH/FTTB/FTTC Fiber Optic Network Designs as well as some OSP support of any remaining legacy APON, BPON Network upgrades to EPON & GPON/GEPON/XGPON for Ethernet (100BaseBX, 100BaseLX10, 1000BaseZX, 10GBaseEW, 10GBaseER, 10GBaseLR, etc.), SONET and OLT, POS (CWDM/DWDM), ONR, EDFA/OA, TP& ONT counts based on client’s central office locations and the termination points based using GEO data and tools like IQ Geo Platform including Network Manager Telecom (Insight/Pro), OSPInsight, IQ Geo Inspection & Survey, Workflow Manager, Comsof Fiber & Net Revenue Optimizer, Google Earth, MapInfo and QGIS. Using Fiber Power Budgets to calculate Max Fiber Lengths, POS sizing and cabinet locations. Redlining of TP/ONT Drop sheets based on field surveys, designation of hand hole locations. Interfacing with regulatory for permitting, aerial to burial transitions due to right of way issues.
* Reviewing VSWR for Antenna and Feeder Cable Testing as well as RF PIM Testing as well as Fiber OTDR and Fiber Scope Video Inspection Probe photos for splicing and connector faults and high ORL.
* PtmP Terragraph network design using the unlicensed 60GHz band to support outdoor MAS-Scada PLC deployment for the natural resources industry in West Texas powered by PoE.
* Project, Construction & Permitting Management of client’s 4G, 5G Cellular (Macro, Small Cell, DAS) and MW Transmission projects using Ericsson, Nokia, Samsung, Cambium, Ceragon, Aviat, Terragraph, SAF Tehnika, Ubiquiti, Tarana, Airspan, Baicells, Mimosa, Telrad, etc. Working with clients to support all permitting, construction, deployment scheduling, design, procurement, budgeting, quality control, risk management, progress reporting, change orders, cost control, final build acceptance, punch listing, site acquisition, regulatory activities, bid and quote control, RFIs, etc. throughout the projects.
* Materials Staging, Ordering and Logistics for major projects for some of MRL’s customers in Idaho and Alaska (Bristol Bay, OTZ and TelAlaska) for remote locations like the OTZ Telephone Cooperative MW/LTE/FTTH project from Kotzebue, AK to the Red Dog Mine and over to Coldfoot, AK on the Dalton Hwy. TelAlaska Rip and Replace 22 locations all over AK including Nome, Fort Yukon and Dutch Harbor. TelAlaska Kodiak, AK to Cold Harbor multihop MW project for FTTH Backhaul, etc. Due to the unique logistics and weather in Alaska logistics, ordering and staging for these projects are much more complex than in CONUS.
* Support of permitting including local zoning and land use rules. This included Standard Building Permits, Specific Use Permits, Right of Way rules including Network Node Permits. Permit Application Reviews, Setbacks, Stealthing and visual impact issues, Permitting for Federally controlled and Tribal Lands (national forests, reservations, etc.), Site Plans and Supporting Documents including 1As, 2Cs, FCC ASRs, FAA determinations, FCC NEPA rules (ESA, EIS, NHPA & TCNS), and requirements of other agencies including RUS, NTIA, FEMA, FirstNet, DHS, FRA, FTA & the OSMRE. Contractor Permitting obligations, County permitting requirements, Co-location and Permitting Fees.

# **CBRS LTE RF Design Engineer, Sagetree Solutions & Networks Inc. (contractor ATNi, remote) (10/20 – 11/20)**

* Tasked along with a team of engineers to perform CBRS Band Fixed LTE RF Design for ATN International using Atoll ACP for existing Towers (co-locations) augmented by proposed Green Field locations for a fixed LTE CBRS band network in over 500 rural counties in many states across the USA based on ATNi CBRS band acquisitions from the FCC CBRS 3.5 GHz Auction 105 results that ended in September 2020.

# **RF Field Engineer IV, Black & Veatch (Project Employee, Rochester, NY) (09/19 – 03/20)**

* Focus WiMAX CBRS Smart Grid and AMI: Assigned to work as a RF Design Engineer on B&V Iberdrola (Avangrid) Smart Grid point to multi-point fixed WiMAX CBRS project in the NE, US until project put on-hold in 2020 due to Covid19:
* Field Duties: Link Verification Team Lead, BS Construction Quality, MW Tower Surveys, make ready surveys, CVT rod & IKEGPS wooden power pole surveys. Updating Asset360 Database and EDX SignalPro fixed WiMAX PTM Design based on WiMAX CBRS PtmP Link Test Verification results, preparation of Installation Packages (CD & BOM) and DRVV Templates.
* Design Duties: EDX Signal Pro RF WiMAX PtmP Re-design of certain Divisions following their addition to AMI and Transmission Resiliency CPE Targets by Avangrid to the FAN Smart Grid Network Design Project.
* Project Management: Preparing RF installation MOPs and FAN Network Design Requirement Documents.

# **RF Engineer III, Saigan Technologies Inc. (contractor Sprint, Overland Park, KS) (04/17 – 08/19)**

* Focus member of Central Region RF Engineering Support Team with emphasis of tasks related to design projects for the Central Region Markets: Primarily East Michigan, West Michigan and Toledo markets for CDMA 1x, EVDO, LTE, VoLTE and 5G NR cellular networks using Samsung & Airspan OEM Equipment in the 800, PCS & 2500 Bands all projects have included creation of related RFDS, CIQ and ACDs as needed for:
* Macro Network DOMU (Triband) upgrade Plan of Record development and finalization.
* Atoll Volte Gap vs. CDMA 1x analysis for Toledo, East & West MI.
* Atoll VoLTE ACP EDT Optimization maintaining CDMA No Harm constraints for Toledo Market.
* Stemming from VoLTE Gap Analysis results the Neighborhood Expansion (Macro & Mini Macro) NSB project including initial analysis of MLA (ATC, Crown, VB, SBA, etc.) candidates to meet the design requirements for the NSB Search Rings relative to proximity, location relative to existing sites and available Rad. Centers. Followed by candidate analysis and SCIP reviews then RFDS design for LTE (and CDMA in some cases) for these newly selected candidates and finally CIQ and ACD generation.
* 2500 Massive MIMO Project modification of many DOMU and NSB RFDS to support Massive MIMO along with RFDS for CDU30 upgrades with generation of new CIQs and ACDs,
* Very heavily involved in all Mini Macro (small cell) Projects - Mobilitie, Self-perform (Sprint/Boost/Dealer Stores, Meijer, etc.), Turnkey (Extenet, Crown, Teleworld) & Neo Networks, etc. projects including candidate and SCIP approvals, RFDS, CIQ, ACD and using Atoll for UE Relay BH Donor viability determination. Sprint Central Region SME for questions related to the Mini Macros (small cells) for special case RFDS creation (small cell provides outdoor/indoor solution using Tappers, etc.) antenna questions, how to build in Atoll, Quasi Omni using remote antennas and Airspan questions.
* Preparation and updating both the Central Region MapInfo 2500 Channel Plan Workspace based on Sprint Spectrum Team 2500 Frequency Plan updates and the TAC assignment map based on TACs pulled from PRTS for during RFDS and CIQ creation as well as the 1900 (1x/EVDO/LTE) BTA MapInfo channel workspace using Patrol Channel Pull.
* Central Region RFDS audits for all Marcos and Mini Macros in the Central Region using Sprint Vision Dumps to find and correct RFDS errors.
* Correcting antenna model and tilt assignment errors in Atoll using Patrol, Atlas, and Capstan dumps for Central Region.
* Aided in monthly PNCT preparation for East Michigan prior to NRF PNCT automation.
* Reviewing the RF parts of GC Scoping Reports and contacting GCs for Scoping QC for Sprint Engineering and the PMs.

# **RF Engineer, Primus Software Corp. (contractor Verizon Wireless, Southfield, MI) (02/15 – 04/17)**

* Focus RF Design, Regulatory & Special Project tasks related to VZW MI Regional Cellular Network for deployed CDMA 1x, EVDO and LTE Cellular Networks that use Ericsson/Nortel Technology in Upper 700, 850, PCS & AWS Bands.
* Main contributions: - Working on following in support of NSB, Ant. Mod., Carrier Adds and HP LTE projects in 700, PCS and AWS bands from a regulatory perspective. This includes:
* Creating, checking, and correcting EA (RFDS) and their plumbing diagrams,
* Preparing RFCIQ data for NB and Mod Macro and SC Sites,
* Working with construction (and external site acquisition firms) on National Environmental Policy Act (NEPA – 144R & 5323), Endangered Species Act & National Historic Preservation Act (NHPA) Forms for NB and Mod Macro and SC Sites and the related Tower Construction Section 106 Notifications including Form 620, 621 and E-106.
* Ensuring compliance of DL RSSI Coverage with all domestic and international border requirements (other US Carrier & Canada) i.e., no overshooting or filing requests for extension agreements if needed.
* Corrections and changes to RF Planning Tools if needed (antennas, tilts, losses, power, channel assignments, etc.) when errors were found in coordination with RF Cluster and SP Engineers.
* Running RFE regulatory studies for all tower structures or requesting and tracking EME studies for rooftops, and small cells, etc.,
* Working with Regulatory to reconcile any issues and differences between GeoPlan and VZReg found compared to FAA ASN, ASR, 1A & 2C with respect to total structure heights based on Tower Scan data,
* Completing the RF related parts required to obtain final VZW Regulatory using NWF and Siterra so that assigned projects can move to construction on time,
* Requesting and tracking AM studies for sites requiring this as part of their regulatory approval process so pre and post detuning can happen on time with construction,
* Review of Macro MODs GC Scoping Tower Survey Reports for PMs and Equipment engineering for correctness, RF BOM adjustments and pre post RFDS creation to insure build correctness and cost control - built it correct the 1st time.
* Review of closeout packages for any RF related issues (antenna and or RRH configuration errors compared to EA, or RL/IL/PIM issues) so GC Tower crews get requests for mitigation in a timely manner,
* Leading various special projects to reconcile errors in GeoPlan compared to OSS/BSM data in preparation for transition for GeoPlan to Atoll in September 2016. This includes:
* Antenna Trials: Contractor leading day to day tasks for a number of antenna trails focused on comparing between antennas pertaining to similar families such as Hexport, Octoport to find the most suitable antenna from different vendors to achieve certain required coverage objectives to shape and shift LTE between bands in an attempt to elevate LTE congestion of lower bands (700) by shifting traffic to AWS/PCS bands using means other than just parameter adjustments such as LTE Load Balance as well as finding the best antenna for start of LTE 850 deployments moving forward. As well as trials comparing AIR21 to AIR32 and to see if it would be more effective not to move Ericsson AIR antennas from rural sites to the core areas due to their limited power capabilities for LTE.
* True up of all CDMA 1x and EVDO 850 and PCS channels to match BSM data 100%,
* GeoPlan Total TX and RX losses, LTE Radio Models (eNB/RRH – models and power levels), Tilts, Diplexers/Triplexers and TMAs, etc.
* Investigating GeoPlan LTE discrepancies for each site regarding radio types (RU: 01 & 02, RRH: RRUL, RRUS11 RRUS12 & A2 for bands B13, B2 & B4, AIR21 B4A/B2P & AIR32 B4A/B2P) based on OSS Dump.
* Market point of contact for NetScout – TrueCall rollout March 2017.

# **RF Engineer II, Avion Systems Inc./NextGen Global Resources, LLC. - Samsung (contractor at Sprint, Lone Tree, CO) (11/14 – 02/15)**

* Focus Optimization and Network Performance Improvement of Sprint’s Colorado market deployed CDMA 1x, EVDO and LTE Cellular Networks that use Samsung Technology) Following Sprint’s network optimization, NPI processes using Sprint RF Performance and Network Status Tracking Tools (Siterra/Glance/Reveal/ODEON-Tableau /RF Cockpit/Samsung BSM and LSMR) for KPI Monitoring, Optimization and NPI of the deployed and expanding network in the Colorado - CDMA 1x (800/PCS), EVDO (PCS) and LTE (FDD 800/1900/TDD (2.5G) by supporting two market NPI projects:
* Top Gun: Performance investigation/troubleshooting of any (500x500) meter meshes flagged in CO by the Agoop server based on automated active and idle LTE performance data (accessibility, retainability, integrity, mobility and availability) collected by an APP activated on some users UEs followed by investigation of the worst performing grids using drive test data, current physical site settings and parameters and finally arriving at optimization and NPI recommendations (physical cell and network parameter changes as well as possible site additions) to improve performance of those violating grids along with tracking of before and after KPIs in attempt to improve and resolve or improve performance issues in those grids with poor KPIs.
* Multiband (LTE 800/1900/2.5G) Optimization and NPI: A multiband and multi-technology cluster performance improving initiative for the Colorado Sprint market to improve accessibility, RRC failure and HO failure reduction for all 800/1900/2.5G, CDMA 1X, EVDO and LTE. This project was in an early phase with work entailing preparation of processes, trackers, cluster definition, drive routes, etc.
* Worst performing cell investigation based on daily/weekly/monthly KPIs (CDMA 1x VBR/VDR), EVDO (CFR/CDR) and LTE (CFR/CRD) with respect to cause and solutions including modification of physical and soft site parameters and issuing trouble tickets for Sprint Field Ops and OEM Samsung to fix issues and improve network performance.
* Lead identifying congested LTE clusters for traffic offload using planned future Small Cell deployment.
* CDMA/LTE KPIs review following LTE 800 and/or 2.5G turn-ups of existing CDMA or CDMA/LTE 1900 sites as part of the OAR/OAC No Harm Reporting Process.

**LMR PM & RF Engineer, Airbus DS (Cassidian Communications), Richardson, TX (02/12-09/14)**

*Focus Land Mobile Radio (P25, DMR, Tetra) & MW Backhaul* for Public Safety, Transportation, Utilities, and Industrial

* Lead and PM for several P25 LMR Public safety Deployment Projects across the USA.
* Providing RF related technical sections for Land Mobile Radio (LMR) Public Safety, Utility & Natural Resources RFI, RFQ & RFP responses for VHF, UHF, UHFT, 700 & 800 MHz bands using P25 (Cassidian CORE/ Tait Radios), Tetra (all Cassidian), DMR (Tait kit), Paging & Alerting (various OEMs); NXDN; and MW Backhaul Transmission (various OEMs - Cerrigon, Dragon Wave, etc.) – including link-budgets, coverage design, traffic dimensioning for capacity and frequency planning to meet coverage, capacity, C/I and inter-modulation mitigation between co-located antenna systems within KPI and DAQ Quality requirements using EDX – Signal Pro and Mentum Planet RF design tools.
* Preparation of RF network designs, block diagrams, system configurations, MW point by point responses, bills of materials (BOMs) and cost calculations for customer proposals.
* Performed repeater and in-building surveys and measurements to aid in the design and RFP process.
* In-Building venue design included (court houses, detention centers, 911 call centers and airports) for public safety P25 and Tetra Technologies using iBwave for passive/active and hybrid DAS deployments including dedicated head-ends, BDAs, APs and DAS antennas followed by commissioning, turn-up, troubleshooting, verification testing. and final customer acceptance. Vendors used were Comba, Fiplex, Avari, Skymira, Crossfire, ADRF, and Zetron.
* Site selection (Co-lo and Greenfield) to meet LMR coverage requirements with the lowest cost and optimum TX/RX and RX only repeater mix.
* Prepared tower design configurations with respect to antenna mounts, height, standoffs, and best TX/RX antenna locations to meet DL/UL coverage requirements.
* Satisfy all FCC, APCO and RPC regulatory requirements w.r.t. to coverage and interference contours using FCC ULS, ASR and Spectrum Dashboard information.
* Prepared and reviewed ULS FCC601 forms based on project’s licensing requirements.
* Working with APCO, FCC, Industry Canada, etc. for all matters related to licensing and regulatory (AM, MPE, FAA).
* Propagation model calibration using RF Design Tools (EDX Signal Pro, Mentum Planet & iBwave).
* MW Backhaul Link Planning at the RFP phase (route maps, path profile, radio, site surveys, SONET TDM) using Google Earth Pro and Path Loss IV. Followed by construction and deployment project management using Ceragon & Dragonwave MW Radios in SONET ATM configurations.
* Leading and supporting CAT (DAQ – Circuit Merit and Talk-out Drive Testing using STI equipment) and FAT Optimization.

**LTE RF Design Engineer, T-Force Inc. (contractor Ericsson USA, Plano, TX) (02/11 – 11/11)**

**Focus LTE RF Network Overlay Design Project for AT&T & US Cellular**

* Designing AT&T 4G LTE overlay network (TN & KY) and for US Cellular Knoxville, KY Market.
* AT&T LTE overlay employed Atoll RF Design Software and JDSU AriesoACP, and Teoco Capesso ACP tools to achieve: Optimum Coverage (RSRP), Quality (RSRQ), Dominance, SINR and Throughput within required AT&T KPI design target guidelines using approved link budgets for each bands allocated channel bandwidth and the link profile for the Ericsson LTE eNodeB maintaining proper Spectral Border Coordination and Contingency requirements.
* Preparation of AT&T project progress and final review presentations.
* Attending all related design review meetings with AT&T at market level and national HQ levels.
* Moved in October 2011 to the US Cellular Team for LTE overlay design work for the Knoxville, KY market using the Mentum Planet RF Planning tool and its embedded ACP Tool areas included in this design (WVA, WVA, ETN, EKY & WNC).

**Sr. RF Team Lead, Technical Services Division, Huawei Technologies, USA Plano, TX (12/08 – 02/11)**

**Focus CDMA, EVDO, WiMAX, LTE – worked on the following projects:**

**Clearwire (WiMAX):**

* WiMAX RF SME addressing Clearwire’ s questions related to Huawei’s WiMAX implementation for the deployed markets Seattle, WA & Hawaii, relative RF parameters, frequency planning, configurations, features, per-launch optimization, troubleshooting and NPI.
* Member of per-contract & proof of concept Field Trial & Test Bed Team Herndon, VA.
* Addressed aspects related to RF issues for the Field Test Sites in Alexandria, VA including RF parameter settings, physical configurations, drive test analysis, etc.
* Huawei RF representative meeting with Clearwire HQ R&D technical team addressing product feature questions.
* Production of daily KPI trend reports for Huawei R&D at HQ for the Seattle, WA & Hawaii Markets.
* Member of Seattle, WA Market roll-out and launch team.
* LTE (FDD-TDD) vs WiMAX trials Phoenix, AZ.
* HiBeam Internet & VOIP Fixed WiMAX Project: Lead responsible for design, parameter configuration, deployment, acceptance testing and optimization of three small WiMAX networks (Marion, IL, Joplin, MO & Peoria, IL Markets).
* COX (CDMA/EVDO) Atlanta, GA: a) Initial contract negotiations for the design, deployment, and managed services from an RF perspective. b) Review and approval of Greenfield RF Design and Propagation Model Calibration performed by LCC. c) Lead vendor negotiations and selection of suitable DAS integrator for required in-building venues in RI and Tulsa, OK. d) Managed RF Greenfield Macro and In-building RF Designs for Tulsa and RI Atoll and Planet EV RF Tools (Link Budgets, coverage, Monte Carlo simulations, PN planning, etc.).
* Sprint, (CDMA/WiMAX):
* Lead for Kansas City field trial supporting RF comparison between Huawei WiMAX and CDMA.
* Managed end-to-end performance testing of co-located and/or shared antennas for WiMAX 2.5 GHz and CDMA2000 (1.9 GHz and 800MHz) using both the Sprint 3G and Clearwire 4G USB modems.
* Cricket/Leap, (CDMA/EDVO) Chicago, IL network launch Lead:
* Aided with issues related to zoning hearings and getting some sites approved as DAS solutions.
* Troubleshooting EVDO problem sites.
* Tracking network KPIs to find problem sites needing further work.
* Managed Tier 1 & Tier 2 TAC support and troubleshooting duties during network launch and optimization working with Huawei R&D in Shenzhen and Shanghai to track, troubleshoot, resolve and close open RAN tickets in a timely manner, updated pertinent databases and inform all parties via email and over the phone including the customer of the final outcomes.
* Analyzed pre-post drive test logs following parameter changes and any software patch loads to verify issue resolutions.

**RF Market Lead, Amirit Technologies (Turnkey T-Mobile project, Islip, NY) (10/08 – 11/08)**

**Focus GSM/UMTS New Site Build**

* Amirit Technologies Lead for T-Mobile NSB turn-key contract activities in the Long Island, NY market: PM for 130 NSB rings in Western Long Island from initial Asset RF Tool design until final shakedown and Insite activation including:
* RF Design, Frequency Planning, RF data fill, antenna, and propagation model selection.
* Review and red line of Lease Exhibits, Zoning Drawing & Construction Drawings (LEs, ZDs & CDs).
* Zoning Hearings and Zoning Testimony Support.
* Candidate Selection & Site Surveys/Scoping, Site Acquisition Support and Coordination of Candidates, CW Verification.
* Regulatory compliance (FAA Determination Forms, FCC ASRs, AM Coordination and Maximum Permissible Exposure).
* In-building surveys and acceptance walks for DAS implementations using CommScope (Andrew) ION Series (ROF), Mini Repeaters and ValueDAS Products.

**Principal RF Engineer, EPCGlobal – Talascend LLC (contractor at Bechtel, Beltsville, MD) (04/08-09/08),**

*Focus – New Site Build & UMTS roll-out AT&T Wireless:* a) Working for Bechtel to support AT&T Site Acquisition for 180 rings: Design Walks/Scoping, CW candidate verification, Regulatory MPE Roofview/Signage and Narda Walks, LE, ZD and CD red-lines using ArcGIS and AutoCAD, Zoning Hearings and Testimony Support. b) UMTS850 Overlay market launch support (war room coordinator).

**Principal RF Engineer, Amirit Technologies (contractor Sprint Nextel, Mahwah, NJ) (04/07 – 03/08)**

**Focus WiMAX Network Overlay Design:**

* Design of overlay and greenfield WiMAX Network, for NNJ, CNJ NY:
* Preparation of preliminary and final Co-location EBTS (RF Data Sheets).
* PlanetEV and Composer Tool POC (point of contact) for all issues related to WiMAX Overlay Design in NJ (northern and central), LHV (Lower Hudson Valley) and LI (Long Island), responsible for PEV NRF Data Manager updates.
* Propagation Model Calibration: Selection of CW propagation model calibration data collection candidates, review, and approval of the (CW drive routes & GC CW test setups), model calibration using CW data logs for the PEV Predict 4.0 CRC Model and tuned model site/sector assignment throughout the network.
* LE, ZD and CD red-lines; MW backhaul design, oversight of GC site modifications in the field; review of feeder sweep VSWR and PIM test results; review of GC final closeout packages.
* Power Density calculations to comply with Regulator MPE requirements.
* Identification of new WiMAX Search-Rings, candidate hunting, new site Zoning Hearing and Testimony Support.

**RF Engineering Coordinator PM, Nexus Wireless (contractor T-Mobile, Concord, CA) (06/06-04/07)**

**Focus GSM & UMTS**

**PM supporting TMO Bay Area Sr. RF Market Manager in all day-to-day operational tasks, interface duties with Western Region and Field Support Center (FSC) for special projects, network performance and design improvements. Scope included:**

* Flagging of exclusions and special case sites not complying with FSC PCC (Personal Coverage Check) rules, tracking all non-compliance, and working with the performance team to ensure timely corrections.
* Tracking Consistency Check violations then working with cluster performance engineers and BSS group to resolve inconsistencies, analyzing Parameter Compliance, and recommending settings per the FSC rules.
* Overseeing radio removals and additions using EDW queries, RADAR (Radio Add & Removal Tool) based on both TPU (Traffic Prediction Utility) and RANPI TRX utilization metrics (Metrica) criteria. Working with the Performance Engineers for any exclusions.
* Coordination with Western Region RF team for Frequency Plan Re-tunes mandated by the spectrum swap agreements with Cingular Wireless.
* Special projects for management as related to budgetary estimates for upgrade of older BTS models.
* Tracking sites rolled out incorrectly from an RF perspective, and of pending sector additions for NPI.
* Asset database cleanup, Asset vs. Insite database matching and cleanup.
* Cleanup differences between Insite and the E911 Scout Tool Database to facilitate the AutoProv process and PNC TRA/TPM/PCA tracking. Coordination with the E911 Team in the Iconectiv – Granite Zing database.
* Working closely with NextG Networks (Crown Castle) on improvements and troubleshooting of problems related to indoor DAS and campus oDAS systems using both active ROF and BDAs as well as some legacy passive DAS systems in the bay area using Andrews (CommScope) and ADS (TE Connectivity) equipment.
* Zoning Hearing and Testimony Support for oDAS and difficult locations in downtown SF, Marin & Monterey Counties.

**Sr. Radio Network Engineer, Nortel Networks, Richardson, TX (05/04 – 05/06)**

**Focus GSM, GPRS, EDGE, UMTS – worked on the following projects:**

* Team Lead Pulse Mobile, GTA, Guam: RF Lead for GSM Overlay Project, GSM 850/1900 overlay design over existing TDMA network followed by green-field expansion (design and optimization) and zoning work related to site additions.
* Cingular, GSM Overlay Project Genesis, San Juan, PR: GSM 850/1900 Network Optimization for Conditional & Final Acceptance and AMR roll-out. Review of WFI Tower Scoping Reports.
* RFQ Lead GSM & UMTS for presales proposals: DHS GSMR1900, AMX/Telcel UMTS overlay proposal 44 markets in Latin America.
* PM for Cingular SE Region MNC change out project following Cingular AT&T WIRELESS merger.
* PM Caribbean Cable & Wireless GSM Dual-Band propagation model tuning project.
* Lead Dobson Optimization & Coverage improvement project: Supervision of drive-test, route design and site design change recommendations across US.
* Nortel Tier 1 TAC team Lead T-Mobile frequency re-tunes using a new interference matrix tool for Manhattan, NY during GSM Edge rollout across the US for T-Mobile and RF PM for the same in NC & SC for Cingular Wireless.

**Cluster Performance Engineer, Nexus Wireless (contractor T-Mobile, Chicago, IL) (03/04 – 04/04)**

* Focus GSM Performance: Custer Performance Engineer NPI to meet and improve KPIs, resolve trouble tickets and troubleshoot OMCR Alarms.

**Sr. RF Engineer, EPCGlobal Talascend LLC (contractor with Bechtel, Chicago, IL) (02/04 – 03/04)**

* Focus New Site Build & GSM. Consultant working for Bechtel for the AT&T Wireless Best in Class (BIC) New Site Build Project for Chicago and IL, 400 Ring Network Expansion. Site Acquisition Support, candidate design walks, CW candidate verification and Regulatory (MPE), red line of LEs, ZDs and CDs using ArcGIS & AutoCAD.

**Sr. RF Engineer, Wireless Facilities International (WFI), San Diego, CA (11/03 – 02/04)**

***Focus New Site Build & GSM* – worked on the following projects:**

* Lead for 200 Ring NSB Design, AT&T WIRELESS, Tri-State GSM BIC, Paramus, NJ. Cell site candidate selection.
* Lead for GSM NPI Project, AT&T WIRELESS, BAWA market GSM Homestretch NPI Project with over 300 sites.

**Sr. Customer Service Engineer, Siemens ICM, Boca Raton, FL (04/02-10/03)**

**Focus GSM Overlay Design, Optimization/Performance, Project Management:**

**Cingular Wireless, GSM 850/1900 Overlay Detroit MI.**

* Initial overlay design: Antenna selection, link-budgets, meeting GSM coverage requirement KPIs vs. existing TDMA.
* Market Compliance Lead for Lucia process ERP calculations due to stringent requirements for antenna and feeder sharing between GSM bands and existing TDMA.
* Designed and maintained extensive excel databases to automate the process of ERP calculation and preparation of RFDS presented to the Bechtel Site Acquisition team.
* In charge of RF planning tools upkeep for the market.
* Responsible for approval of all ERP change requests during optimization phase to insure FCC de-minimis compliance.
* RF design, initial tuning, and optimization of various clusters in the market.
* Coverage comparison requirements Lead for Conditional Acceptance (CA), including drive testing.
* Post-Construction Site Audits & Pre Scoping PM for Great Lakes region (MI, IN, OH, WI) contracted to WFI: Tracking progress vs. timeline, QA and payment approval or rejections, helping to resolve bottlenecks, and making sure Engineering Change Orders to Bechtel were issued on time.

**Project Manager/Team Lead E911 NSS Survey Project, Milan Consulting, Marietta, GA (02/02 – 04/02)**

**Voicestream Wireless – Turnkey project, Philadelphia, PA & Baltimore, MD – Washington, DC**

* Focus E911 site surveys Project Manager and RF Lead for a team of engineers and tower crews performing Site Surveys to comply with E911 NSS requirements for the two markets. Duties included: E911 NSS Site Survey Database upkeep, training, and supervision of team members (5 engineers & 2 tower crews), survey scheduling, equipment inventory, etc.

**Sr. RF Consultant, Data Workforce, LP (contractor Ericsson USA, Plano, TX) (10/01-02/02)**

**Focus – AT&T GSM RF Network Overlay Design, Pre Launch Coordinator/PM:**

* GSM overlay RF Design, RFDS Generation & Automation based on AT&T DBs and Scoping Data, Project Management and Pre Launch Optimization
* RF War Room Coordinator working with Tier I & II TAC and Ericsson GTAC, for Columbus, Cleveland and Dallas.

**RF Technical Support Engineer, Galaxy Engineering Services, Alpharetta, GA (7/01-10/01)**

**Focus – GSM New Product Trials & Marketing:**

* Frequency Translation Repeaters, Consultant at Littlefeet, San Diego, CA): Assigned to Marketing group at Littlefeet, a California startup producing a niche multicasting repeater-like product called “SPICE™” for GSM operators. Main duties included negotiations for product demo preparations and meetings with potential customers in Moscow, Russia, and Nanjing China.

**Sr. Radio Network Performance Engineer, Ericsson, Inc., Richardson, TX (05/01-06/01)**

**Focus – UTRAN/UMTS/WCDMA R&D & Product Testbed: New Ericsson UTRAN Group closed after two months due to budget cuts.**

**Senior RF Consultant, Logica, Inc., Dallas, TX (02/00-04/01)**

*Focus – GSM Green Field Design, Prelaunch Tuning & Propagation Model Calibration for 2-way Paging*, assignments:

* Voicestream, Austin, TX: Greenfield GSM 1900 network Design, Site Surveys/Scoping and Optimization of Austin DFW corridor expansion for Waco, Temple, Killeen, Fort Hood Nortel BTS Turn-Up & Optimization, scope included: Site build verification (tilts, azimuths & shakedowns), tweaking of cell parameters and frequency plan based in drive test analysis.
* Project Manager PageNet, Dallas: Propagation model tuning using CW drive test data.

**EDUCATION:**

* Completed some Graduate Course Work towards PhD. (24 credit hours completed only), University of Texas at Arlington, Arlington, TX.
* Master of Science, Electrical Engineering, Electronics and Telecommunications, University of Baghdad.
* Bachelor of Science, Electrical Engineering, University of Baghdad.