**Rajat Jain**

Email: rajatjain\_07@yahoo.com, Phone: +91 9810553849

**Experience**

* Working with Tata Consultancy Services Wireless Telecom Unit since October 2002.
* 11 years of extensive experience in analysis and development of conformance test cases for LTE, LTE Advanced and CDMA2000
* 4 years of Project Management experience in offshore/onsite project delivery and multi-site project co-ordination.
* 4 years of experience as Technical Team Lead with Aeroflex and Rohde&Schwarz
* 5 Years of international work experience at Aeroflex (UK), Qualcomm (San-Diego) and Rohde&Schwarz (Munich) customer sites.
* Development of LTE and LTE Advanced (release 8, 9 and 10) RRM conformance framework
* Development of LTE Positioning (OTDOA and ECID) conformance framework
* Development of CDMA2000 L2 and L3, EVDO Rev 0 conformance framework
* In depth knowledge and experience of LTE Release 8, 9. LTE advanced Release 10 protocols (RRC, Phy and MAC layers).
* In depth debugging experience of LTE protocols.
* Good knowledge of LTE Advanced Rel 11 and 12 features such as COMP (Co-ordinated Multipoint), Relaying, ePDCCH, eICIC, feICIC etc..
* Experience in UMTS (Basic), PPP, Mobile IP and SIP Protocols
* Experience in analysis and review of 3GPP work items, CRs etc.

**Platform Experience**

* VC++, Perl, VB Scripting Programming Languages
* Extensive Experience in conformance test platforms of Rohde&Schawrz (CMW500)
* Experience working with Qualcomm Panda/Python and Aeroflex Wireless Simulators
* Experience in Mobile Diagnostic tools such as QXDM, QPST, UDM, QCAIT

**Qualification**

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| Degree and Date | Institute | Major and Specialization |
| Bachelor of Technology, July 2002 | Regional Engineering College, Kurukshetra, India | Electronics and Communications Eng. |

**Key Projects**

The details of the various assignments that I have handled are listed here, in reverse chronological order.

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| Project | RRM LTE Framework Development |
| Customer | Rohde & Schwarz, Munich. |
| Period | March, 2010 – Current |
| Role | Senior Developer, Analyst |
| Location | Munich (March 2010 – August 2013), New Delhi (Since September 2013) |
| Project Description | Development of RRM conformance framework for Release 8, 9 and 10 for LTE FDD, LTE TDD, LTE InterRAT to WCDMA/GSM/C2K, FDD-TDD interworking, LTE Advanced and LTE Positioning minimum performance specifications test cases. |
| Role/Responsibilities | **LTE Release 8, 9 RRM Framework**:   * Responsible for design and development of LTE Release 8 RRM framework. * The RRM Framework includes RRM Required RMC patterns, Multi cell support, AWGN and Fading environment conditions. * Implementation of complete LTE FDD and LTE TDD duplex modes in RRM framework. * Implementation of framework for various RRM Rel 8 required features such as LTE Handover in FDD/TDD, LTE Re-establishment, Radio Link Monitoring, Measurements etc. * Implementation of framework for various RRM Rel 9 required features such as CSG scenarios, CGI Reporting * Implementation of Minimum performance test scenarios based on 36.521-3 for LTE FDD, TDD and FDD-TDD Inter working.   **LTE-eHRPD InterRAT**   * Design and implementation of LTE-eHRPD InterRAT framework. * Implementation of LTE-eHRPD reselection feature for RRM. * Analysis and contribution towards LTE–eHRPD Active Handover (with eHRPD Pre-registration)   **LTE Advanced Framework**   * Responsible for design and development of LTE Advanced Release 10 RRM framework. * Implementation of framework for Carrier Aggregation. * Implementation of Carrier Aggregation Minimum performance test scenarios (Measurement scenarios) based on 36.521-3. * Design and implementation of eICIC (Almost Blank Subframe) Framework in RRM. * Analysis of various eICIC scenarios (Radio Link monitoring under time domain restricted measurements, CRS measurements, CRS Cancellation (Rel 11))   **LTE Positioning**   * Responsible for design and development of LTE Positioning framework for Minimum Performance specification based on 3GPP 37.571-1. * Implementation of framework for OTDOA and E-CID based on C-Plane and U-Plane (SUPL 2.0) positioning. * Implementation of OTDOA and E-CID Minimum performance test scenarios based on 37.571-1. * Analysis and Framework design for OTDOA under Carrier Aggregation constellation. |
| Solution Environment | Visual C++, Rational Clearcase, Rohde-Schwarz CMW500 platform |

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| Project | SIP Stack Porting for Blackberry |
| Customer | Qualcomm |
| Period | August 09 – December 09 |
| Role | Technical Leader / Project Leader |
| Location | Tata Consultancy Services, India |
| Description | The project was a pilot project aiming SIP Support in Blackberry. Started with porting of an open source SIP Stack available in JavaSE to Blackberry platform in JavaME and implementation of JSR180 Interfaces. All the SIP Signalling involving SIP Registration and Session Setup was ported to JavaME and Tested with Blackberry Bold 900 Device using Wi-Fi and GPRS having BIS connection. |
| Role/Responsibilities | * Study of the existing SIP Stack source code and analysis of porting effort/challenges * Study and implementation of various network connection methods available for Blackberry e.g. Wi-Fi, Direct TCP, BES etc. * Leading the team in effort for porting of SIP Stack code from JavaSE to JavaME * Development of JSR180 Interfaces for SIP on JavaME * Leading development effort for a Basic UI for Blackberry Bold 9000 device * Delivery ownership of the project including all the project management tasks |
| Solution Environment | JavaME, Blackberry JDE 4.6.0 |

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| Project | Gobi Test Support and Automation |
| Customer | Qualcomm |
| Period | August 07 – July 09 |
| Role | Project Leader |
| Location | Tata Consultancy Services, India |
| Description | Gobi was data card module, being developed by Qualcomm, to be integrated and sold with different vendor notebooks. The project involved CDMA/UMTS Signaling Test along with functional, performance and integration testing of Gobi module, such as Notebook Integration Testing, USB Drivers Testing, CDMA/UMTS Firmware testing etc. with different Notebook OEMs. |
| Role/Responsibilities | * Responsibility of timely verification of CDMA L3 and UMTS RRC Signaling as per the customer’s defined test cases in TTCN * Responsible for Monitoring, scheduling and delivery of all the Test Activities by the teams as per CDMA / UMTS firmware build release schedule from customer * Preparation and Review of various Test plans as per the product requirements and functional specifications from customer and different OEM vendors * Responsible for the delivery of Automation development of Notebook Integration Testing in Perl on Windows XP / Vista and Win7 32 bit and 64 bit environment * Automation development for various Gobi Module activities using QPST, QXDM Automation Interfaces in Perl * Multi site project co-ordination between TCS Delhi, QC India, QC San-Diego * Ensuring Quality Management of project |
| Solution Environment | Perl, QPST, QXDM, QCAT, VC++ |

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| Project | PPP and SIP Conformance development and testing |
| Customer | Qualcomm, |
| Period | September 06 – July 07 |
| Location | San Diego, USA |
| Description | Implementation and testing of different PPP and SIP call flows on the CDMA chipset for modem conformance. These PPP flows were supported with CDMA 1X and EVDO Rev 0 and Rev A protocols. |
| Role/Responsibilities | * Analysis of different PPP and SIP scenarios and call flows * Design and implementation of PPP/SIP framework. * Implementation of common library for handling PPP signaling and retransmission protocols * Implementation of test cases in ASIA Framework using Perl language |
| Solution Environment | Perl, Perforce, QXDM, QPST, Qualcomm Panda/Python system, Qualcomm ASIA framework |

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| Project | CDMA Conformance Test |
| Customer | Aeroflex, UK |
| Period | Jan 03 – Aug 06 |
| Role | Developer (Jan 03 – April 05),  Module Leader (May 05 – Aug 06) |
| Location | TCS India and Aeroflex UK |
| Description | Aeroflex was the leading CDMA protocol test equipment manufacturer in the UK.  The project involved design and development of CDMA 2000 1x and EVDO Layer 3 signaling framework for the CDMA Conformance test cases. |
| Role | * Design and development of Layer 3 signaling protocol framework for CDMA2000 1X Rev 0 and Rev A in VC++/VB Scripting * Porting of CDMA 2000 ESN based protocol signaling stack to MEID based stack * Design and development of EVDO Rev 0 and Rev A signaling protocol stack in VC++ * Analysis of 3GPP2 Conformance test requirements * Design of Conformance Test cases as per 3GPP2 test specs (C.S0031, C.S0037, C.S0038 Rev 0 & Rev A, C.S0043, C.S0044, C.S0073) in VB * Add support for AWGN and Fading Simulator in CDMA 1X Protocol Stack * Design and Development of AGPS protocol stack to work with NavLabs GPS Simulator * Design and Development of Mobile IP Conformance Test Cases * Design and Development of GSM-1X conformance test cases in Perl * Responsible for customer support to Qualcomm, Motorola, KDDI, Kyocera and Reliance infocomm |
| Solution Environment | Windows 2000 Server, Visual Basic, VC++, NavLabs GPS Simulator, Perl, Installshield |