

Mark Opfell

Exposure & Skills

RF Standards	FCC, ITU, DVB-S2
Programming Languages	Python, VBA
HW Tools	VNA, Antenna Hats, Digital Transceiver
SW Tools	Excel (Wizard), Pycharm, Git*, Bash, Vi
Scientific Python Stack	NumPy, SciPy, Matplotlib, Pandas
Significant Ascents	Mount Rainier, Mount Adams, Mount Baker

Work Experience

Job Title	Senior RF Systems Engineer	
Employer	LeoStella	Tukwilla, WA
Period	April 2019 – Present	

Architecting software defined RF communications system solutions for low-earth orbit small satellite constellations (BlackSky & Loft Orbital) managing cost, SWaP, schedule, and risk. Building an open source link budget model to simulate: throughput, coverage, power, and bandwidth.

Flowed top-level GPS RF system self-compatibility requirements to a filter design. Implemented design by researching and simulating parts, and then laid out the RF section on a mixed signal PCB. Validated and characterized calibrated RF response with a network analyzer over temperature extremes.

Job Title	RF Systems Engineer	
Employer	Kymeta	Redmond, WA
Period	February 2018 – March 2019	

Developed and executed over-the-air combined OSI application, transport, network, and physical layer level test cases for a mobile MIMO terminal Ku-band ground station with software defined phased array flat panel antennas and a DVB-S2 satellite modem

Wrote phased array antenna cross-polarization optimization algorithm in Python and integrated it with production level test codebase along with documentation, theoretical and actual response data.

Took on project management duties helping guide and educate team members towards a unified view of software processes, programming languages, and development tools, across Agile and Waterfall methodologies.

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Job Title	RF Systems Software Engineer	
Employer	Space Systems/Loral	Mountain View, CA
Period	October 2016 – January 2018	

Award winning role leading, developing, and managing a production Python client and services to exchange data between a PostgreSQL database storing 1 TB of antenna data and an RF downlink capacity tool.

Job Title	Senior RF Systems Engineer	
Employer	Space Systems/Loral	Mountain View, CA
Period	March 2015 – October 2016	

Lead successful Forward downlink payload re-design, deployment, launch, in-orbit test, and handover of geostationary communication satellite Echostar 21 operating the receive at Ka-band and transmit at S-band.

Wrote specifications, triaged vendors, reviewed test data collateral, and directed the installation, unit level and system level tests of the following passive and active RF units: diplexer, waveguide, directional coupler, band pass filter, low noise amplifier, downconverter, high power load, circulator, coaxial cable, master reference oscillator, and synthesizer.

Job Title	RF Systems Engineer	
Employer	Space Systems/Loral	Mountain View, CA
Period	September 2013 – March 2015	

Developed Python analysis tool to model complex amplitude and time delay of 10,000+ passive and active electronic units for a ground-based beam-forming network.

Awarded by the CEO for saving \$0.25 Million and 3 weeks of production schedule with Python tool simulations.

Job Title	Associate RF Systems Engineer	
Employer	Space Systems/Loral	Mountain View, CA
Period	June 2012 – September 2013	

Automated calculations for the world's highest capacity satellite's gateway downlinks at 32,000 Watts of transmit power.

Developed and maintained budgets analyzing RF channel performance over 80 unique countries during 1.5 year satellite design cycle.

Education

Degree	Bachelor of Science in Electrical Engineering
University	University of California, Davis
Period	June 2009 – June 2012

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