

Mark Opfell

Exposure & Skills

RF Standards	FCC, ITU, DVB-S2, CCSDS, VITA49
RF Tools	VNA, GNU Radio, Antenna Hats, Cloud SDRs
Groundstation Network	KSAT Lite
General Software Tools	Python, Git*, Bash, Excel (Wizard)
Scientific Python Libraries	NumPy, SciPy, Matplotlib, Cartopy, Pandas
High Altitude Volcano Summits	Mount Rainier, Mount Adams (solo in a day)

Work Experience

Job Title	Lead Communication Systems Engineer	
Employer	Albedo	Asynchronous Remote
Period	October 2021 – Present	
<p>Creating and documenting space-to-ground communication interfaces and evaluating mission data chain physical, frame, and packet layers through GNU Radio software defined transceiver simulations, technical deep dives into open source communication standards, and drawing information flow diagrams.</p> <p>Created a realistic actionable plan to increase satellite constellation average payload data throughput by 42% yielding a 14% increase in capacity (directly correlated with revenue). Validated the plan with large scale year-in-the-life Python link budget modeling and systems engineering both showing minimal: recurring cost, schedule delay, and technical risk. Built consensus with the founders: CEO, CTO, and CPO, on which space and ground communication business partnerships to pursue.</p>		
Job Title	Senior RF Systems Engineer	
Employer	LeoStella	Tukwilla, WA & Remote
Period	April 2019 – October 2021	
<p>Created technology roadmaps, architecture diagrams, link budgets, test plans, and ran hands-on troubleshooting. Collaborated with suppliers and customers to design, manufacture, test, launch, and operate X, S, GPS, and UHF-band space-based software defined radios linked to ground stations enabled by the AWS Ground Station product (global ground-station-as-a-service) as well as the KSAT lite ground station network.</p> <p>Designed, simulated, purchased, laid out, and validated: parts, mixed signal PCB, connectors, cabling, and enclosure for a GPS RF system self-compatibility filter. Multiple spacecraft successful in-orbit operation.</p>		

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

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.

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

Job Title	Senior RF Systems Engineer	
Employer	Space Systems/Loral	Mountain View, CA
Period	March 2015 – January 2018	

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.

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

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

Education

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

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