

# Mark Opfell

## Exposure & Skills

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

## Work Experience

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Job Title	<b>Lead Communication Systems Engineer</b>	
Employer	<b>Albedo</b>	Asynchronous Remote
Period	<b>October 2021 – Present</b>	

Evaluating potential mission data chain physical, frame, and packet formats through GNU Radio software defined transceiver simulations and technical deep dives into open source communication standards.

Created a realistic and 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 and CTO, which supporting strategic business partnerships to pursue.

Job Title	<b>Senior RF Systems Engineer</b>	
Employer	<b>LeoStella</b>	Tukwilla, WA & Remote
Period	<b>April 2019 – October 2021</b>	

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.

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.

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

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	<b>Senior RF Systems Engineer</b>	
Employer	<b>Space Systems/Loral</b>	Mountain View, CA
Period	<b>March 2015 – January 2018</b>	

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

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

## Education

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

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