Mark Opfell

Exposure & Skills

RF Standards	FCC, ITU, DVB-S2, CCSDS
RF Tools	VNA, SDR, GNU Radio, Antenna Hats
General Software Tools	Python, Git*, Bash, Excel (Wizard)
Scientific Python Libraries	NumPy, SciPy, Matplotlib, Pillow, Pandas
Significant Ascents	Mount Rainier, Stawamus Chief (Squamish Buttress)

Work Experience

Job Title **Payload Integration & Test RF Communications System Engineer**
Employer **Amazon** Redmond, WA
Period **July 2024 – Present**

Project Kuiper

Job Title **Lead Communication Systems Engineer**
Employer **Albedo** Remote & Some Travel
Period **October 2021 – March 2024**

Creating, evaluating, and building space-to-ground digital communications links. Developing the mission data chain from modulated waveform to frames, packets, and connections. Analyzing and testing with: GNU Radio, physical software defined transceivers, technical deep dives into open source communication standards, and writing Python code for the processing pipeline.

Leading FCC and ITU regulatory filing and RF analysis.

Architected facility RF testing flow, and lab-to-cloud remote VPN network. Procured, set up, coded, and maintained FlatSat communication with test equipment, and ground station hardware & software stack.

Joined just after Seed funding as the 12th employee.

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Job Title	**Senior RF Systems Engineer**	
Employer	**LeoStella**	Tukwilla, WA & Remote
Period	**April 2019 – October 2021**	

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.

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 forward payload receive at Ka-band and transmit at S-band.

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

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

Education

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

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