

Mark Opfell

Exposure & Skills

RF Standards	FCC, ITU, DVB-S2, CCSDS
RF Tools	VNA, SDR, GNU Radio, VSA
General Software Tools	Python, Git*, Linux, Bash
Python Libraries	NumPy, Matplotlib, Scapy
Networking	Wireshark, Cisco Networking Technician
Cloud	AWS EC2 & S3
Significant Volcano Ascents	Mount Rainier, Mount Baker, Mount Adams

Work Experience

Job Title	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	

Created, evaluated, and built space-to-ground digital communications links. Developed the mission data chain from modulated waveform to frames, packets, and connections. Analyzed and tested with: GNU Radio, physical software defined transceivers, technical deep dives into open source communication standards, and Python code for the processing pipeline.

Lead NGSO imaging satellite constellation FCC 312 Schedule S and ITU regulatory filings. Ran RF analysis support efforts with Python scripts, and ITU Spacecap. Collaborated with orbital dynamics expert, and mechanical engineers to decomposed legal wording into requirements for satellite architecture and material choices for post mission disposal.

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.

+1-530-848-8212
markopfell@gmail.com
github.com/markopfell
linkedin.com/markopfell

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

Created RF 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	

Led 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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