

Mark Opfell

Exposure & Skills

RF Standards	FCC, ITU, DVB-S2, CCSDS, VITA49
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 Volcano Summits	Mount Rainier, Mount Adams (solo)

Work Experience

Job Title	Lead Communication Systems Engineer	
Employer	Albedo	Asynchronous Remote
Period	October 2021 – Present	

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

Leading FCC and ITU regulatory filing and RF analysis efforts.

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

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.

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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 forward payload 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 from scratch to model complex amplitude and time delay of 10,000+ passive and active RF 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 EIRP calculations for geostationary satellite Jupiter 2's return Ka-band downlinks at 32kW of transmit power.

Education

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

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