

Mark Opfell

Exposure & Skills

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| 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, Cathedral Peak (Southeast Buttress) |

Work Experience

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| Job Title | Lead Communication Systems Engineer | |
| Employer | Albedo | Remote & Some Travel |
| 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, 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.

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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

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| 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.

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| 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.

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| 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

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

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