

Mark Opfell

Skills and Exposure

Standards	DVB-S2, CCSDS, FCC, IRIG, ITU
RF Tools	SDR, VNA, GNU Radio, VSA
General Software Tools	Python, Git*, Linux, Bash, AWS EC2
Python Libraries	NumPy, Matplotlib, Scapy
Networking	Ethernet, UDP/IP, Wireshark, iPerf
FPGA	Xilinx, PYNQ, Vivado
Volcano Ascents	Mount Rainier, Mount Baker, Mount Adams

Experience

Job Title	Senior RF and Telemetry Engineer	
Employer	Relativity	Long Beach, CA
Period	August 2025 – Present	

Architected, developed, and programmed RF HTTL rack (hardware-in-the-loop) testing S-band telemetry bit and packet error rate of the mission data chain from vehicle UDP/IP multicast network traffic to radiated QPSK waveform received by the ground FPGA-based SDR.

Job Title	RF Communications System Engineer	
Employer	Amazon: Kuiper	Redmond, WA
Period	July 2024 – August 2025	

Developed and ran over the air Ka-band MIMO phased array system test UDP/IP throughput experiments on Xilinx Versal FPGAs.

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

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

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 showing minimal schedule delay, and technical risk.

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

Created RF architecture diagrams, link budgets, test plans, and ran hands-on troubleshooting. Collaborated with customers and suppliers to design, manufacture, test, launch, and operate X (payload), S (TT&C), GPS, and UHF-band space-based software defined radios linked to ground stations enabled by AWS and the KSAT Lite ground station network.

Collaboratively designed, simulated, sourced, advised layout, 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	

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	Maxar	Mountain View, CA
Period	September 2013 – January 2018	

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.

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

Education & Certifications

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

Certification	Network Technician
Organization	Cisco
Period	2024

Certification	Apprentice Alpine Mountain Guide
Organization	American Mountain Guide Association
Period	2023

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