

Mark Opfell

Skills and Exposure

Standards	DVB-S2, CCSDS, IRIG, FCC, ITU
RF Tools	VNA, SDR, GNU Radio, VSA
General Software Tools	Python, Git*, Linux, Bash, AWS EC2
Python Libraries	NumPy, Matplotlib, Scapy
Networking	Ethernet, UDP, TCP, IP, Wireshark, iPerf
FPGA	Xilinx Zynq, 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	

Developing real time rocket telemetry systems for first flight safety.

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

Built, and ran UDP/IP throughput experiments on a Xilinx Zynq FPGA. Developed a Python driver capturing raw telemetry frames of RSSI on Gateway LNBs, and coupled RF transmit power from BUCs. The Python driver could reboot individual gateway hardware and reverse faults.

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 payload (gigabit class) for high data rate visible and thermal sensors. Developed the mission data chain from modulated waveform to frames, packets, and connections. Analyzed and tested with: engineering model radios, GNU radio, technical deep dives into CCSDS and DVB-S2 standards, and Python code for the processing pipeline.

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

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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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