Aria Rouzmehr

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Summary

RF & Antenna Engineer passionate about tackling complex RF challenges. Experienced across S-, Ku-, Ka-, and QV-bands, with strong expertise in waveguide structures, antenna systems, and SDR-based signal chain design. Skilled in HFSS, FEKO, ADS, Python automation, and lab measurement techniques—ready for innovative aerospace and advanced RF roles.

Education

Santa Clara University, Santa Clara, CA
B.S. Electrical Engineering, Sep 2019 – Jun 2023

Experience

Comtech Xicom Technology Santa Clara, CA
RF Engineer, SSPA Systems Apr 2024 – Jan 2025

- Designed a Ka-band waveguide-to-microstrip transition and scaled a 3-way riblet-style waveguide splitter to Ka-band in HFSS; optimized for low insertion loss and amplitude balance.
- Analyzed GaN PA gate voltage telemetry during 48-hour burn-in using slope statistics and moving average filters; justified qualification procedure to enterprise satellite client.
- Authored Python SCPI drivers for legacy RF test hardware, including HP 437B power meter and temperature chamber; initiated migration plan from Visual Basic to Python test infrastructure.
- Collaborated with vendors on thin-film fabrication quoting and design-for-manufacturing (DFM) validation.
- Participated in schematic and layout reviews for Ka-band upconverter chains; validated gain, impedance, and interconnect topologies against system specs.

Astranis Space Technologies San Francisco, CA
Intern Engineer, Antennas Nov 2022 – Dec 2023

- Created a custom 2.92mm K-connector calibration kit using Keysight's cal kit software; documented process on Confluence for reproducibility across RF test systems.
- Designed and fabricated Ka-/QV-band helical antennas for flight polarization validation; modeled PLA cores in HFSS and optimized for axial ratio across RHCP and LHCP.
- Measured and post-processed feed radiation patterns for Ku-, Ka-, and QV-band apertures; generated .ffdd files and simulated reflector-level gain patterns in HFSS SBR+ for TICRA planning integration.
- Modified MilliBox testbed control scripts to enable dual-polarized measurements with QF horns; cut measurement time by 75%.
- Characterized standard gain horns in Ku-, Ka-, and QV-bands using the three-antenna method; validated gain for chamber calibration and .ffd correction.
- Parsed chamber sweep data in Python and performed matrix-based inversion to extract calibrated gain profiles for simulation input correction across frequency.

- Served as Responsible Engineer for vehicle-level OTA test planning; simulated horn alignments in HFSS, contributed to TWTA backoff parameters, and led documentation and hardware coordination with cross-functional teams.
- Modeled PIM test staging and performed EIRP-based safety analyses; procured EVM monitors and coordinated risk mitigation with facilities during high-power RF testing.

Santa Clara University Santa Clara, CA
Undergraduate Researcher, RF Systems Jun 2022 – Sep 2022

- Designed and tested a Vee-dipole antenna for NOAA satellite reception; measured H-plane pattern using Friis equation and reference antenna method.
- Demonstrated receiver system in electromagnetics lecture; frequency-dependent resonance behavior and its filtering benefit, leading to a 150% increase in Advanced EM enrollment the following quarter.

Projects

SCRAP II – Hydrogen-Line Radio Telescope
Barnes L., Quang M. & Rouzmehr A., "Santa Clara Radio Astronomy Project II (SCRAP II)," SCU Senior Thesis 2023, `https://scholarcommons.scu.edu/elec_senior/82`

- Simulated reflector gain in FEKO and procured a 3 m mesh dish; aligned simulation with analytical predictions.
- Built a cylindrical 1.42 GHz feed using a metal can & SMA dipole (-15 dB return loss, 19% BW).
- Installed and weatherproofed the system for hydrogen-line scans with SDR + SAWBird front-end.

2.4 GHz FMCW Radar Development

- Architected entire FMCW radar chain using circularly polarized antennas for TX/RX isolation and SDR for beat signal processing.
- Simulated dual-polarized patch/horn antennas in HFSS; targeted <20 dB return loss and <3 dB axial ratio.
- Designed RF front-end with connectorized microstrip filters to support GNU Radio acquisition and processing.

Publications

- Barnes, Logan; Quang, Michael; Rouzmehr, Aria. "Santa Clara Radio Astronomy Project II (SCRAP II)". Santa Clara University, 2023. `https://scholarcommons.scu.edu/elec_senior/82`

Skills

Simulation: HFSS, FEKO, ADS, MATLAB
RF Systems: LNAs, Mixers, Waveguide Transitions, Passive RF Chains
Test & Measurement: VNAs, Spectrum Analyzers, Anechoic Chambers, P1dB/IP3/ACLR
Software: Python, GNU Radio, SCPI/GPIB, C
Safety & Compliance: EIRP Modeling, PIM Testing, OTA Safety Protocols

Fabrication: 3D Printing, PCB Layout, RF Machining
Languages: English (Fluent), Spanish, Farsi (Working)

Certifications

- **RF Field Testing Basics** – Keysight Technologies (Jul 2020)
  Credential ID: aray49risisi
- **Signal Analyzer Fundamentals** – Keysight Technologies (Jul 2020)
  Credential ID: 8pvvuxpzauo
- Keysight ADS & MATLAB Fundamentals (LinkedIn Learning)
- Ansys HFSS Essentials (Ansys Academy)