Crean & Associates
AEROSPACE EXPERTISE
For when it **does** take a Rocket Scientist
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Edward Francis Adams

Education:

- Drexel University - BSEE,
- University of Southern California - Communication Systems

Security:

- US Citizen, Held Secret clearance and SSBI/EBI

Patent / Trade Secret:

- Modulated Helium-Neon Laser Guidance System
- Dual Output Power Level, High Efficiency Solid State Power Amplifier

Experience:

- Hands-On: Active & Passive RF / Microwave / Millimeter circuit design & product development for Space
- Engineering Management

Seminars Attended:

- Microwave Circuit Design I and II and Microwave Solid State Devices, Les Besser, UCLA
- Microwave Integrated Amplifier and Oscillator Design, George Vendelin
- Transitioning from Technical to Managerial Responsibilities, UCLA, Ron Read, PE

Positions Held:

- Engineering Manager, Chief Technical Officer, Director of Engineering, Senior Scientist, Sr. RF Design Engineer, Principal Engineer

Knowledge, Skills, Abilities and other Characteristics:

- Provide Technical Leadership, mentor design engineers in the efficient use of linear, nonlinear and 3D EM simulator tools and analysis techniques.
- RF system component design, fabrication, integration and test of Space Qualified products. Produce component stress, thermal, radiation, reliability and other supporting analyses for SDRLs.
- Design & develop commercial, military & space qualified SSPA, LNA and high power passive components / system level hardware from HF through V Band frequencies.

- Technical Commercial & Government Proposal Volumes for New Business Development Provide functional block diagrams, optimal system architecture trades, electrical & mechanical performance predicts, identify risk and mitigation to potential solutions.
- Perform reliability trades; thermal and voltage reverse breakdown limitations for solid state devices. Worst-case circuit analysis, device / component radiation aging effects (EOL) for Active and Passive components for 18 to 21 year minimum spacecraft mission life.
- High Power passive & active circuit design, modeling and analysis. Provide optimum system level: reliability, performance and manufacturability to meet cost targets.
- Design by utilizing accurate & representative circuit modeling techniques, efficient use of linear & non-linear (AWR's MWO), 2D EM (AWR's Axiem) and 3D EM (Ansys - HFSS) analysis tools. Proper allocation and selection of materials for: CTE, electrical and thermal conductivity and RF stability, etc.
- A hands-on RF circuit designer with considerable experience through millimeter wave for filter, LNA and high power solid state amplifier Space qualified products.

Areas of Technical Expertise:

Passive Flight Hardware Designer for Space Products

- Filters: Lumped element, Microstrip distributed, chip & wire, surface mount. Coaxial combline BP, Coaxial stepped impedance LP. Waveguide iris coupled BPF to E-band
- Diplexer, triplexer, attenuator, phase shifter, W/G to Coax "E" & "H" Field transitions
- 3dB Hybrid & Wilkinson couplers: dividers / combiners (low loss and high power)
- High Power PIM, Multipaction & Corona (for operation during launch thru Critical Pressure) analysis; design mitigation & TVAC testing utilizing multiple ESA detection methods
- Substrate Materials: Teflon Loaded (Duroids), Fluoroloy-H, Alumina and Quartz
- Antennas: W/G, helical, phased array patch and printed types

Active Flight Hardware Designer for Space Products

- Low Noise: (Silicon, GaAs, InP), Peltier & cryogenic cooling (discrete device & MMIC)
- Low Phase Noise Amplifiers: (Silicon Bipolar, GaAs) for DRO & PLL, Costas loop
- High Power: Silicon, GaAs, MOS, LDMOS, GaN (discrete device & MMIC)
- Linearizers: Hybrid and Reactive Predistortion
- SSPAs Topologies: Single ended, Balanced, Doherty
- Broadband: Feedback, distributed and coaxial transformer / balun
- Up / down, Rx / Tx Converters: mixers, multipliers, PIN / Shockley limiters, detectors, attenuators and switches
- PCB / RF design and layout, DXF/ STEP/ IGES / Gerber file generation

Computer Aided Design and Analysis Experience

- Ansys HFSS, AWR Microwave Office, Axiem & VSS**,** Agilent ADS & Genesys**,** IE3D, Sonnet, EM3DS, NuHertz Filter Synthesis, CST, FEKO 3D, Antenna Magus & AutoCAD
- EM Modeling & Analysis, Worst Case Circuit, FMECA and BOL & EOL, radiation effects
- HP and Multipaction margin analysis

Semiconductor Flight Device Reliability for Space

- Device failure mechanisms: accelerated by temperature, RF drive and peak voltage
- Space Qualification / Life Testing, MTTF, RF Overdrive and Light Emission testing
- Device performance evaluations, Step Stress Reliability Testing

SSPA and LNA Device Technology

- Space Qualified SSPA and LNA Designs, utilizing Sumitomo (Fujitsu), NEC, Mitsubishi devices; numerous designed Flight units are in geostationary “on-orbit” operation
- Familiar with die processing, internal matching and manufacturing techniques
- Die modeling, internal lumped & distributed matching, low loss matching techniques

Related Experience and Interests:

- Became an Amateur Radio Operator at 12 and earned an Amateur Extra Class Federal Communications Commission Amateur Radio License at 15 years of age
- Maintaining my Harley (FXDWG3) Dyna Wide Glide motorcycle

Occupational Goals:

- Continue to refine my design skills while improving leadership abilities. Proactively share talents to motivate the team to success and meet business goals.

Employment History

Company: **COM DEV USA,** El Segundo, CA. - Currently Employed
Titles: **RF Engineering Manager / Sr. RF & Microwave Design Engineer / Principal Design Engr.**
Products: Commercial, Military & Classified Satellite Communications Systems - Space Qualified: High Power Waveguide & Coaxial Filters and other passive components. W/G Beam Forming Networks, Advanced Filters, OMUX, Isolators, Switches and Ka Band Antenna Feeds
Time: **5.8 years** (03/2009 to present)

Company: **Lucix Corporation,** Camarillo, CA.
Titles: **Sr. Scientist / Sr. RF & Microwave Design Engineer**
Products: Commercial, Military and Classified Satellite Communications Systems - Space Qualified: Low Noise and Solid State Power Amplifiers, Filters and Mixers - Low Phase Noise RF Amplifiers, DRO and XTAL Oscillators. Up and Down Rx and Tx Converters
Time: **1.2 years** (09/2007 to 03/2009)

Company: **Boeing IDS, Space and Communications Group,** El Segundo, CA.
Titles: **Sr. Scientist / SSPA Designer / Sr. RF & Microwave Design Engineer**
Products: Commercial, Military and Classified Satellite Communications Systems - Space Qualified Low Noise and Solid State High Power RF Amplifiers and IR&D. MUOS LNA and SSPAs, MSV SSPAs and GPS 3 SSPA Demo, Automated Testing Equipment
Time: **2.1 years** (06/2005 to 09/2007)

Company: **Ophir RF Inc.**, Los Angeles, CA.
Titles: **Director of Engineering / Chief Technical Officer**
Products: Commercial, Military and COTs: HP Solid State Power Amplifier Design and Development for Communications, Broadband and EMC Markets - Power Amplifiers and passive Filters operating 10 kHz to 10 GHz and up to 3,000 Watts CW and Pulse - MRI and NMI Medical and Research, Fast RF Blanked Pulsed SSPAs - Defense SSPA Systems and Products
Time: **5 years** (06/2000 to 06/2005)

Company: **Hughes Aircraft Co., Space and Communications Group,** El Segundo, CA.
Titles: **Sr. RF Designer / Sr. Scientist / Sr. Technical / Sr. Project Manager / REA SSPA**
Products: Commercial, Military and Classified Satellite Communications Systems - Classified Defense Aircraft and Missile Data Link Guidance Systems - Radar Systems - Space Qualified LNAs, Solid State Power Amplifiers to 60 GHz. Programs: UHF F/O, Galaxy, ICO, Aussat, Agrani, TDRS, Thuraya and Space Way
Time: **20 years**

Company: **Wideband Data Corp.**, Los Angeles, CA.
Titles: **Sr. RF Design Engr. / Project Manager**
Products: CATV Headend Equipment Design & Development / Satellite TVRO System Design
Time: **3 years**

Company: **Ailtech / Eaton Corp., Electronics Instrumentation Division**, Los Angeles, CA.
Titles: **Sr. RF Design Engr. / Project Engr. / Project Manager**
Products: RFI / EMI Receiving Systems (antennas, receivers, controllers, etc.) from 20 Hz to 40 GHz - Precision automatic noise figure instruments - Broadband power amplifiers and oscillators - Communications Service Monitors
Time: **3 years**

Company: **CLS Industries Inc.**, Los Angeles, CA.
Title: **Chief Electronics Engr.**
Products: Construction and Agricultural Laser Guidance Systems - He-Ne CW Lasers, High Voltage Power Supplies, Fiber Optic Transmission and Optical Practices - Digital Design for Laser steering / feedback control circuitry
Time: **2 years**