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The quality design produces a quality product.

Greetings,

I am Alex Lapayev, a seasoned Electronics Designer with a Master's Degree in Electronics and Computer Science. With over 25 years of hands-on experience, I have honed my skills across all aspects of modern electronics, from concept to production.

My areas of specialization include:

- **The Mixed Signal Design** - expertise in sophisticated analog-digital interactions.
- Proficient in extremely sensitive and accurate measurement using sensors, meters, probes, etc.
- Low-noise analog solutions, practically distortion-free analog circuits, including measurement, audio, video, etc.
- Matched RF/Microwave including GNSS, RADAR, Satellites, Radio/TV, Wi-Fi, Bluetooth, and Cellular phones.
- Effective Power Supplies. Highly efficient power supply solutions, including integrated batteries.
- Elegant integration of mechanical and electronics solutions.
- Sophisticated matched PCB Layout with a focus on information authenticity and EMI/EMC considerations.

All my life I have had a successful career and all my input, and projects brought success, growth, new markets, and huge profits to the companies where I worked. I have become distinguished in my field with many devices that have unique schematics and resulted in excellent quality. They are produced in hundreds of thousands of devices and serve people all over the world.

Having worked in Europe, I bring a global perspective to my work. Also, I understand the intricacies of business conduct and work culture in the United States.

Thank you for considering my expertise. I look forward to discussing how I can contribute to your organization's success.

Sincerely,
Alex Lapayev, M.S. Electronics Designer

Alex Lapayev

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HARDWARE ELECTRONIC MIXED SIGNAL DESIGNER P.E.

Summary of Qualifications:

Highly qualified **Hardware Electronic Engineer** and Designer with over 25 years of experience. Proficient in developing state-of-the-art solutions, from concept to final assembly. Extensive expertise across various domains of modern electronics, including industrial, automotive, and home electronics. Communication, measurement, data transmission, RF/microwave, antennas, audio, video, satellite radio, TV, and power technologies.

Technical Summary:

- **Electronic Circuit Design** including precision **Mixed Signal Design with modeling and simulation tools**: Altium Designer PSpice Altium (expert level), Mentor Graphics, PADS. Cadence, Allegro. OrCAD Capture CIS/OrCAD-PSpice. EDA libraries and simulation development environment management.
- **Analog Signal Design, low noise, ultra-linear**: specialized in low-noise, ultra-linear designs for measurement and sensing applications (sensors, meters, probes). Expertise in communication, data, audio, video, signal splitting, selection, filtering, amplification, and servo-drive and electro-motor power control.
- **Radio Frequency and Microwave Design, high efficiency, and performance**: Achieved high efficiency and performance in RF/microwave applications. Experience with GNSS (GPS, GLONASS, Galileo, Compass), IRIDIUM satellite solutions, Bluetooth, Wi-Fi, ZigBee, GSM, radio, and TV. Proficient in FCC/EMI conditions. Skilled in RF/microwave PCB layout with matched impedance and layers stack-up management. Knowledge of various antenna types (patch, chip, helical, custom PCB printed, Yagi, traveling-wave, log-periodic, parabolic-dish, etc.).
- **Digital Signal Design**: Designed high-speed digital solutions using microcontrollers, Digital Signal Processing (DSP), and programmable logic arrays (CPLD and FPGA). Covered digital measurement, sensing, audio, video, and data applications.
- **Switching and Power Supply Design, high precision and efficiency**: up to 5 kW. EMI/EMC Test plans. High and low-voltage power regulators and controllers. Linear and Switched Mode Power Supplies (SMPS), Resonant and Zero Crossing technology, AC/DC, DC/AC, AC/AC, and DC/DC converters. Proficient in transformers, batteries, recharging, backup systems, and Super-Cap solutions. Familiar with Bi-Polar, MOSFET, and IGBT power semiconductors.
- **Automotive Electronics Design**: EV solutions, expertise in diagnostic systems, OBD-II, control, measurement, and automotive satellite and audio/video solutions.
- **Printed Circuit Board Design**: Highly experienced in sophisticated Analog low-noise, RF/Microwave, and Digital High-Speed PCB design. Proficient in manual routing, layout with strong impedance requirements, layers stack-up design, EMI/EMC considerations, and EDA library management. Skilled in Ground and Power project concepts. Proficient with tools like Altium Designer, Mentor Graphics PCB Expedition, PADS, PCB Design Flow, and OrCAD PCB Designer.

Obtain extensive experience in all phases of product development from inception to production including management, research, development, and design. Technical PRD – product requirement documents, BoM – parts and material selection, qualification, and risk assessment. Produce manufacture documents, test plans, and procedures. UL hazardous locations certifying. Liaison between management, electrical, manufacture, and testing to determine circuit design requirements. Skilled in analyzing, troubleshooting, and resolving varied problems.

Major published work:

- Analog Input/output compensated. The modern solution to analog processing of data transmitting
http://lapayev.com/articles/analog_input_output_compensated/
- FilterWorkBanch. The Windows application; calculates high and low-pass Analog Active Filters (Bessel, Butterworth, and Chebyshev). The application is mainly targeted at an experienced developer. Freeware.
<http://lapayev.com/fw/index.html>
- The Fascination of Four Wheels. Automotive battery issues.
http://lapayev.com/articles/fascination_of_four_wheels/
- Tables and calculators. Useful tables, solutions, and short apps.
<http://lapayev.com/info.html>
<http://lapayev.com/articles.html>

My main hobby is resolving High-Quality sound sophisticated issues.

Research, development, and design of home and automotive modern Hi-Fi / High-End audio solutions.

Education: Masters of Electronics and Computer Sciences.

6-year program.

- **Citizenship - U.S. citizen**

Professional experience:

Senior Hardware Electronics Engineer.

June 2013 – present: **Franklin Fueling Systems / INCON** – the subsidiary of **Franklin Electric Co.**, Saco, ME.

<http://www.franklinfueling.com/americas/en>

Management and design solutions of future-oriented smart gas station services, electricity power networks, and electric vehicle charging. High-precision measuring systems, sensors, meters, and probes. Some achievements:

- Probes and Sensors– Inventory and Leak Detection - <https://www.franklinfueling.com/en/products/fuel-management-systems/>
- EV Systems - <https://www.franklinfueling.com/en/products/ev-systems/nexphase-smart-ev-switchgear/>
- OPTIMIZER3 - <https://www.franklingrid.com/en/products/power-grid-monitoring/incon-optimizer-3/>

Personal Contributions:

Development and design of new electronic solutions, helping the company to advance to new markets.

Franklin Electric Co., won its first-ever R&D 100 Award ('Oscars of Innovation') for the newly developed OPTIMIZER3.

- Management and development, design concept, and risk assessment. Bill of Materials (BoM) - parts and material selection.
- Schematics – management, and design, including analog low-noise circuits, RF/microwave, power, and digital high-speed circuits.
- Simulation - management of the PSpice development environment.
- PCB layout – management, and design of sophisticated EMI/EMC PCB Layout; matched High-speed stack-up.
- Prepared for UL and FCC EMI/EMC certification, and created manufacturing documentation, manuals, and test procedures.

Senior Hardware Electronics Engineer.

January 2011 – June 2013: **DeLorme (Garmin) Publishing Company**, Yarmouth, ME <https://www.garmin.com/en-US/>

Research and development, design - GNSS (GPS, GLONASS, Galileo, Compass) solutions; IRIDIUM satellite data communication with GPS. Bluetooth, ZigBee, Wi-Fi. For the consumer, professional, army, navy, and government markets.

Major achievements: http://lapayev.com/download/Inreach_Alex_Lapayev.pdf

"InReach" - 1.0 / 1.5 / 2.0 - Two-Way Satellite Communicators with Global Coverage:

<https://www.garmin.com/en-US/blog/outdoor/inreach-for-life/>

- Two-way satellite messaging and pole-to-pole global coverage with GPS.
- Message delivery confirmation and interactive SOS.
- Multiple InReach users can communicate directly with each other to share information and locations.

Personal Contributions:

Developed new electronics solutions, which increased the company's market share.

Garmin® Ltd. acquired DeLorme Company due to its interest in the 'InReach' satellite communicators' family of devices.

- Research and development; Design concept; Risk Assessment; BoM - parts and material selection.
- Schematics - Mixed signal circuit design includes Analog Low Noise, RF/microwave, Power, and Digital High-Speed design.
- PSpice and RF/Microwave simulation. PSpice development environment management.
- PCB layout – management, and design of sophisticated EMI/EMC PCB Layout; matched High-speed and RF-microwave stack-up.
- Prepared for FCC EMI/EMC certification. Created manufacturing documentation, manuals, and test procedures.

Hardware Electronics Engineer.

January 2007– February 2010: **VAIS Technology**, Greenwood Village, CO <http://www.vaistech.com>

Research and development, design adjustment of high quality, radio and audio/video integrations, control units, power supplies, and other devices which allows third-party installation of Satellite Radio, DVD-HD players, cellular phones for most Toyota/Lexus, Nissan/Infiniti, and Honda/Acura vehicles.

Some achievements:

- **SIRIUS SCC1 Digital Satellite Radio receiver.** The universal tuner box. The SCC1 delivers full control of third-party XM Satellite Radio directly through a vehicle's audio system. Can be used in Toyota/Lexus, Nissan, and Honda.
- **Automotive Apple® iPod™ - SoundLinQ2 Interface.** The universal audio and video adapter is designed to provide superior sound and video. Can be used in Toyota/Lexus, Nissan/Infiniti, and Honda/Acura.
- **Automotive High-End Digital Audio Player.** The High-End device with practically free of distortion audio. Includes HDD and the unique analog output driver - http://lapayev.com/articles/analog_input_output_compensated/ . Can be used in Toyota/Lexus, Nissan/Infiniti, and Honda/Acura vehicles.

Personal Contributions:

Developed new engineering solutions that improved VAIS Technology's financial standing.

Research & Development; Design concept; technical PRD; Project's timeline; BoM - parts selection.

- Schematics - Mixed signal circuit design includes Audio, Video, RF, Power, and Digital High-Speed design.
- PCB Layout – design, Mentor Graphics library management, manufacturing documentation, manuals, and test procedures.
- PSpice simulation and modeling, development environment management.

Prior experience available on request

Thank you,

Alex Lapayev, M.S., Electronics Designer.