# Jessica Kedziora

**KEDZIG Inc** WWW.KEDZIG.COM
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**Education:** Worcester Polytechnic Institute, BSEE - Graduation with High Honors, Tau Beta Pi Engineering Honor Society. Graduate work at Villanova University and Syracuse University RF/Microwave design.

**Experience:**

**KEDZIG Inc** President and CEO

KEDZIG Inc. is a provider of model based engineering research, development, and product design provider for electronic systems. KEDZIG's primary focus areas are RF/Microwave and power systems as applicable to Telemetry, RADAR, communications, and power systems ins the MIL/Aerospace, Cellular telephone and renewable energy markets. KEDZIG Inc. also offers natively developed products in the telemetry markets.

**Lockheed Martin MS2 – 11/04-11/06** Engineer IV

Lead engineer for development of Radar hardware subsystems including high power amplifier train, and the UHF high dynamic range receiver subsystem. Responsibilities include architecture development, advanced receiver technology trade studies, digital signal processing modeling, Hardware to systems technical interface. ADS and HFSS component simulation, and test / evaluation, Requirements definition, development of testing concepts, customer interface and technical presentation, technical reviewer, HFSS based design methodology training and technical support to coworkers.

**Anaren Microwave 1/03-11/04** Design engineer

Technical Project lead for advanced laminated passive microwave and mixed signal assemblies. Technical Customer interface. Proposal preparation.

**BAE SYSTEMS** 97 – 1/03 Engineer IV

Major responsibilities: Technical system lead for new product development. RF systems , algorithm , and hardware detail design. Circuit Card level RF design engineer. New business development Technical proposal preparation and Customer representation. Recommendation of internal R&D projects, technology exploration and report authorship

**Allegro Micro Systems:** June95 - April 97 Product Development Engineer I

Major responsibilities: Product development and Statistical Process Control for Gear tooth sensors. Custom test equipment design and implementation for production test.

**General Skills:** Technical project leadership. Microwave, RF and analog system analysis and design, Receiver specialist. Detail module design: small signal and high power, through 26 GHz. HFSS microwave and RF component design. Digital calibration techniques, microprocessor interface, embedded micro-controllers, signal processing. GPS based embedded system applications. Power system design. MATLab, Microwave Office, ADS, HFSS FE modeling, Spice, micro-controller C and assembly. AutoCAD fluency. Extensive quick reaction prototype fabrication experience, Extensive RF / Digital Lab testing. Electronic assembly, Microscope work, basic machine shop skills.

**Accommodation:** BAE systems Chairmen's Award for Innovation 2001 and 2000, BAE systems Employee achievement award 1999, Department of the Army PMSW Letter of Accommodation 1999, Extra class Amateur Radio Operator, Private Pilot, Patent on "Method and apparatus for data logging of physiological and environmental variable for domestic and feral animals" USP#: **7,705,736**

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## Project Work

KEDZIG products:

Currently producing and marketing (Patented) versions of low cost GPS telemetry / vhf transponder tracking collars for wildlife and livestock. VHF/UHF transponders, time based electronic / electrochemical trigger and release mechanisms. Extremely low power battery operated devices.

Currently developing a family of mesh network RF/ DSP based infrastructure free sensing and communications solutions.

KEDZIG customer projects:

Alternate energy power electronics system analysis and architecture trade studies.

In Building Distributed Antenna System: requirement development, system modeling, Cascade modeling, and key technology risk item proof of concept designs for a multi-standard RF over Fiber cellular radio system.

Measurement, modeling and characterization guides and documents for RADAR stability, power devices and amplifiers

Reverse engineering and production improvement of legacy Instantaneous Frequency Measurement Receivers

Ultra wide band microwave synthesizer architecture design

Microwave Threat simulator polarization control algorithm development

Microwave RADAR Jammer multi-signal power management algorithm development

IEEE MTT Phase noise tutorial presentation.

MATLAB based time domain phase noise prediction tool that utilizes a net list input and synthesis of cascade phase noise from modeled or measured data sources.

Microwave power amplifier architecture trade studies, and device modeling, L, S and KU band.

Lightweight RADAR systems:
Complex multilayer PCB based L band switch matrices and beam former assemblies.
RADAR hardware performance modeling
Phase noise and stability measurement, modeling, and characterization
EMI/EMC top level system design.
RADAR power system modeling and design
RADAR performance metrics measurement technique guide

Engineer Mentoring and topic specific seminar and tutorials.

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Work projects completed previous to founding KEDIG Inc.

*Phase array Radar UHF TR module development*

Receiver architecture definition and system modeling and design. Major item performance estimation, RF chain definition and modeling, frequency plan development and simulation, Digital receiver definition and Matlab modeling, A/D converter selection, component requirements definition and selection, physical packaging and cooling concept development.
Digital signal processing and equalization modeling and algorithm development
Digital interface and control architecture development
Transmitter chain system modeling and budgetary analysis
TR module physical architecture definition
RF flex interconnect development (HFSS based design)
Advanced digital receiver based power amplifier testing methodology, hardware and software development for pulse to pulse stability characterization.

*Calibration Module* Advanced Microwave laminated signal distribution assembly.

Assembly budgetary analysis and Designer based component/system simulation
Critical component definition, test and model correlation
HFSS based Microwave Component design and optimization
Microwave assembly design including microwave Laminated circuit board layout
Advanced microwave laminated circuit manufacturing process development

*Low Band Transmitter:* High power VHF airborne jammer

LBT Basic power module high power (500W) RF amplifier development (VHF)
LBT Basic Power module Bias and control card design
(high speed protection, blanking, system processor interface)
LBT Transmitter RF input section design:
Digital attenuator, Built in test functions, level control and sampling
LBT prototype amplifier RF chain build, test and demonstration to Government customer
LBT Engineering Design Model imbedded microcontroller Test set design and construction
LBT Preamplifier design low level RF input and bias card design and power amplifier support
LBT transition to production support for aforementioned units

*Universal Communications Jammer* (H.F.-microwave portable jammer)

UCJ DC power supply design, prototype build 12 vdc-24vdc DC-DC converter +
housekeeping supplies and system protection
UCJ AC power supply design and Prototype build
UCJ Wide band multi-mode synthesized Exciter design
15-1000MHZ direct digital synthesizer
UCJ Chassis fabrication.
UCJ system integration support

*Prophet Ground:* Vehicle mounted tactical band High power jammer

PG: Power conditioner design test and integration. 100A 28VDC-power management system with imbedded micro-controller for the transmitter
PG: Wide band synthesized DDS exciter design, test and integration. This was an upgrade to UCJ unit with high-speed tune and 8bit-microcontroller interface with digital modulation and sweep

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PG: Lead system integrator
PG: Lead vehicle integrator
PG: Lead engineer field test -Ft. Huachuca AZ.

*Advanced anti radiation guided missile:*

AARGM: IF processor unit (IFM) design and prototype development support
AARGM: IF processor Low rate Production automated test development (software for automatic calibration and programming)

PMSYS, Department of the Army: special projects

Battery technology study and usage research paper for man portable medium power applications

Hellfire*, Advanced technology demonstration Research and development program*

Lead system integrator and field engineer for ATD system. A six month QRC program. System included missile and antenna section, receiver section, IF and encoding, and Direction finding and interface software. Testing performed simulated missile fly out and endgame performance at Redstone Arsenal, Huntsville AL.

Hellfire, *Advanced Technology Demonstration Flight demo*

Lead system engineer, project manager, algorithm developer for Follow on Flight demo of hellfire Anti-radiation homing missile seeker system. An eight month QRC program. System was integrated into a Blackhawk helicopter, which flew simulated missile paths against representative ground based air defense radar systems

*AARGM producability upgrade*

Design of a Wide band uhf through Millimeter wave digitally tuned DDS based multi loop RF synthesizer for a missile application. Imbedded in circuit reconfigurable microprocessor control using FLASH ram look up tables. Printed circuit construction techniques employing hybrid soft substrates and millimeter wave ball grid arrays, strip line filters, and automatic digital temperature compensation of amplifier bias and output leveling. Includes on board memory programmer and diagnostic tools. Project includes development of millimeter wave BGA soft substrate process development for very low cost microwave assemblies to replace conventional MIC assembly.

Miscellaneous:

System analysis and change recommendation for a human use tympanic thermometer for Delaware valley Industrial Research Council, Oxis Medical electronics and True Tek Inc.

Specification writing for redesigned human use tympanic thermometer for the same.

Custom hydraulic valve design and fabrication for heavy trucking applications

Industrial workshop lighting system design and specification

Emergency power applications technical consulting

Design review services