

WILLIAM H MEITZLER
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SUMMARY

A radio frequency Principal engineer with proven innovation, leadership, training, design, bread boarding, measurement and simulation skills. Proven track record as Consultant and Employee. Proven track record of RF Design and Certification in multiple industries. Familiar with Business Team Innovation Program logistics. Proven track record of leading Microwave Startpoint 7000, Base Stations MSF Series, CT2 Silverlink, iDEN transmitter Integrated Circuits, and Verizon ZN4 CDMA Cellular phone to market. Innovator and risk taker who developed first shipping internal Media FLO antenna in a flip phone. Published author with patent awards. Proven leadership in Product Development, International Consulting and Inspecting for LMR, and Research roles. Presently working in small consulting firm. Working on spectrum sharing, spectrum monitoring, LTE based NB-IOT, and WiGig, air-to-ground military, and radar security contracts. Familiar with USRP (SDR) radios and their interfaces. Work with many types of vendors to buy and rent most RF equipment, computer equipment, airplane hardware, and software needed for each project.

TECHNICAL EXPERIENCE

- International Public Safety LMR base station installation inspection and system test experience.
- Design and Construction of Working Cell Phones with custom Printed Antennas.
- Handset and reflector antenna design and measurement experience.
- Radio prototype design and measurement specialist. Including transistor circuit designs of many radio parts and experience in building bridge circuits between parts from different radios.
- Experience in PA Design and methodologies for maximization of Power Added Efficiency.
- Leadership experience in new engineer training, scheduling, and factory introduction and training roles. Leadership roles in procuring specialized parts from outside vendors.
- Member of IC design team that developed the proprietary iDEN transmitter linearization loop circuits.
- Experienced in simulation and measurement of WLAN 802.11a propagation in both indoor and outdoor scenarios.
- Experience in noise, intermodulation, electro-magnetic compatibility, and electrostatic discharge control and measurement techniques. Experienced in EMC Certification of Products.
- Design, measurement, and certification experience with Wideband FM iDEN, WLAN, BT, GPS, WLAN, CDMA, and AMPS radio system architectures.
- Experienced with waveguide circuits, Spirent GPS equipment, R&S LTE Base Station equipment, and USRP radio use.

PROFESSIONAL EXPERIENCE

LENOVO RESEARCH (MOTOROLA MOBILITY) ,CHICAGO, IL **5/2019 TO PRESENT**
Consultant Antenna Designer. Used Remcom XFDTD to determine if new design concepts from CXD were feasible.

ROBERSON AND ASSOCIATES, SCHAUMBURG, IL **7/2015 TO PRESENT**
Principal Engineer 1. Solved client needs for electromagnetic testing, FCC representation, spectrum sharing, and spectrum analysis.

- Recently measured customer radar system on cell phones, satellite links, hearing aids, WiFi links, and LMR links. Also working on air-to-ground wideband link for the military.
- Measured Out of Band noise immunity of Iridium Satellite voice and data links.

- Measured out of band emissions of LTE radios in various bands for several customers. Testing includes use of call box, shield box, and custom notch filters. Some work was IoT testing (AT&T Avnet IoT Starter Kit and Digi XBEE Cellular Cat 1 Dev. Kit) using a R/S CMW500.
- Worked on LabView and Labview Communications projects with USRP radios.
- Worked on a contract the US Military on electromagnetic surveillance research.
- Worked extensively on GPS satellite and LTE spectrum sharing testing and data processing and analysis. Testing was done using Anechoic Chambers, Drive tests, and Airplane flights.
- Developed proposal for 900 MHz narrowband LTE system.
- Worked on 60 GHz WiGig 802.11ad proposal.

D&SCI, EATONTOWN, NEW JERSEY

8/2013 TO 4/2015

RF Equipment Test Specialist responsible for testing and inspecting LMR base stations, RF tower, shelter installations and system performance in the field in the East, Central, West, and South regions of Saudi Arabia

- Working on a contract with the Ministry of Interior of Saudi Arabia
- Motorola (Tetra), Airbus(Tetra and LTE) , and Aviat (P-P microwave) radio equipment.
- Inspected MSO, Dispatch, and BS facilities across Kingdom of Saudi Arabia
- Was in first group sent to Kingdom of Saudi Arabia by D&SCI.
- Proven capability to live and function well in International cultures working with colleagues from many different countries with many different technical specialties.

ILLINOIS TOOL WORKS, GLENVIEW, IL.

5/2010 TO 2/2013

ITW Technology Center Senior Research Engineer responsible for monitoring, directing, and helping make successful all wireless innovations within all ITW 800+ companies.

- Guided Successful Cattle Tag product launch.
- Designed antenna system used in Wireless Welding Control prototypes.
- Led indoor RF noise evaluation of interferences in MIG, TIG, and Plasma Cutter welding environments.
- Purchased a VNA, Sig Gen, Real-Time Spectrum Analyzer, Portable Spectrum Analyzer, and reference antennas for the ITW lab.
- Defined operation and construction of an automotive engine diagnosis antenna.
- Led successful research with Remcom Inc. on methodologies to maximize RFID antenna Q.
- Participated in defining all business opportunities in the Smartphone business space. Opportunities included: laser defined structures; haptics, displays, and shielding were explored. Went to Printed Electronics and CES Conferences and Shows.
- Technology expert on Business Intelligence team on RFID use, technology, acceptance, and research within International Governments. Selected GLG experts to hire for consulting conferences.
- Attended International Conferences on Antennas, Microwave Devices, Sensors, and Microelectronics Devices and Packaging.

ILLINOIS TOOL WORKS, GLENVIEW, IL.

11/2009 TO 5/2010

Consultant for Antenna Design in Cell Phones Using Proprietary Chemical Materials and Methodologies

- Performed lab experiments on Nokia cell phones
- Repeatedly worked in contract antenna measurement labs.
- Made phone calls on phones custom outfitted with unique antennas.

AIRCELL INC. Itasca, IL.

4/2009 TO 10/2009

Consultant for Computer Analysis of Airplane to Base Station Handoff Methodologies and Null-Elimination Strategies

MOTOROLA INC, Schaumburg, Libertyville, and Arlington Heights, IL.

9/1983 to 3/2009

A leader in the design and manufacture of high technology communication products for industrial, commercial, and consumer markets.

Senior Staff Research Engineer, Mobile Devices, Libertyville, IL. (2007 to 2009)

Lead antenna engineer for development of CDMA cellular phone antenna systems. Responsible for maintaining best in class performance of phone designs. Researched best antenna solution for phone form factor through simulation and bread boarding. Led ME and EE tradeoffs in design

and responsible for maintaining balance between customer appeal, materials, assembly complexity, and RF function of phone. Simulated antenna radiated performance from most recent mechanical Pro E designs. Use of ME files kept tight accuracy of ME to EE discussions of design tradeoffs with respect to all design changes. Maintain leadership knowledge of competitor phone antenna systems through measurement and disassembly of phones. Authorized material loss tangent testing when needed. Discussed designs with subject matter experts to guarantee six sigma quality.

- Developed and shipped Verizon ZN4 Krave phone. Phone's RF performance was well received in the marketplace reviews. Phone contains 850 and 1900 CDMA, Bluetooth, GPS, and Media FLO antennas. Design required ability to evaluate TRP, TIS, SAR, antenna isolation, receiver desensitization paths, material losses, mechanical tradeoffs, grounding, and PC board layout variables quickly.
- Designed Media FLO 719 MHz **internal** antenna system in ZN4 Krave phone. First internal Media FLO antenna in a flip phone ever put on the market. Flip Open performance is equivalent to competitor pull-out antenna performance.
- Simulated and physically studied many Motorola phone and competitor company phone designs to suggest best trade off practices for future phones. Evaluated SAR, efficiency, bandwidth and diversity antenna correlation tradeoffs. Purchased, measured, and used competitor phones.
- Designed exceedingly efficient, wide band, and dual-band Media FLO and PCS antenna for alternate form factor phone.
- Specified and measured printed circuit design, including keep out regions, grounding, desense isolation risks, and antenna match configurations.
- Found source of intermodulation noise causing receiver sensitivity desensitization that started PC board layout changes needed to enhance phone performance.
- Measured and designed all phones for best free space, at head, and in hand performance.
- Used innovation and designed and simulated printed PC board antenna system with 850, PCS, BT, GPS and Media FLO in small space. Not optimal RF performance, but unique, innovative, inexpensive, and thin.
- Programmed phones with updated software and field tested software revisions in new phones.
- Evaluated impact of second source speakers in Krzr cellular phones.

Senior Staff Research Engineer, Wireless and Solutions Research, Schaumburg, IL (2004 to 2007)

This is antenna simulation group that was assigned to help the Corporation explore new business opportunities.

- Lead meetings between Roger Skidmore at Wireless Valley. Discussed AWE software with vendor due to its modular design. Motorola later bought Wireless Valley.
- Evaluated internal and external software for determining path losses between many public safety radios in public safety disaster relief scenarios.
- Built and measured many flip and candy bar prototypes. Emphasis was on using Inverted L antenna, dipole, and slot antennas in combination to cover band combinations.
- Researched antenna systems printed on outer surface of handset. Work required measurement and simulation of antenna systems for efficiency, specific absorption rate and hearing aid compatibility performance.
- Developed and proved new innovative process for reducing SAR in thin flip phone. Patent disclosure now published by patent office.
- Researched Cognitive Radio plans and specifications issued by FCC. Reported on concerns of very wide bandwidth and ability to minimize dual users of the same bands from interfering with each other's data links.

Senior Staff Research Engineer, Networks Research, Schaumburg, IL (1996 to 2004)

Develop internal system experiments to address LMDS, 3G, WLAN, and 40 GHz business opportunities.

- Developed propagation test MIMO hardware on Phantoms for testing of 2 and 5 GHz MIMO systems. This included building several MIMO handset prototypes with differing antenna systems.
- Set up high frequency RF circuit test lab with most test equipment usable to 110 GHz. Goal was to explore 40 GHz radio systems. Made equipment computer controlled using Lab View. Purchased and used mixer test software from Anritsu.

- Helped develop stochastic 5 GHz WLAN propagation models for both indoor and outdoor propagation loss and programmed the models into a custom OPNET simulator. Received Bravo award for this work.
- Developed new model for 5 GHz WLAN propagation in downtown rectangular street grid scenario.
- Patented use of electrochromic material for use in antenna pattern control.
- Built PA prototypes and measured potential power added efficiency improvement could be made in iDEN systems with various feed forward and feedback loop configurations using envelope elimination concepts.
- Investigated all receiver RF and antenna components on market in 28-31 GHz LMDS market.

Senior Staff Research Engineer, Land Mobile Research, Schaumburg, IL (1992 to 1996)

- Developed new PC test board layouts to cover new bands and introduce use of new ADDAG, exciter, and TRANLIN IC into the iDEN product line. IC's were the transmitter loop for linearization of M16QAM to meet ACCPR specifications. Adjusted gains around feedback loop for both inside and outside the ICs for best ACCPR.
- Trained other groups inside Motorola how to work with the new IC's and develop them into new Base Station and mobile products.

Staff Engineer, CT2 Personal Products Development, Schaumburg, IL (1989 to 1992)

- Used Project Management Software to determine project time lines. A handset and a base station were developed.
- Designed CT2 whip antenna.
- Travelled to Penang, Malaysia factory to train factory technicians how to test and debug transceivers.
- Worked on contract with Government Electronics Division for brass board prototyping of receiver chain.
- Created custom PIN receiver switch with outside vendor.
- Performed coverage testing. Visited customer CT2 site in Boston to evaluate reason for lower than expected propagation range.
- Made test boards to investigate ability to add frequency hopping to CT2 systems.

Staff Engineer, Base Stations (Public Safety), Schaumburg, IL (1987 to 1989)

- Wrote spur search program to determine all mixing products. Benchmarked frequencies used in base station products against new Abacus IC IF frequency to determine if any spurious issues would result.
- Developed spreadsheet analysis of receiver lineup to determine receiver sensitivity of product line.
- Developed audio impedance transformers for use with international telephone standards.
- Responsible for keeping factory production output high. Analyzed all factory productivity issues.

Staff Engineer, Motorola Microwave, Schaumburg, IL (1985 to 1987)

- Developed manufacturing documentation and trained factory for tuning of transmit and receive waveguide filters, waveguide PIN switch, and couplers.
- Developed baseband linearizer circuits for StarPoint 7000 product.
- Developed wideband baseband amplifier using cascode design.
- Performed Noise Power Ratio testing on baseband system.

Engineer 1, Motorola Cellular Base Stations, Schaumburg and Arlington Heights, IL (1983 to 1985)

- Measured system performance and analyzed dropped call causes in San Francisco.
- Developed new low noise amplifier in Base Station preselector module.
- Developed receiver front end filter and mixer lineup and put design into factory.

ANDREW CORPORATION, Orland Park, IL

1982

Company specialized in point to point and satellite reflector dish antenna systems and coaxial cable.

Summer Intern 1982

- Wrote computer programs to assist in circular and rectangular mode and mode characteristic impedance analysis.
- Wrote program to evaluate waveguide iris impedance matching.
- Emphasis was to determine impedance match capabilities for Orthomode Transducer development.

COMSAT LABS, Clarksburg, MD

1978 to 1980

Satellite Maintenance, Tracking, and Research..

Co-op Student 1978 to 1980

Worked in Antenna Lab responsible for Satellite Antenna Systems

- Ran programs to develop beams on earth using horn feeds and reflectors.
- Measured and tuned large antennas on many ranges and in anechoic chamber.

EDUCATION

Post MSEE Courses: 3 Radio Courses : Digital Radio Design, Analog Radio Design, and Coding Theory: 4.0/4.0 GPA Illinois Institute of Technology

Many RF industry short courses.

MSEE , University of Illinois Urbana-Champaign

BSEE Cum Laude, Virginia Tech

Dale Carnegie Course on Effective Speaking and Communications

TECHNICAL SKILLS

- Handset Antenna Design Specialist. Familiar with both external and internal (FICA, FJA, PIFA, ILA) antennas. Simulated, bread boarded, measured, and shipped phones. Experience simulating and measuring, SAR, TIS, TRP, and HAC. Developed antennas for 719 MHz to 5.8 GHz radios. Experienced on outdoor range and anechoic chamber measurements. Experience with high end CDMA phones containing many antennas used in hand held applications.
- Radio prototype design specialist. Experience with PC board layout; filter, LNA, mixer, PA, and feedback loop design. Evaluated digitally controlled RF IC components. Experience prototyping chip component matches under a microscope.
- Experience designing and calibrating AMPS, TACS, and Public Safety Base Stations.
- Experience with writing Matlab, C++, LabView, and FORTRAN code. Experience with XFDTD, Cadence, Pro Engineer, Wildfire, QXDM, ADS, Opnet, NEC, EZNEC, Analog Workbench, and Spice engineering software.
- Simulating and measured WLAN 802.11a propagation in both indoor and outdoor scenarios.
- Reverse engineering and testing of competitor cellular phones to benchmark Motorola products.
- Experience in EMC and ESD control and measurement techniques.
- Very skilled at prototyping and measuring both PC based and semiconductor circuits under high optical magnification.
- Experience with iDEN, WLAN, BT, GPS, WLAN, and AMPS radio systems.
- Experience with waveguide filter, orthomode transducer, reflector antenna, and horn antenna designs.
- Experience inspecting and testing TETRA public safety base station (tower) installations with Aviat 7 and 23 GHz backhaul.

PROFESSIONAL DEVELOPMENT

Internal classes on Six Sigma, ADS classes from Hewlett Packard, Coding Techniques for Pictures, Understanding 3G Wireless Mobile Communications, and CDMA courses. IMS Conference 2012, IMAPS Conference 2012

PROFESSIONAL AFFILIATIONS

Member of IEEE, Tau Beta Pi and Eta Kappa Nu

COMMUNITY AFFILIATIONS

Junior Achievement
Chicago IEEE EMC
Living Hope Church

ADDENDUM

PATENT/PUBLISH AWARDS

- Patent: US 6,703,981 B2 Antenna(s) and Electrochromic Surface(s) Apparatus and Method in 2004.
- Patent: US 8,116,831 B2 Hand-Held Communication Device With Auxiliary Input Apparatus and Method in 2012
- Patent: US 8,583,193 Hand-Held Communication Device With Auxiliary Input Apparatus and Method in 2013
- Published Disclosure: “Infrared Methodology for Bringing CPE Baseband Signal Into Buildings Without Drilling Holes” in 2001.
- Published Papers: Meitzler, Turney, Malek, “Biconical Antenna, Scans 4.8-5.8 GHz”, *Microwaves & RF*, August 05 edition.
- Invention (Trade Secret) Award: “Apparatus Enabling IC Packaged Part RF Test Fixture to Perform IC Die Tests without the Use of a Probe Station” in 1998.
- FCC Filing: <https://www.fcc.gov/ecfs/filing/60002004438/document/60002112686>
 - Final Report:GPS and Adjacent Band Co-Existence Study

PRESENTLY UNDER REVIEW IN PATENT OFFICE

- Method of reducing electromagnetic exposure of the body from a wireless device antenna by Navsariwala, Buris, Meitzler.
- U.S. Patent Application Serial No. 13/104,504, Method of Manufacturing/Operating Antenna Arrangement for Communication (Printed Antenna), Inventors: Miomir Djordjevic, William Meitzler, Ignatius de Wilde, Paul Jelonek, Tun-Jen Chu

SECURITY CLEARANCE

- US citizen. Born in USA.