Michael Roche

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Microsoft CERTIFIED MCP ID# 1997871 FCC Federal Communications Commission FCC License: PG-0215229

Objective Seeking a position integrating my knowledge of analog video transmission / broadcasting with modern day digital technology.

Position Desired Communications engineer / technician.

Experience

1999 to Present - MicroCom Engineering, Nutley, NJ
Chief Engineer / Owner

Design and Construction of Communications Systems both Analog and Digital, including custom Remote Control (RF & Network) of Industrial Equipment, and installation of computer networks. Design and construction of Internet based remote monitoring / control of HVAC systems for commercial buildings. Projects include wireless remote control of concrete crushing machine (normally requiring an operator to start the diesel generator and control feed hopper / conveyor belt) allowing the loader/backhoe operator to perform both jobs from the cab.

1982 to 1999 - WNET TV 13, New York, NY
Chief Operator (FCC Designated) & Supervisor, RF Department

Responsible for overall engineering and maintenance of High Power Television Broadcast Transmitter Facility at the World Trade Center in New York City, specifically "ON AIR" signal quality and FCC compliance. This was an "On-Call" position to repair any outage 24 hours per day, 7 days per week. It also included generating and filing weekly maintenance and operating logs for FCC inspection. Additionally, I was responsible for the wideband microwave, satellite and fiber optic equipment linking the Master Control for video program feeds, remote control and monitoring to the Western Union Earth Station in Vernon, NJ and to the World Trade Center.

Equipment included: Larcan 30 KiloWatt Solid State TV Broadcast transmitters, RCA 25 KiloWatt Tube output transmitters, Varian 6 GigaHertz high power Klystron permanent magnet satellite uplink transmitter, downlink receivers, digital multichannel audio (PCM) over microwave, numerous long haul and short haul microwave links (both fixed & portable) from 2 GigaHertz to 23 GigaHertz, and associated remote control via telephone lines (telco) and Single-SideBand (SSB) subcarrier. Performed broadcast transmitter tuning utilizing a sweep generator and spectrum analyzer for flat frequency response with differential phase and gain within 1 degree / 1 percent for the visual side (after vestigial sideband filters). Performed Bessel Null method FM modulation calibration using a precission tone generator with the spectrum analyzer for the aural side.

Developed test procedures for the year long project to improve the radiation pattern of WNET's Harris antenna at the World Trade Center broadcast facility and supervised the installation (union labor) of the tower modifications. The project included mapping ground based field strength measurements, through extensive use of topographical U.S. Geological Survey maps, before and after to quantify the effects within the Grade A and Grade B service contours.

1985 to 1988 - Teleport Communications, New York, NY
Technological Consultant / Design Engineer

Freelance consultant to the then newly formed communications carrier, employing fiber optics to provide data, voice and video transmission to various Broadcasters (such as CBS) and corporate users throughout the metropolitan area. Project responsibilities included the first Common Carrier interconnect to AT&T's NR facility, design and construction of the satellite Earth Station uplink-downlink facility on Staten Island, and other local interconnects. Designed and built (off site – to circumvent union labor issues) the original routing switcher system for video / audio at the Earth Station.

1980 to 1985 - New Jersey Network, WNJM TV 50 / WNJB TV 58
Television Transmitter Engineer

Operation and maintenance of UHF (Klystron) high power television broadcast transmitters, including microwave and tower climbing. This involved monitoring video feeds, adjusting power and modulation levels, repairs, keeping logs. Also operated directional parabolic antenna rotator (tuning for the highest Signal-Noise-Ratio) for remote pickup feeds.

1979 to 1982 - New Jersey State Police, Troop "B"
Radio Technician - Communications OPR Section

Maintenance of two-way radio communications equipment from Low Band (30 - 50 MHz) to VHF (150 MHz) to UHF (450 MHz) and ancillary equipment such as operator consoles and remote control via telephone lines (telco), antennas and transmission lines. Equipment included Motorola and General Electric 100 Watt RF output power mobile radios and legacy tube output base stations, UHF repeater systems utilizing satellite receiver system (via dedicated telephone lines) to enable wide area coverage for low power portables, and mobile repeater systems linking the Low Band mobile radio with VHF walkie-talkie for the Trooper to walk away from the vehicle and still remain in communication with the barracks. Diagnosed faulty equipment and made repairs down to the component circuit level (transistors, capacitors, resistors). Also performed installations of emergency remote Command Posts and tower work.

Summer of 1979 - WPAT 930 AM / 93.1 FM, Paterson (Clifton), NJ
Radio Transmitter Engineer - "Transmitter / Tower Site"

Internship as radio broadcast transmitter operator and engineer under Ken Stout, Chief Engineer. Duties included operating and monitoring local AM transmitter with directional antenna array and remote FM transmitter in New York. This was (at the time) a state of the art "automated" radio station, utilizing computer controlled reel-to-reel tape decks for on-air program material. Audio tapes had to be racked approximately every hour with a complete cleaning & lubricating of each deck. Transmitter meter readings were taken manually every half hour and antenna pattern switch required "base current" readings to be taken before and after by trudging out to the 4 towers (sometimes through the mud).

1976 to 1979 - Barnes & Company, Bloomfield, NJ
Supervisor - "Radio Room"

Installation and maintenance of Central Receiving Station for police and fire radio traffic. Site included 60 foot tall Rohn guyed tower (roof mount) with several coaxial whip antennas for Low Band (30 - 50 MHz) to VHF (150 MHz) to UHF (450 & 800 MHz) along with the transmission lines into the building and split to feed the various radios. Designed and installed 10.8 MHz Intermediate Frequency traps to isolate each receiver from adjacent pick up under strong signal conditions. Installed squelch controlled relays to activate recording system on each radio. Duties included scheduling shift work for employees.

1973 to 1976 - Cable TV of Elizabeth, Elizabeth, NJ
Installer / Repair Technician

Installation and repair of cable TV (Part-Time during college years). Developed system to measure trunk line signal loss in dB at various frequencies and adjusted pre-emphasis amplifiers to compensate for flat response.

1971 to 1973 - Lafayette Radio Electronics, Newark, NJ
Counter Sales / Repair Technician

Counter salesman of electronic parts, wire, radios and stereo equipment (Part-Time during High School years). These stores were similar to the Radio Shack stores of today except they were geared toward more serious electronics offering industrial components and non-catalog parts could be ordered. I also worked in the Service / Repair Department as an apprentice performing minor repairs and gained valuable experience at a young age as to the insights of troubleshooting transistor technology (I grew up repairing old tube radios and televisions at a *very* young age).

1967 to 1972 - Home TV / Radio Electronics, Bloomfield, NJ
Installer / Repair Technician

Own home business performing installation and repair of home electronics including television systems (from roof antennas to custom wiring), stereo equipment, short-wave radio stations, and 2-way mobile radio.

Skills

- → read schematics and repair electronic equipment down to the component circuit level including wiring and soldering and connectorizing
- → measure voltage, current, power from DC to audio, ultra-sonic, and radio frequencies to light to X-Rays (meter, oscilloscope, spectrum analyzer)
- → install and repair ONT / NID / DSLAM equipment and inside wiring
- → climb ladders, poles, aerial work
- → use power tools, including Bosch 11209
- → operate earth excavation equipment (backhoe, loader, drilling)
- → familiar with MDF / Frame-Room / Switch-Room / Head-End wiring layout and troubleshooting procedures
- → "Ring Out" phone lines for frequency response / dB loss / Signal-Noise-Ratio
- → assemble and repair PC (IBM) & MAC computers
- → install and service small computer networks (both server based & workgroup - hard wired & wireless)
- → Programming Languages: Assembler, Vis-Basic, C++, Fortran, RPG, HTML
- → conversion of digital video formats (MPEG, XviD, DivX & web encoding)
- → familiar with the National Electrical Code (NFPA) & electrical wiring
- → familiar with MSDS labeling and experienced with safe handling of shop chemicals (sulphuric acid, tetrachloroethylene, hexane, isopropyl)

Education

2000 - LANOP, West Orange, NJ
MicroSoft Certification

1973 to 1978 - Kean College, Union, NJ
Industrial Electronics

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