

## **EMS Wireless, 1995 - 1998**

EMS Wireless, a division of EMS Technologies, is a leading designer and manufacturer of Cellular, PCS, and GSM base station antennas and equipment. EMS Wireless Networks Group was organized to find and exploit new commercial wireless markets for parent EMS Technologies.

Positions Held: Senior Design Engineer, RF and Antenna Design (98)  
Manager, Test Engineering, Operations, Temporary (97-98)  
Senior Design Engineer, RF Design, R&D (95-97)

Working in small multi-disciplinary teams of senior engineers, I assisted EMS' technology partners in creating wireless systems for new markets by performed technical research studies, feasibility studies and preparing project development plans for prospective projects. I designed transmitter and antenna components of the systems. As manager of test engineering, I implemented new antenna tuning processes while managing the 5 tuning technicians on the factory floor.

### **Accomplishments**

- Increased antenna tuning production from 100's of antennas per day to over 1000.
- Designed a 2.4 GHz Access point range extender for 802.11 wireless systems.
- Designed 2 watt L-band PA, ALC and output circuits for a wireless local loop phone system.
- Designed and integrated an antenna for a wristwatch sized 915 MHz band transmitter
- Designed and built high performance GPS amplifier modules flown on the AMSAT AO-40 satellite.

## **Norand Corporation, 1985 - 1995**

Norand Corporation was a pioneer in the wireless inventory control market, designing and manufacturing inventory control and bar code ID systems reaching sales levels of \$200M with products such as hand held computers, tablet computers and wireless LAN and WAN based inventory control systems.

Positions Held: Technical Leader, Antennas and RF Systems, (93-95)  
Senior Design Engineer, RF and Antenna Design (90-92)  
Design Engineer, RF Design, R&D, Antennas (85-90)

As one of the founders of Norand's RF product line, I performed research and development activities leading to new classes of products in the areas of wireless LAN systems. I designed the antennas and integrated the radio transceivers into 4 generations of products and performed pioneering research into the characteristics of indoor radio systems.

### **Accomplishments**

- 23 patents in antennas, RF communications systems and Microlan devices.
- Pioneered Internal/Conformal antennas in the RF inventory control industry
- Integrated cellular transceivers with tablet computers to field major firsts including products for service trucks, and direct sequence spread spectrum modems in forklift applications
- Performed fundamental research and development contributing to the IEEE 802.11 specification in the areas of RF protocols and antenna diversity systems.