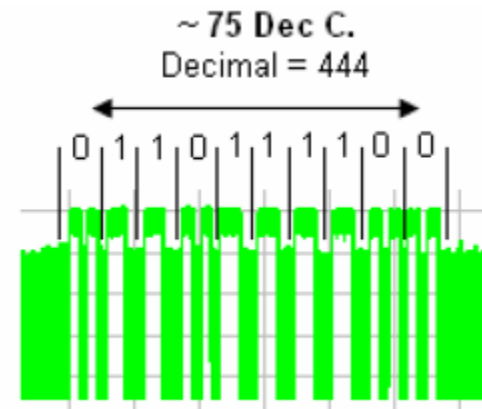
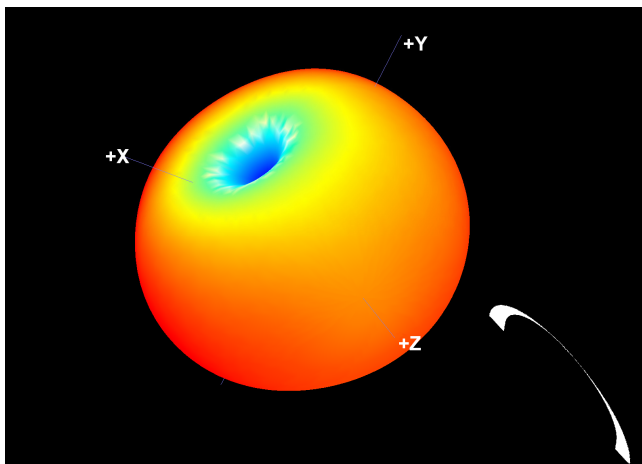
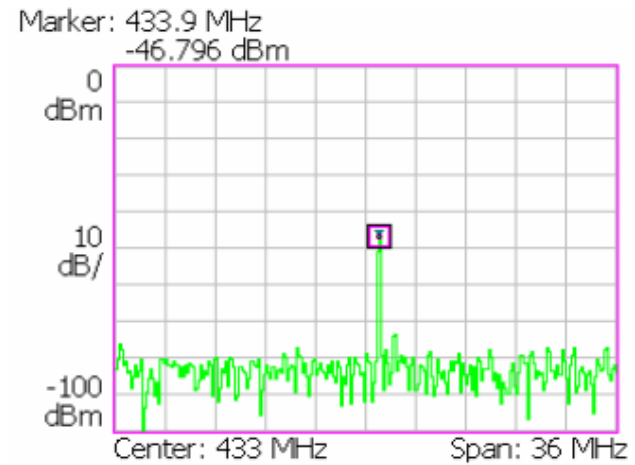
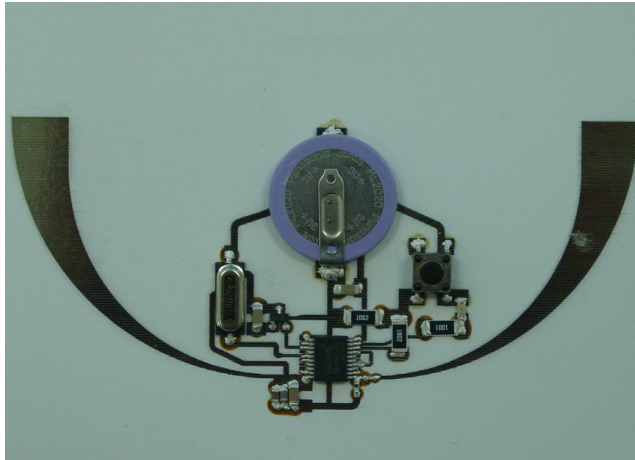


Paper Based Wireless Sensor Module

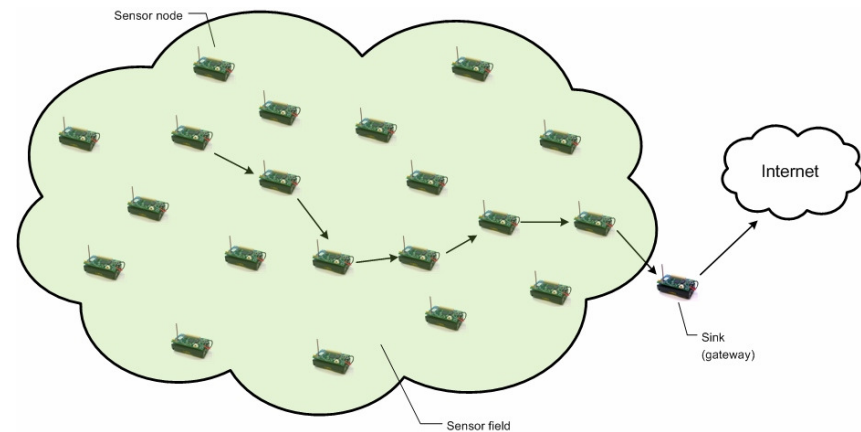
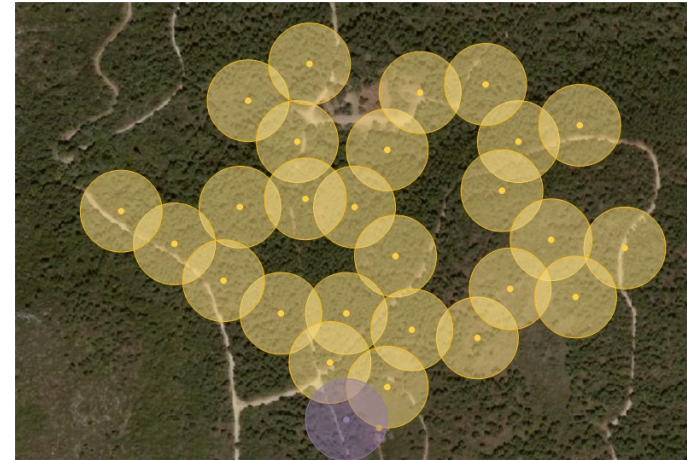
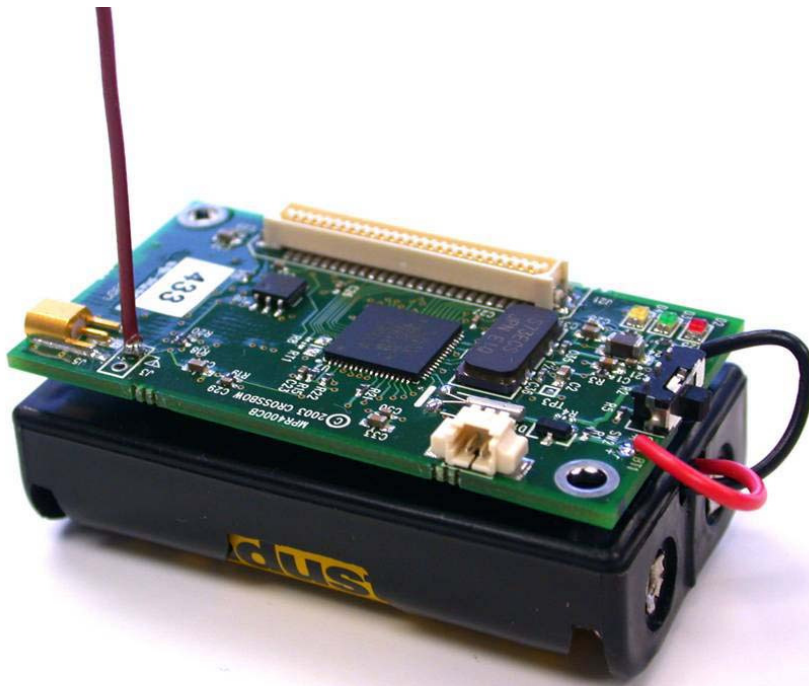


Paper Based Wireless Sensor Module

- Low cost wireless platform for sensing applications
- Antenna and circuit fabricated using low cost inkjet printing process on paper and duroid substrates
- Frequencies of Operation: Free Industrial Scientific & Medical bands around 433 MHz and 905 MHz
- Power Amplifier characterized for maximum power transfer
- Antenna impedance tuned to be optimally matched to Power Amplifier for maximum range
- Integrated 10 Bit A/D converter for better sensing accuracy



Wireless Sensor Networks



Wireless Sensor Networks

- A Wireless Sensor Network (WSN) is a wireless network consisting of a large number of spatially distributed low-cost, low-power, autonomous sensor nodes, which, besides sensing and processing, also possess communication capabilities.
- The unique characteristics and requirements of sensor networks, such as the limitations in power, computational capacities and memory, the high deployment density, the lack of global identification and the frequent topology changes, render the protocols and algorithms proposed for traditional wireless ad hoc networks inapplicable. In addition, there are also routing specific constraints, such as the high spatial and temporal correlation of the data traffic, the randomness of the node deployment and the mobility of a number of nodes, which necessitate the emergence of new WSN routing protocols.
- Multi-hop communication, which involves the requirement for each node to play the dual role of data originator and data router relaying the information to its peer nodes, plays a major role in the aforementioned routing protocols. The ability of multi-hop routing to effectively overcome path loss effects and shadowing is exploited in both the dramatic range enhancement of WSNs and the improvement of the energy efficiency of communication.
- The performance of the main routing protocols is investigated under the different propagation effects caused by the three different testbed frequency bands, namely the ISM 433 MHz, 915 MHz and 2.4 GHz, as well as with different typical RFID antennas. Results of the power lifetime efficiency and the range improvement achieved by the protocols, as well as the tradeoffs between these two factors mainly in open-space environments are obtained.



RFID Testbed

- Symbol (Matrics) XR400 Reader Kit
- Conductive paste inkjet printer and test kit
- HP Vector Network Analyzer
 - HP 8517B S-parameter Test Set
 - HP 8510C Network Analyzer
- Tektronix Real-Time Spectrum Analyzer (RSA3408A) with Rhode and Schwarz Vector Signal Generator (SMJ100)

