

Chirping Tag & Seal

A better approach than RFIDs!

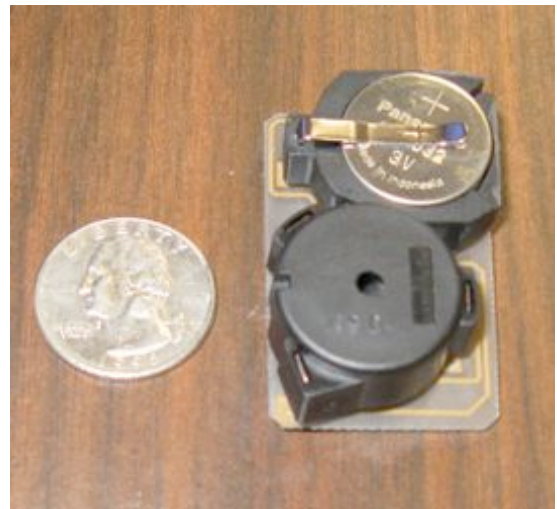
The Problems with Conventional Approaches

RFIDs and conventional radio frequency (rf) tags, seals, and real-time monitors suffer from most or all of the following negative attributes:

- flakey
- power hogs
- prone to interference
- still relatively expensive
- easy to eavesdrop on
- easy to "lift"
- easy to tamper with the reader
- easy to spoof the reader at a distance
- easy to counterfeit (even by hobbyists)
- work poorly around corners
- work poorly in or near liquids & metals
- there's mish-mash of international standards & regulations
- create safety & security concerns in nuclear facilities

An Alternative

- Don't use RFIDs or rf! Use sound (or ultra-sound for shorter range). It has few of the problems of rf.
- Don't bother modulating the signal or sounding an alarm. For simplicity & low-cost, each tag/seal 'chirps' at a random, unpredictable, constantly changing time (every minute or so on average) known only to the good guys.
- The chirping from any one tag/seal will cease if the item is stolen or has been tampered with. The future pattern of chirps is then instantly erased inside the microprocessor.
- We use a microphone and inexpensive DSP chips to analyze the chirps & ignore background noise.



A prototype Chirping Tag/Seal. This device uses less than \$4 of parts (retail quantities of 1) to provide high-levels of security for critical assets. The device can detect tampering or theft in real-time. Chirping can be detected 300 feet away.

Advantages of the Chirping Tag/Seal

- Cheap, simple, & small
- Low power requirements
- Works well around corners and inside containers.
- Not bothered by proximity to liquids or metals.
- Many chirping tags/seals can be in the same volume. (The chirps are so short that they rarely overlap, though the overlaps that do occur are known in advance to the good guys.)