

## How Not to Install RFID

THE RFID NETWORK

### Our Biggest Blunder List



With all the hype about radio frequency identification (RFID) over the past few years, a lot of people have claimed to have more expertise than they actually possess. Here are some of the mistakes made and lessons learned the hard way in no particular order or project:

- 1.)** Assuming that because you are an industry expert in a given area that you know how to implement an RFID system. I can drive the heck out of my Kawasaki Ninja, but that doesn't mean I'm going to try to rebuild its engine!
- 2.)** Ordering tags that are pre-encoded, but with no human-readable site verification. It's very difficult to ensure that the asset identifier (serial, asset tag, etc) assigned to an RFID tag is assigned to the *right* RFID tag — as opposed to one close to it — without this convenient second line of verification. It doesn't necessarily matter if that human readable disappears after the initial assignment is made.

Yes, you can remove the asset and the tag to a solitary location and do the assignment, or somewhat adjust attenuation, but have you ever tried to associate 500 full half-barrel metal beer kegs that have already been tagged and are already stacked together ready to roll? Can we say back scatter? For your information, metal *amplifies* RF signal, so even adjusting the attenuation can still result in accidentally picking up (even with a handheld) a nearby tag rather than the one

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you're aiming at.

**3.)** Ordering tags and mounts (especially 10 thousand of them) without first verifying they are going to work, and the selected method of mounting is *approved* by the customer. But also not testing the mount thoroughly in as many adverse conditions as possible to ensure it stays put. This includes the ability of a person to grab the mount, tag it and stay *mounted*!

**4.)** Just call me Rosie. Being budget conscious, trying to save money by doing that special mounting (riveting, welding, etc.) yourself. Unless you are a former welder, no matter how easy it looks ... it's *not*.

**5.)** Assume that because you threw a variety of tags loosely on top of an asset, ran it through the reader and got great results that those results are the same after the tags are actually mounted. Kudos to you for testing metal items and tag reads with and without liquids but, guess what? It turns out that after you mount them, some times orientation matters. And what may work on one similar, but slightly different-shaped asset, doesn't necessarily work on another.

**6.)** Recommending a hardware device (handheld, static, tag, etc.) you haven't tested in the field first. (Or at least getting a guarantee from whomever you are partnered with that they correct the mistake — cost or other — should the recommended devices not work). Make sure you have the best reader(s) for the job. Some times that means testing it yourself to ensure reliability. (Hint: If it requires jumping through hoops, creating strange workarounds in order to get the data where you need it ... it may not be the right reader.)

**7.)** Ordering pre-encoded tags (especially in the thousands), without guaranteeing that all tags are uniquely encoded, and if they are found not to be, any costs and time associated with correcting the issue is handled by the tag suppliers. Nothing ruins a weekend like having to encode 9,000 tags ... by hand.

**8.)** What do you mean the last two months of testing data is lost?! Ensure that any data gathered for testing and certainly for the initial go-live ... is backed up.

**9.)** Let the user think that RFID is magic and can solve all their asset tracking needs. The truth is, some times RFID makes no sense.

**10.)** Going into a project without a rudimentary understanding of the technology. Ultra high frequency doesn't work well on metal without special configurations/form factors. And high frequency only has about a 6-inch read range. A lot of problems can be caused by simple lack of knowledge.

**11.)** Let someone tell you that a spectrum analysis is unnecessary "because very few things interfere with this frequency" ... or some other excuse. The truth is, even if you are familiar with a certain setup (let's say data center), there are always unknown factors in each physical location that can interfere with various frequencies. It's worth the time and money to get it right. And when doing a spectrum analysis, make sure it covers at least a 24-hour period in or near the area

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where RFID is going to be used. A lot of weird things can happen when you're not looking. My favorite is the floor sweeper incident, but that's another article.

**12.)** Send any old RFID reader (and or tag) to a foreign country. (Note: Many of these countries have strict standards on frequency, power settings, RoHS compliancy, etc. For example, in some countries, the ultra-high frequency range is completely illegal to use. *All. Of. It.* Until recently, Italy was one example.)

**13.)** Partner with someone "overseas" without first ensuring their RFID capabilities. This can result in a lot of wasted time, effort and the damaging of your company name when they fail. (See 15 for more detail.)

**14.)** Installing the RFID equipment yourself without prior experience. Sure, we know how to put the system together. We know how to put the tags on right, configure the readers and position the antennae. But some of us just aren't that handy with tools. (I recall one disastrous incident with a power saw.) And plywood and duct tape aren't always the right answer. Sorry MacGyvers of the world, but it's true. Some times it pays to have a professional do it. Whenever possible, at least try to work with the client to get their current facilities personnel or contracting company to assist with installation.

**15.)** Ordering the wrong tags for the assets/environment. Nothing screams remedial RFID like someone who puts RFID label tags on file folders, puts those file folders in a metal cart to be pushed through a fixed portal and then wonders why the tags don't have reliable read rates. Can anyone tell me why? Anyone? Bueller?

**Editor's Note:** *The author of this article has asked to remain anonymous but would like it noted that he/she was the one fixing the above problems ... not creating them.*

From The RFID Network: [www.rfid.net](http://www.rfid.net) [1]

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