Design your own UHF RFID reading zone

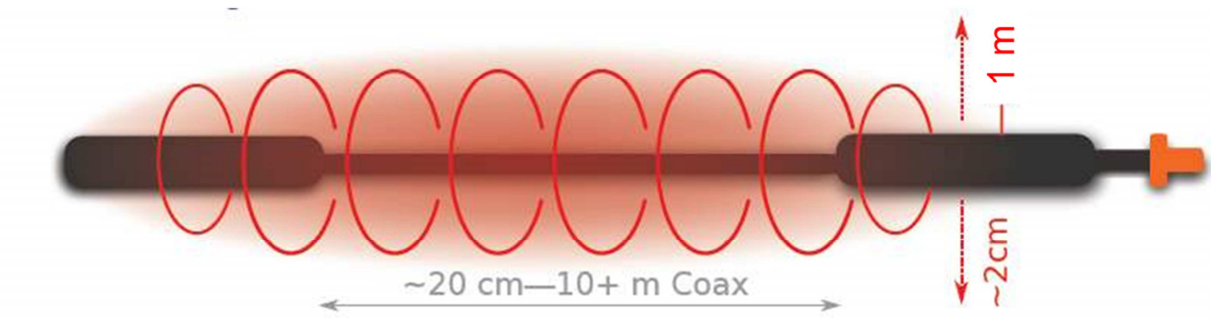
Ha-VIS LOCFIELD® RFID antenna

In some cases, so many patch antennas are required for the coverage of the region of interest that no return on invest can be achieved. The Ha-VIS LOCFIELD® now allows you to design your tailored UHF RFID reading zone. A wide range of challenging applications become possible, e.g. smart shelves, 19" racks, RFID in complex machines, doors and pass-throughs.

Idea

Wouldn't it be great if you could design your RFID reading zone in almost any arbitrary shape you like and need in your current project? The Ha-VIS LOCFIELD® antenna brings you very close to this vision.

LOCFIELD® stands for LOCalized FIELD: the antenna generates a localized electromagnetic field exactly along the path of the antenna cable. You may think of the field as a tube with the antenna cable at the centre of the tube. The diameter of the tube can be determined by changing the radio power injected into the cable by the RFID reader. Depending on reader, transponder, the specific coax cable type and environment, the read range can be adjusted from a few centimeters to about one meter. The length of the antenna can be varied from 20 cm to about 10 m.



Theory

The Ha-VIS LOCFIELD® antenna generates a traveling wave along the antenna cable at a UHF frequency band of 865 – 928 MHz. Because the wave is traveling, a homogeneous RF field is generated along the cable. Only a negligible fraction of the field energy is radiated. So reflections and interferences are avoided, especially in metallic environments. The antenna can be connected to any kind of UHF RFID reader.

Design guidelines

With Ha-VIS LOCFIELD® you can create your own reading zones. The zone is clearly defined and the read range can be adapted by the RF power of the reader. Almost any complex path in 2 and 3 dimensions is possible.

You can form almost any shape you like: straight lines, meandering waves, circles or any shape you need. One thing to avoid is that the antenna touches itself. Then one might suffer from a loss of performance. The shape you create can be in two dimensions, e.g. for a smart shelf or a smart work bench. But it can also be in three dimensions, for example if you like to identify numerous modules in a complex machine with only very little space left for your antenna.

Because the Ha-VIS LOCFIELD® generates a traveling electromagnetic wave along the antenna cable, the antenna should not be put directly on metal. In this case, the major part of the RF energy is absorbed by the metallic surface and the performance decreases. The same applies to steel enforced concrete: major parts of the electromagnetic wave traveling along the cable might be absorbed.

Advantages

The new antenna can be shaped in any way you like. It is quick and easy to mount. Because no energy is radiated, the antenna is perfectly suitable for metallic environments as reflections and interferences are avoided. Tuning and optimization are very simple: adjust the RF power of the reader and move the cable until the generated field covers the required reading zone.

Applications

- Doors and Pass-throughs
- 19” server racks
- Complex machines
- Smart shelves

Contact

Engineering samples of the antenna are available now. If you are interested, please don’t hesitate to contact us. The product will be available in July 2014.

http://www.harting-rfid.com