

Notice of dissertation defense

10.10.2017

# Passive wireless RFID sensors for the Internet of Things

<b>Title</b>	Modulation Frequency Based RFID Sensor
<b>Content</b>	<p>Recently, the increasing use of Internet of Things (IoT) sensors has allowed smart objects to provide major industries with the vital data that they need to track inventory, manage machines, increase efficiency, save costs, and even save lives. However, there is a consistent lack of consensus around technical and regulatory solutions. In this context, RFID sensor is a solution for intelligent sensing: sensing is wireless and passive.</p> <p>The objective of this thesis is to develop a novel passive wireless sensor technology for IoT. The developed devices should provide sensing capability, efficient use of signal from the reader utilizing retrodirective antenna, and include the sophisticated features of RFID (e.g., non-volatile memory, identification, anti-collision protocol, and a large read out distance). The obtained results show that the passive RFID sensor that has been developed in this dissertation is potentially able to address the formidable challenges of IoT. The RFID sensor can be read precisely across long distances and made compliant with frequency regulations. Furthermore, the sensing information can be detected across wider ranges of incident angles than with typical passive wireless sensors. This is especially beneficial in situations where the location and orientation of the sensors are completely unknown.</p>
<b>Field of research</b>	Radio Engineering
<b>Doctoral candidate</b>	Md. Mazidul Islam, MSc Born in Rajshahi, Bangladesh, 1987
<b>Date and time</b>	02.11.2017 at 12:00
<b>Place</b>	Aalto University School of Electrical Engineering, hall TU1, Maarintie 8, Espoo
<b>Opponent</b>	Professor Yvan Duroc, Claude Bernard University Lyon 1, Villeurbanne, France
<b>Supervisor</b>	Associate Professor Ville Viikari, Aalto University School of Electrical Engineering, Department of Electronics and Nanoengineering
<b>Dissertation website</b>	<a href="https://aaltodoc.aalto.fi/handle/123456789/53">https://aaltodoc.aalto.fi/handle/123456789/53</a>
<b>Contact information</b>	Md. Mazidul Islam, +358504677072, <a href="mailto:mazidul.islam@aalto.fi">mazidul.islam@aalto.fi</a> , Maarintie 8, 02150, Espoo

The dissertation is publicly available on the notice board of the Library of the Aalto University School of Electrical Engineering (Maarintie 8).