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The Effect of Introducing Carrier Sense in an Active RFID Protocol

B. Nilsson[1,2], L. Bengtsson[1,3], P-A. Wiberg,[1,2], and B. Svensson[1]

[1.] Centre for Research on Embedded Systems, IDE; Halmstad University, SE-301 18 Halmstad, Sweden

[2.] Free2Move, Sperlingsgatan 7, SE-302 48 Halmstad, Sweden

[3.] Chalmers university of technology, Datorteknik, SE-412 96 Gothenburg, Sweden

ABSTRACT

Active Radio Frequency Identification (A-RFID) extends the functionality from the predecessor passive RFID trough adding a power source to the transponder device (device used on a product to identify it). This power source enables more advanced functions in the radio interface such as listening (doing a carrier sense) to the radio channel (carrier of data information) finding out if it is unengaged, and free to use. In this paper we study the carrier sense functionality and its effects in lowering the tag energy consumption. Simulation results show that the life time of a tag, in an A-RFID system, using carrier sense is more than doubled compared to one not using carrier sense. The increased lifetime of the tag is due to the lowered energy consumption caused by the improved throughput and the decreased payload delay, which in turn is thanks to using carrier sense and naturally then give a better utilization of the radio channel.