

在無線射頻系統中使用群組碰撞標籤的反碰撞辨識方法

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摘要

In RFID systems, tag collision critically influences the throughput of tag identification when a reader uses an ALOHA-based method to identify tags. Researchers, therefore, proposed anti-collision methods to overcome tag collision. To conquer tag collision, the dynamic framed-slotted ALOHA (DFSA) is the most common anti-collision method. DFSA has an important characteristic: in a cycle, the throughput increases as the identified tag quantity decreases when the tag quantity equals the frame size. However, most DFSA-based anti-collision methods neglect this characteristic, and therefore these methods can be further improved in terms of throughput. We propose a new anti-collision method which uses this characteristic to increase the throughput of tag identification. Our proposed method is called Group Framed-Slotted ALOHA (GFSA). In GFSA the collision tags on the current cycle don't appear as a whole on the next cycle. Instead, the collision tags on the current cycle are distinguished into several groups on the next cycle based on the slot of the tag collision event on the current cycle. We also derive the throughput using a probability model. Simulation results show that the throughput of GFSA, 42.7%, outperforms that of DFSA, 36.7%.

關鍵字：RFID, anti-collision method, Group Framed-Slotted ALOHA