

The Relay Scheme over MAC for Data Transmission Performance in Railway Wireless Sensor Network

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Abstract—Wireless sensor networks (WSNs) have been widely applied to a various areas. Especially in recent years, there has been an increasing interest in the adoption of emerging sensing technologies for a railway infrastructure monitoring. However, because the wireless communication of a railway is operated between sensor devices in poor environments such as high speed and much vibration, there may be a problem when the IEEE 802.15.4 and ZigBee would be applied in railway WSNs. Therefore, it is necessary a scheme to reduce data transmission delay and power consumption in railway WSNs. To solve this problem, the relay scheme over the MAC sublayer on the IEEE 802.15.4 standard is proposed in this paper. In this paper, the relay scheme could reduce data transmission delay and power consumption by about a half when data routing is performed on not the IP layer but the MAC sublayer.

Keyword—Wireless Sensor Network, IEEE 802.15.4, ZigBee, Railway, Relay



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