

# scheduled IEEE 802.15.4 가 Performance Evaluation of scheduled IEEE 802.15.4 for Real-Time Wireless Network

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Key words : Wireless Industrial Network, IEEE 802.15.4, time division multiplexing access

1. (mobility) (mobile robot) AGVs(Automated Guided Vehicles), OHTs(Over head Hoist Transfers) (mobile devices) 가 [1].

DeviceNet, Profibus-DP, Ethernet [2]

Radio-Frequency(RF) Slots) modem 가

가 IEEE 802.11b [3]. IEEE 802.11b TCP/IP

ZigBee IEEE 802.15.4 WPAN(Wireless Personal Area Network) 가 [4]. IEEE 802.15.4 (Medium Access Control) CSMA/CA(Carrier Sensing Multiple Access with Collision Avoidance) 가

IEEE 802.15.4

IEEE 802.15.4 (time slot)

scheduled IEEE 802.15.4 scheduled IEEE 802.15.4

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## 2. Overview of IEEE 802.15.4

IEEE 802.15.4 가, IEEE(Institute of Electrical and Electronics Engineering) 2003 LR-WPAN(Low-Rate Wireless Personal Area Network) . IEEE 802.15 task group

WPAN IEEE 802.15.1 BlueTooth IEEE 802.15.4 IEEE 802.11 가

IEEE 802.15.4 2.4GHZ ISM (The Industrial, Scientific and Medical) 가 250kbps 30m

Fig. 1 IEEE 802.15.4 CAP(Contention Access Period) 가 CSMA/CA, CFP(Contention Free Period) GTSs(Guaranteed Time Slots) CAP CSMA/CA(Carrier Sense Multiple Access with Collision Avoidance) CSMA/CA 가, (1)

$$InitialbackoffPeriod + CCA = (2^{macMinBE} - 1) * aUnitBackoffPeriod + CCA \quad (1)$$

where: macMinBE = 0,1,...,3

CFP CAP GTS 가

## 3. Scheduled IEEE 802.15.4

IEEE 802.15.4 CSMA/CA 가 (Non-Time Deterministic) IEEE 802.15.4

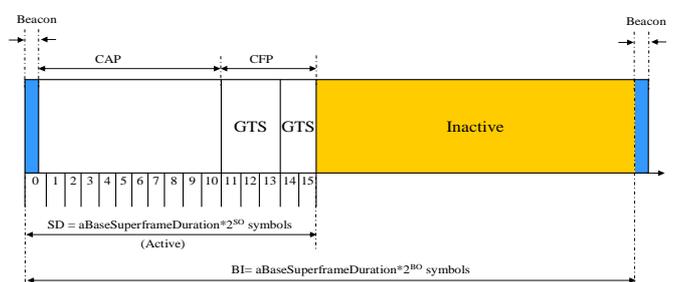


Fig. 1. Structure of IEEE 802.15.4 superframe.

