NB-IoT latency evaluation with real measurements

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ABSTRACT

In the 3GPP LTE Release 13, NB-IoT was standardized to provide wide-area connectivity for IoT. To optimize network signaling and power consumption, control plane (CP) optimization was introduced. In Release 15, to support infrequent small data transmissions, Early Data Transmission (EDT) was also included, in which the data are sent during the random access procedure. Thus, this paper analyses the latency performance of the different NB-IoT optimizations for the CP. The study, carried out in a real device, has been performed for different packet sizes and coverage levels. Evaluation results show lower latencies for EDT, particularly with small packets, where a reduced transport block is used, being more efficient from a network point of view. Additionally, we verify that EDT, unlike Release 13 optimization, fulfills 3GPP latency requirement for extreme coverage.