3GPP RAN Rel-19 Workshop RWS-230181

June 15th-16th, 2023, Taipei, Taiwan

Agenda Item: 5

Low-Power WUS

Qualcomm Incorporated

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Outline

- Background
- WI scope for R19 LP-WUS

LP-WUS

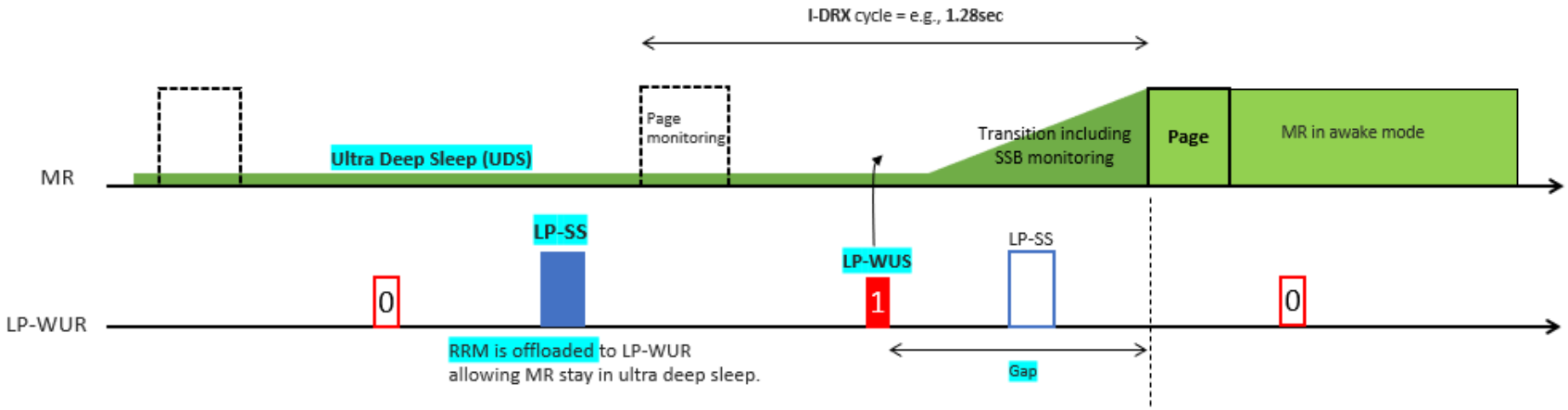
Background

- Energy efficiency is critical especially for UEs requiring long battery life, e.g., sensors, actuators
- With main radio, configuring large wake-up period (eDRX) reduces power consumption but results in high latency. LP-WUS can realize reduced power consumption with no or little latency increase.
  - LP-WUS is received by simply-designed wake-up receiver without waking-up main radio every DRX cycle
  - In IDLE/INACTIVE mode, keeping main radio in ultra deep sleep mode dramatically reduces the total UE power consumption
- LP-WUS is mainly targeting small form-factor devices including IoT use cases (such as industrial sensors, controllers) and wearables. XR/smart glasses and smart phones are potential other use cases for LP-WUS in CONNECTED mode.
- Detailed scope of Rel-19 work item will be determined depending on outcomes of Rel-18 study item
  - Waveform
  - Receiver architecture
  - Synchronization
  - RRM relax/offloading to LP-WUR
  - WUS monitoring mechanism
  - Idle mode/Connected mode use

LP-WUS

Scope of the work item

- Specify Low-power wake-up signal (LP-WUS) and wake-up receiver (LP-WUR) procedure [RAN1, RAN2, RAN4] with focus on RRC IDLE/INACTIVE mode IoT use case.
  - Introduction of new physical layer signals and channels, including OOK-based LP-WUS and periodic low power synchronization signal (LP-SS).
  - Corresponding L1/L2 procedures, including duty cycled LP-WUS monitoring procedure, main radio wake-up operation, activation/deactivation of LP-WUS, LP-SS based synchronization.
  - RRM measurements offloaded to LP-WUR based on LP-SS at least for serving cell and new measurement metrics
  - Time/frequency tracking function, and ideally beam management function, should be provided.
- Specify RAN4 core requirements for the above.



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