

3GPP TSG RAN Rel-19 workshop

RWS-230144

Taipei, June 15 - 16, 2023

Agenda item: 5. Specific RAN1/2/3-led Rel-19 topics

Low-power Wake-up Signal and Receiver for NR

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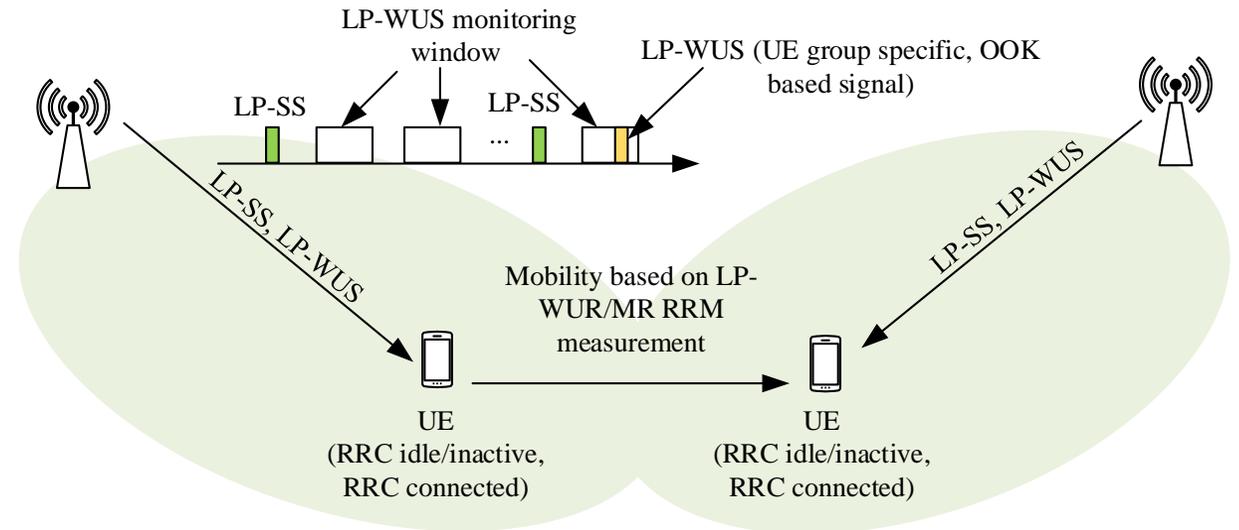
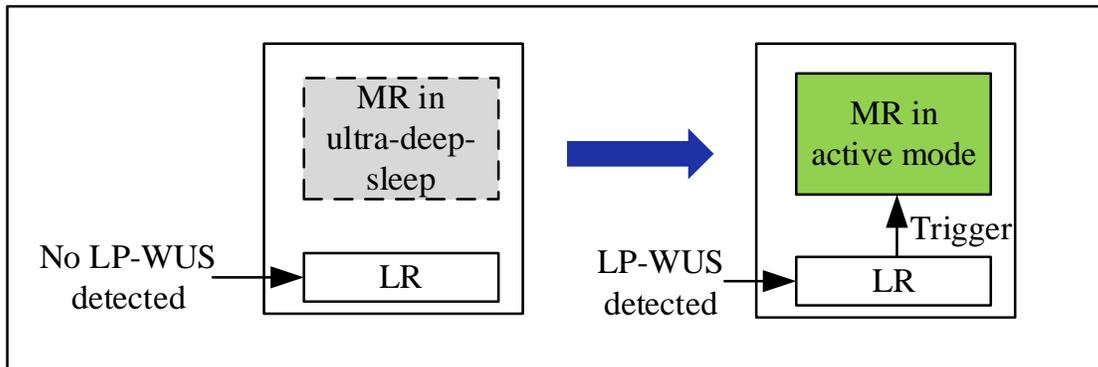
Motivation for LP-WUS/WUR

- ◆ In Rel-18, a Study Item on LP-WUS/WUR is ongoing, in which the evaluation methodology & KPIs, receiver architectures of LP-WUR, L1 signal design, PHY and higher layer procedures are studied.
- ◆ The primary target is supporting LP-WUS/WUR for power-sensitive, small form-factor devices including IoT use cases (such as industrial sensors, controllers and wearables). Other use cases are not precluded, e.g. XR/smart glasses, smart phones.
- ◆ In Rel-19, it is proposed to start a WI on LP-WUS/WUR based on the outcomes of the SI.

Overview of new WI

- ◆ Following Rel-18 SI, start WI for the fundamental parts of LP-WUS/WUR
 - Enable ultra-deep-sleep state for the Main Radio (MR) by introducing LP-WUS and LP-WUR (LR)
 - Offload RRM measurement to LR to further reduce the active time of MR
 - Support different coverage for LR signal and MR signal, considering the relatively poor receiver performance of LR

MR power state transition triggered by LP-WUS/WUR



Objectives for LP-WUS

- ◆ Specify signal generation for LP-WUS and LP-SS, including:
 - Signal generation for LP-WUS and LP-SS, including baseband signal generation, encoding, multiplexing with other signal/channels, etc.
- ◆ Specify L1 procedures to support LP-WUS/WUR, including:
 - UE monitoring configuration and monitoring procedure for LP-WUS
 - Synchronization and measurement procedure based on LP-SS
- ◆ Specify higher layer enhancement to support LP-WUS/WUR in RRC_IDLE/INACTIVE and RRC_CONNECTED mode, including:
 - Enhancement on paging/PEI monitoring behavior to support LP-WUS/WUR in RRC_IDLE/INACTIVE mode
 - Enhancement on C-DRX and PDCCH monitoring behavior to support LP-WUS/WUR in RRC_CONNECTED mode
 - Support of entry/exist condition and network awareness of LP-WUS monitoring
 - LP-WUS content and LP-WUS grouping mechanism
 - Support of RRM measurement by LR, and relaxed RRM measurement by MR

Summary

- ◆ As the continuation from the Rel-18 SI, the work on LP-WUS/WUR should be done based on the outcome of the SI.
- ◆ All new functions including new receiver architecture shall be operated in a cell supporting legacy UEs, as confirmed in the SI.

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