Timing Compensation of Sleep Mode in MR

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Discuss and adopt proposed text and message format
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1. Assumptions
- Non-transparent RS system
- Processing delay existing in RS. RS may not relay MAC PDU within current frame.
- RS and MR-BS are synchronized, and have same frame number

2. Problem Description
-- Because of message processing delay in RS, the sleep-mode MS may miss messages such as TRF-IND at the pre-notified timing.
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- MS
  - MOB_SLP_REQ
  - MOB_SLP_RSP
  - (Start Frame Number)
  - MOB_TRF_IND

- RS
  - MOB_SLP_REQ
  - MOB_SLP_RSP
  - (Start Frame Number)

- MR-BS
  - MOB_SLP_REQ
  - MOB_SLP_RSP
  - PDU for the MS
  - MOB_TRF_IND

FB: The beginning frame of Sleep Window
DR: Relay processing delay of RS

Listening Window
Sleep Window
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3. Compensation Method

- The delay in RS will be reported to MR-BS as a capability parameter of SBC-REQ message
- MR-BS broadcast the MOB_TRF-IND over R-DL $D_R$ frame earlier ($D_R$ is the delay in RS)

- $D_R$: Relay processing delay of RS
- $F_B$: The beginning frame of Sleep Window
- $F_B$(modified): Modified beginning frame of Sleep Window
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4. Benefits
- Guarantee the sleep-mode MS receiving messages at pre-notified time in the presence of RS delay
Specific text changes

Insert the following text at the end of 6.3.21.2:
For MR, to guarantee the sleep-mode MS receiving traffic indication in time in the presence of processing delay of RS, which is $D_R$, the MR-BS may transmit MOB_TRF-IND twice over R-DL and access link separately. MR-BS sends MOB_TRF-IND over the R-DL as a pre-transmission DR frame earlier than the normal MOB_TRF-IND transmission time. MR-BS may wait for $D_R$ frames, and then sends MOB_TRF-IND again over the access link. The RS delay, $D_R$, is given to MR-BS as a capability parameter of SBC-REQ message.