**3GPP TSG RAN WG1 Meeting #119 R1-240abcd**

**Orlando, FL, USA 18th – 22nd November 2024**

**Title:** Draft reply LS on SSB relation in On-demand SSB and SSB adaptation on Scell

**Response to:** R1-2409350 (R4-2416913)

**Release:** Rel-19

**Work Item:** Netw\_Energy\_NR\_enh

**Source:** Ericsson [To be RAN1]

**To:** RAN4

Cc: RAN2

**Contact person:** Ajit Nimbalker, Ajit (dot) Nimbalker (at) ericsson (dot) com

**Send any reply LS to:** 3GPP Liaisons Coordinator, <mailto:3GPPLiaison@etsi.org>

**Attachments:** None

# 1 Overall description

RAN1 would like to thank RAN4 for the LS on SSB relation in On-demand SSB and SSB adaptation on Scell and would like to provide the following replies.

Obj 1

**Reply to Q1 (What is the relation in terms of periodicity between always-on SSB and OD-SSB?):**

* The periodicity of on-demand SSB is one of 5 ms, 10 ms, 20 ms, 40 ms, 80 ms, or 160 ms.
* The periodicity of on-demand SSB can be configured separately from the periodicity of always-on SSB.
* RAN1 is discussing what is the relation between periodicity of always-on SSB and periodicity of on-demand SSB and it has been identified that the main use case is that the periodicity of on-demand SSB is equal to or smaller than that of always-on SSB.

**Reply to Q2 (What is the relation in terms of time location between always-on SSB and OD-SSB?):**

**TBD**

**Reply to Q3 (What is the relation in terms of frequency location between the always-on SSB and OD-SSB?):**

* The frequency location of on-demand SSB is the same as the frequency location of always-on SSB at least for the case where always-on SSB is not CD-SSB. RAN1 is discussing the frequency location of OD-SSB for the case where always-on SSB is CD-SSB.

**Reply to Q4 (What is the spatial relation between the always-on SSB and OD-SSB?):**

* SS/PBCH blocks with the same SSB indexes for always-on SSB and on-demand SSB are quasi co-located with respect to Doppler spread, Doppler shift, average gain, average delay, delay spread, and when applicable, spatial RX parameters.
  + Applies at least for the case when the centre frequency locations of always-on SSB and OD-SSB is same
* When a signal/channel is configured to be QCLed with a SSB index, the signal/channel is QCLed with the same SSB index of always-on SSB and on-demand SSB (if transmitted) with the same QCL parameters according to existing specifications
  + Applies at least for the case when the centre frequency locations of always-on SSB and OD-SSB is same
* At least the case where SSB indices within on-demand SSB burst are identical to SSB indices within always-on SSB burst is supported. RAN1 is discussing whether to support the case where SSB indices within on-demand SSB burst can be subset of SSB indices within always-on SSB burst.

Obj 3

**Reply to Q1(What is the relation in terms of time location before and after SSB adaptation?):**

* RAN1 agreed that at least SSB burst periodicity is adapted.
* There are no RAN1 agreements to adapt the time location of the SSB burst other than the periodicity but RAN1 is still discussing other options.

**Reply to Q2(What is the relation in terms of frequency location before and after SSB adaptation?):**

* The frequency location is same before and after SSB adaptation.

**Reply to Q3(What is the spatial relation before and after SSB adaptation?):**

* There is no change to spatial relation (in terms of QCL assumption) for the same SSB index before and after SSB adaptation.
* At least the case where there is no change to actually transmitted SSBs within a burst before and after SSB adaptation is supported.

# 2 Actions

**To RAN4:**

**ACTION:** RAN1 respectfully asks RAN4 to take the above into account in their future work.

# 3 Dates of next TSG-RAN WG1 meetings

TSG-RAN WG1 Meeting #120 17th – 21st February 2025 Athens, GR

TSG-RAN WG1 Meeting #120bis 7th – 11th April 2025 TBD China