**3GPP TSG RAN WG1 #122 R1-250XXXX**

**Bengaluru, India, Aug 25th – 29th, 2025**

Agenda Item: 8.5

Source: Ad-Hoc Chair (Ericsson)

Title: Session notes for 8.5 Maintenance Enhancements of network energy savings for NR

Document for: Discussion, Decision



## Maintenance on Enhancements of network energy savings for NR

[122-R19-NES] Email discussion on NES– Ajit (Ericsson)

* To be used for sharing updates on online/offline schedule, details on what is to be discussed in online/offline sessions, tdoc number of the moderator summary for online session, etc

### On-demand SSB SCell operation

R1-2505136 On-demand SSB SCell Operation Nokia, Nokia Shanghai Bell

R1-2505257 On-demand SSB SCell Operation Google

R1-2505327 Maintenance on on-demand SSB SCell operation CATT

R1-2505355 Maintenance on on-demand SSB SCell operation for eNES Huawei, HiSilicon

R1-2505378 Maintenance on on-demand SSB Scell operation vivo

R1-2505542 Remaining issues on on-demand SSB SCell operation Samsung

R1-2505595 Discussion on on-demond SSB for NES ZTE Corporation, Sanechips

R1-2505663 Discussion on on-demand SSB SCell operation Ofinno

R1-2505704 Remaining issue for on demand SSB SCell operation OPPO

R1-2505843 Remaining issues on on-demand SSB SCell operation LG Electronics

R1-2505877 Remaining issues on on-demand SSB SCell operation Apple

R1-2505973 Remaining issues on on-demand SSB SCell operation Fujitsu

R1-2506009 Maintenance on the SSB indexes of SSB-RO mapping for NES Sharp

R1-2506033 On-demand SSB SCell operation MediaTek Inc.

R1-2506055 Remaining issues on on-demand SSB SCell operation ETRI

R1-2506079 Maintenance of on-demand SSB SCell operation CMCC

R1-2506181 On-demand SSB operation for Scell Qualcomm Incorporated

R1-2506318 Discussion on on-demand SSB SCell operation ITRI

R1-2506376 Maintenance on on-demand SSB SCell operation Ericsson

**R1-2506493**

Agreement

* Remove parameter to configure physical cell ID of on-demand SSB (i.e., *od-ssb-physCellId*) from OD-SSB configuration (i.e., *od-ssb-config*)

Agreement

Adopt the following TP for TS 38.214 Clause 5.2.1.4

**Reason for change:** To clarify that CSI report for an SCell configured with *od-ssb-config* cannot be configured with *eventType*

**Summary of change:** Add description that CSI report for an SCell configured with *od-ssb-config* cannot be configured with *eventType*

**Consequence if not approved:** Whether or not CSI report for an SCell configured with *od-ssb-config* can be configured with *eventType* is unclear

5.2.1.4 Reporting configurations

<omitted text>

For a UE configured with *od-ssb-config* on a SCell and for CSI report with *CSI-ReportConfig* with higher layer parameter *reportQuantity* set to 'ssb-Index-RSRP', 'ssb-Index-SINR', 'ssb-Index-RSRP- Index', or 'ssb-Index-SINR- Index ' and not configured with *eventType*

- if the UE is not provided *absoluteFrequencySSB* for the SCell, the CSI report configuration is associated with the SS/PBCH block configured by *od-ssb-config* and the UE reports SSBRI based on *SSB-index* corresponding to the currently transmitted SS/PBCH block.

- if the UE is provided *absoluteFrequencySSB* for the SCell, the CSI report configuration is associated with both the SS/PBCH block configured by *od-ssb-config* and the SS/PBCH block provided by *absoluteFrequencySSB* and the UE reports SSBRI based on *SSB-index* corresponding to the currently transmitted SS/PBCH block(s) that may be the one configured by *od-ssb-config* and/or provided by *absoluteFrequencySSB* based on measurement requirements defined in [11, TS 38.133].

- The UE reports SSBRI based on *SSB-index* corresponding to the currently transmitted SS/PBCH block, where the SSBRI *k* (*k* ≥ 0) corresponds to the configured (*k*+1)-th entry of the associated *csi-SSB-ResourceList* in the corresponding *CSI-SSB-ResourceSet.*

The *reportConfigType* of CSI reporting configuration based on SS/PBCH block configured with *od-ssb-config* may be aperiodic or semi-persistent.

**Agreement:**

* Confirm the value range of *od-ssb-nrofBurst* for both FR1 and FR2
  + For FR1, the value range of od-ssb-nrofBurst is {5, 10, 15, 20, 25, 30, 40, 50}.
  + For FR2, the value range of od-ssb-nrofBurst is {25, 30, 40, 50, 75, 100, 150, 200}.
* Note: It is upto RAN4 whether to include smaller value than 25 for FR2.

**Agreement:**

Adopt the following TP for TS 38.213 Clause 7.

**Reason for change:** The *od-ss-PBCH-BlockPower* is not provided for Case #2. For Case #2, if a UE obtains a downlink pathloss estimation based on reception of second SS/PBCH blocks (i.e., on-demand SSB), downlink transmit power of on-demand SSB is the same as the *ss-PBCH-BlockPower* for always-on SSB and there is no *od-ss-PBCH-BlockPower* in higher layer parameters

**Summary of change:** Add description for the case when *od-ss-PBCH-Block power* is absent in Case #2 to align the UE behaviour with RAN1 agreement.

**Consequence if not approved:** When *od-ss-PBCH-BlockPower* is not configured, UE cannot obtain a downlink pathloss estimation based on reception of second SS/PBCH blocks.

|  |
| --- |
| 7 Uplink power control  -----------------------omitted text-----------------------  In the remaining of this clause, if a UE obtains a downlink pathloss estimate based on reception of second SS/PBCH blocks, as described in Clause 4.4, *ss-PBCH-BlockPower* is replaced by *od-ss-PBCH-BlockPower* if provided. |
|  |

Agreement:

Adopt the following TP for TS 38.214 Clause 4.1

**Reason for change**

* The SSS EPRE for OD-SSB in Case #1 is undefined
* The CSI-RS EPRE for CSI-RS that is QCLed to the OD-SSB in Case #1 is undefined

**Summary of change**

* The downlink SS/PBCH SSS EPRE can be derived from the SS/PBCH downlink transmit power given by the parameter *od-ss-PBCH-BlockPower* provided in *od-ssb-config* for SS/PBCH block transmitted according to Clause 4.4 of [6, TS 38.213].
* The downlink CSI-RS EPRE can be derived from the SS/PBCH block downlink transmit power given by the parameter *od-ss-PBCH-BlockPower* provided in *od-ssb-config* for SS/PBCH block transmitted according to Clause 4.4 of [6, TS 38.213]

**Consequence if not approved:**

* Undefined EPRE of SSS and CSI-RS for OD-SSB in Case #1

4.1 Power allocation for downlink

The gNB determines the downlink transmit EPRE.

For the purpose of SS-RSRP, SS-RSRQ and SS-SINR measurements, the UE may assume downlink EPRE is constant across the bandwidth. For the purpose of SS-RSRP, SS-RSRQ and SS-SINR measurements, the UE may assume downlink EPRE is constant over SSS carried in different SS/PBCH blocks. For the purpose of SS-RSRP, SS-RSRQ and SS-SINR measurements, the UE may assume that the ratio of SSS EPRE to PBCH DM-RS EPRE is 0 dB.

For the purpose of CSI-RSRP, CSI-RSRQ and CSI-SINR measurements, the UE may assume downlink EPRE of a port of CSI-RS resource configuration is constant across the configured downlink bandwidth and constant across all configured OFDM symbols.

The downlink SS/PBCH SSS EPRE can be derived from the SS/PBCH downlink transmit power given by the parameter *ss-PBCH-BlockPower* provided by higher layers or *od-ss-PBCH-BlockPower* provided in *od-ssb-config* for SS/PBCH block transmitted according to Clause 4.4 of [6, TS 38.213]. The downlink SSS transmit power is defined as the linear average over the power contributions (in [W]) of all resource elements that carry the SSS within the operating system bandwidth.

The downlink CSI-RS EPRE can be derived from the SS/PBCH block downlink transmit power given by the parameter *ss-PBCH-BlockPower* or *od-ss-PBCH-BlockPower* provided in *od-ssb-config* for SS/PBCH block transmitted according to Clause 4.4 of [6, TS 38.213] and CSI-RS power offset given by the parameter *powerControlOffsetSS* provided by higher layers if the SS/PBCH block is associated with serving cell PCI, or derived from *ss-PBCH-BlockPower-r17* in *SSB-MTC-AdditionalPCI-r17* and *powerControlOffsetSS* provided by higher layersif the SS/PBCH block is associated with additional PCI different from serving cell PCI, where the CSI-RS is QCLed with the SS/PBCH block. The downlink reference-signal transmit power is defined as the linear average over the power contributions (in [W]) of the resource elements that carry the configured CSI-RS within the operating system bandwidth.

### On-demand SIB1 for idle/inactive mode Ues

R1-2505137 On-demand SIB1 for Idle/Inactive mode UEs Nokia, Nokia Shanghai Bell

R1-2505258 On-demand SIB1 for Idle/Inactive Mode UE Google

R1-2505328 Maintenance on on-demand SIB1 CATT

R1-2505356 Maintenance on on-demand SIB1 for eNES Huawei, HiSilicon

R1-2505379 Maintenance on on-demand SIB1 for idle/inactive Ues vivo

R1-2505543 Remaining issues on on-demand SIB1 for idle/inactive mode UEs Samsung

R1-2505596 Discussion on on-demand SIB1 for NES ZTE Corporation, Sanechips

R1-2505705 Remaining issue for on demand SIB1 for idle/inactive mode UE OPPO

R1-2505826 Maintenance on on-demand SIB1 for idle and inactive mode UEs Ericsson

R1-2505878 Remaining issues on on-demand SIB1 for IDLE/INACTIVE mode UEs Apple

R1-2506034 On-demand SIB1 for idle or inactive mode UEs MediaTek Inc.

**R1-2506399**

Agreement

**The following is supported for the value range of *od-sib1-windowStartOffset***

* **{sl0, sl1, sl2, sl4, sl8, sl10, sl20, sl40, sl80}**

### Adaptation of common signal/channel transmissions

R1-2505138 Adaptation of common signal/channel transmissions Nokia, Nokia Shanghai Bell

R1-2505259 Adaptation of Common Signals Google

R1-2505329 Maintenance on adaptation of common signal/channel transmissions CATT

R1-2505357 Maintenance on common channel/signal adaptation for eNES Huawei, HiSilicon

R1-2505380 Maintenance on adaptation of common signal/channel transmissions vivo

R1-2505544 Remaining issues on adaptation of common signal/channel transmissions Samsung

R1-2505597 Discussion on common signal channel for NES ZTE Corporation, Sanechips

R1-2505706 Remaining issue for common signal/channel transmission OPPO

R1-2505844 Remaining issues on adaptation of common signal/channel transmissions LG Electronics

R1-2505879 Remaining issues on adaptation of common signal/channel for NES enhancements Apple

R1-2505993 Maintenance for R19 NES adaptation of common signal/channel transmissions Ericsson

R1-2506035 Adaptation of common signal/channel transmissions MediaTek Inc.

R1-2506056 Remaining issues on SSB and PRACH time domain adaptations ETRI

R1-2506080 Maintenance of adaptation of common signal/channel transmission CMCC

R1-2506182 Adaptation of common channel transmissions Qualcomm Incorporated

R1-2506251 Maintenance on adaptation of common signal/channel transmissions Sharp

**R1-2506521**

**Agreement**

* Send LS to RAN2
  + FFS: wording
* Conclude in RAN1 that there is no change to RAN1 specs, e.g., no change to calculation in 38.211



Proposal 2.2-1

Amongst the following parameters in RACH-ConfigCommon

* *zeroCorrelationZoneConfig*
* *preambleReceivedTargetPower*
* *preambleTransMax*
* *powerRampingStep*
* *ra-ResponseWindow*
* *ra-Msg3SizeGroupA*
* *messagePowerOffsetGroupB*
* *ra-ContentionResolutionTimer*
* *rsrp-ThresholdSSB*
* *rsrp-ThresholdSSB-SUL*
* *prach-RootSequenceIndex*
* *msg1-SubcarrierSpacing*
* *restrictedSetConfig*
* *msg3-transformPrecoder*
* *numberOfRA-PreamblesGroupA*
* *totalNumberOfRA-Preambles*

Discuss which, if any, are provided separately for additional PRACH resources and legacy PRACH resources.

Alt-1: None of the parameters are provided separately; all are common.

Alt-2: The following two parameters are provided separately; the rest are common

* *numberOfRA-PreamblesGroupA*
* *totalNumberOfRA-Preambles*

Alt-3: The following power-control related parameters are provided separately; the rest are common

* *preambleReceivedTargetPower*
* *preambleTransMax*
* *powerRampingStep*