3GPP TSG-RAN WG2#130 R2-25XXXXX

St Julian’s, Malta, 19 May - 23 May, 2025

Agenda Item: 8.5.1

Source: Huawei, HiSilicon

Title: Report of [POST129b][114][NES] (Huawei)

Document for: Discussion and decision

# 1 Introduction

This document is the report of the following discussion:

* [POST129b][114][NES] (Huawei)

 **Scope:** Update 38.300 running CR based on RAN2#129bis progress.

 **Intended outcome:** Updated 38.300 running CR.

**Deadline: Long email discussion (May 2nd 10:00 UTC)**

Please provide your comments by Thursday May 1st 10:00 UTC to allow 24h for the rapporteur to update the CR before the deadline.

# 2 38.300 CR for NES

The post-RAN2#129bis draft running stage-2 CR for NES enhancements and a document for providing comments are provided in the discussion folder. Please don’t change the CR text or insert comments to the CR file. Please use the table below for comments and wording suggestions for clarity of the CR tdoc. If you want to highlight several issues, please use comment IDs e.g. HW001, HW002, etc. so it is easier for the rapporteur to respond.

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| **Company and comment ID (e.g. HW001)** | **Section and detailed comments/suggestions** | **Rapporteur response** |
| SAM 001 | Figure 7.3.1-1The arrow for periodically broadcast SIB1 should be dotted line.[Apple] Agree with this suggestion. After introduction of OD-SIB1, SIB broadcasting should be dotted line. | Agree |
| SAM 002 | Given that Section 15.4.2.5, specifies that “If a cell provides SIB1 on-demand, the cell can allow the access of UEs supporting OD-SIB1 but prevent the access of UEs not supporting OD-SIB1 based on no SIB1 indication in MIB as described in clause 7.3.1.”, it would be good to capture the following agreement:* When the cell supporting on demand SIB1 is broadcasting SIB1 (e.g. upon SIB1 request), legacy UE can camp on the cell if the legacy UE is able to acquire the broadcasted SIB1.

Otherwise, current text may give impression that UEs not supporting OD-SIB1 are always prevented.TP:“If a cell supporting on demand SIB1 is broadcasting SIB1 (e.g. upon SIB1 request), it may allow access of UEs not supporting OD-SIB1”[OPPO] after checking with our R1, we are now a bit negative to capture this conclusion directly, since R1 assume that Kssb would not change upon SIB1-request reception, but rather kept as >=24/12.**Agreement**If a UE has SIB1 request configuration of a cell and before transmitting UL WUS,* If the UE detects a SSB where K\_SSB>=24 for FR1 or K\_SSB>=12 for FR2, select the following:
	+ Alt. 3: It is up to UE implementation on whether to monitor Type 0 PDCCH for SIB1 transmission

So that some further clarification may be needed at R2 in terms of the scenario where Kssb @ MIB <24/12 for a NES cell.[Ericsson] Agree with Oppo. The Kssb value determines if legcy UE can camp. Of course if network indicates the cell operates in normal mode it has to broadcast SIB1 normally. But broadcasting SIB1 normally does not mandate the network to open the cell to legacy UEs by switching the Kssb value(it is up to the network operation) | I agree with OPPO and Ericsson that nothing is needed for this agreement. The Kssb determines if legacy UEs can camp or not and it is up to NW implementation when the changes the Kssb value. [Samsung]: If we do not capture this agreement, whats the point of capturing the following text. “If a cell provides SIB1 on-demand, the cell can allow the access of UEs supporting OD-SIB1 but prevent the access of UEs not supporting OD-SIB1 based on no SIB1 indication in MIB as described in clause 7.3.1.”,It should be removed as well. This is a legacy mechanism to bar the UEs. |
| NOK 001 | In 5.2.2.5 – To align with rest of the wording maybe “being broadcasted” should be “being broadcast” - Both are I guess correct but maybe better to avoid using both ways.Also maybe add reference to 15.2.4.x2 to make it clear which feature we mention here. | Agree to change and to add reference.  |
| NOK 002 | 7.3.1 – on the added sentences in *SIB1* section.Maybe highlight that “request” is “OD-SIB1 request” and then also maybe it is wrong to say that only “broadcast on-demand” is allowed after the request. NW can start regular broadcast as well. So Maybe sentence could be modifed to (red removed- green added) “SIB1 can be broadcast on-demand upon OD-SIB1 request from UEs in RRC\_IDLE, RRC\_INACTIVE or RRC\_CONNECTED state when T311 is running if a UE and cell support OD-SIB1 as described in 15.4.2.x2”Also see comment on 15.4.2.x2 – maybe we can remove RRC states mentioned here and just mention them in the 15.4.2.x2. | Whether the NW starts “regular broadcast”, i.e. change Kssb and switch to legacy behavior is up to NW implementation. The legacy broadcast is described in the previous sentence. I can add the “OD-SIB1” before the request to clarify. For the RRC states they are mentioned above and below this section, so I would keep them here.  |
| NOK003 | In 9.2.5 – “The UE supporting paging adaptation shall also monitor separately signalled PEIs, if configured.”Should we mention also that this is only for UEs supporting PEI? | I will add “and PEI” to this sentence.  |
| NOK004 | 15.4.2.5 – Samsung suggestion looks quite good to us.  | As responded o SAM002 I think nothing is needed for this agreement.  |
| Nokia005 | 15.4.2.x1 – “after the SCell activation complete” =>” after the SCell activation completion” | Agree |
| Nokia006 | 15.4.2.x2 – As we mention in this section RRC states where the feature is supported then maybe we could remove duplicating those in the other sections e.g. 7.3.1This sentence “While the UE is camped on a cell, it can use the OD-SIB1 request configuration of another cell from SIBxx valid in the camped cell to acquire OD-SIB1 of that cell for cell reselection or it can apply the OD-SIB1 request configuration of the camped cell from SIBxx valid in the camped cell to acquire OD-SIB1 of the camped cell.” Is bit convoluted – so maybe some simplification would be desirable. It is already mentioned in earlier sentences that SIBxx may contain info for this or other cel. Also UE cannot camp on cell before it acquires SIB1 so terminology is not really correct in my view. In fact is this sentence needed at all. So maybe remove it as all the information is already in the previous sentences? If something is needed then maybe something in line with below:“While the UE is determining suitability of the cell during reselection, UE may request SIB1 based on the configuration in the SIBxx“[Ericsson] Agree that the current wording is bit complex. The Nokia’s proposal is fine but other option is “UE may request SIB1 based on the configuration in the SIBxx in order to determine suitability of the cell”[Samsung]: The proposal from Nokia, does not capture limitation of which SIBxx can be applied for requesting SIB1. There are two cases for SIB1 requestReselection from Cell A to Cell B* In this case SIB1 request config from SIB X valid in Cell A is allowed to be used for SIB request to Cell B.

SIB1 request in Cell B after cell reselection* In this case SIB1 request config from SIB X valid in Cell B is used for SIB request to Cell B.

So wording should capture these clearly.  | I agree that the wording of this sentence is complex and some of the information is already provided beforehand. I will simplify based on the suggestions.  |
| Nok007 | 15.4.2.x3 – for paging adaptation do we need to mention anything here or then just reference to 9.2.5 where detailed description is?Likely same for SSB and PRACH once we have some more text on those.Also I guess SMTC decision for SSB adapatation is applicable for OD-SSB as well so maybe that text should be somewhere in measurements section or some common section? | I agree there is redundancy between 15.4.2.x3 and 9.2.5 but no strong view whether to remove and add a reference. Regarding the second comment there is no agreement to apply the same mechanism of SSB adaptation to OD-SSB.  |
| OPPO001 | 15.4.2.X1On-demand SSB transmissions facilitated through serving cell indications enable UEs to perform at least SCell activation, and are supported for FR1 and FR2 in non-shared spectrum. This solution is supported prior to or when the UE receives the SCell activation command or after the SCell activation complete.[OPPO] Refer to R1 conclusion**Agreement**For a cell supporting on-demand SSB SCell operation, the following combinations of scenarios and cases are supported for indicating OD-SSB using a MAC-CE.* Scenario #3B and Case #1
	+ In the above combinations of scenarios and cases, the MAC-CE is used only for updating the transmission parameter of a transmitted OD-SSB for the cell since the OD-SSB has been transmitted according to NW indication.
* Scenario #3B and Case #2
	+ In the above combinations of scenarios and cases, the MAC-CE is used only for updating the transmission parameter of a transmitted OD-SSB for the cell since the OD-SSB has been transmitted according to NW indication.

“after SCell activation complete” is only feasible if it is sent previously already. Now the wording seems to say it can be sent without a prior command. More importantly, sending OD-SSB MAC-CE after completion is clearly not a case to “enable UEs to perform at least SCell activation”. Reworded version can be “This solution is supported prior to or when the UE receives the SCell activation command, and the OD-SSB MAC-CE can be re-sent ~~or~~ after the SCell activation complete.” | Agree to the understanding. Rewording will be proposed based on Apple002. |
| OPPO002 | 15.4.2.x3 For adaptation of paging occasions in time domain, the value range for parameter N is extended to make it possible to have increased interval between PFs. The value range for Ns, which is the number of paging occasions within one paging frame, is increased to compensate the decrease in the number of PFs. UEs supporting paging adaption should monitor PEI according to the additional PEI configuration, if configured.[OPPO] for UEs supporting PEI (as commented above in NoK003), ‘should’ should be removed. UEs supporting paging adaption ~~should~~ monitor PEI | OK |
| Xiaomi001 | In last meeting, we agreed to not support MAC CE based signalling for SSB adaptation1. Not support MAC CE based signalling to indicate SSB adaptation in addition to DCI agreed in RAN1.

Better to clarify in stage2, suggested TP:Adaptation of SSB in time domain is supported for SCells for UEs in RRC\_CONNECTED configured with carrier aggregation (CA). Multiple SMTC configurations can be configured to the UE, and the UE selects one SMTC based on the SSB adaptation indication via DCI. | This change is technically correct, but it should be either way captured in stage-3 descriptions.  |
| Apple 001 | **Where:**Section 9.2.5:“The UE supporting paging adaptation shall also monitor separately signalled PEIs, if configured.”**Issue:**As mentioned by Nokia and OPPO, the highlighted part is not accurate. **Suggested change:**“The UE supporting paging adaptation **and PEI** shall also monitor separately signalled PEIs, if configured.” | “and PEI” will be added to this sentence. |
| Apple 002 | **Where:**Section 15.4.2.x1:“This solution is supported prior to or when the UE receives the SCell activation command or after the SCell activation complete. RRC and MAC-CE can indicate the activation/deactivation state of OD-SSB transmissions.”**Issue:**We agree with the issue raised by OPPO 001. Our understanding is:1. In case 2/2A (i.e. prior to or when the UE receives the SCell activation command), RRC and MAC-CE can indicate the activation/deactivation state of OD-SSB transmissions.
2. In case 3B (i.e. after the SCell activation complete), MAC-CE can only update parameter of an activated OD-SSB (i.e. can’t deactivate the OD-SSB).

**Suggested change:**“This solution is supported prior to or when the UE receives the SCell activation command or after the SCell activation complete. RRC and MAC-CE can indicate the activation/deactivation state of OD-SSB transmissions prior to or when the UE receives the SCell activation command. And MAC-CE can update parameter of an activated OD-SSB after the SCell activation complete.” | Agree to the understanding. Rewording will be proposed based on Apple002.  |
| Apple 003 | **Where:**Section 15.4.2.x1:“While the UE is camped on a cell, it can use the OD-SIB1 request configuration of another cell from SIBxx valid in the camped cell to acquire OD-SIB1 of that cell for cell reselection or it can apply the OD-SIB1 request configuration of the camped cell from SIBxx valid in the camped cell to acquire OD-SIB1 of the camped cell.”**Issue:**We think there are two issues:1. On highlighted text, we agree with Nokia 006 that it is better to rephase it to make clearer.
2. The case of RRC\_CONNECTED UE when T311 is running is missed. Note that the highlighted text can’t cover this case because the UE in RLF doesn’t camp on a cell and cell selection (rather than cell reselection) is triggered in RRC re-establishment.

**Suggested change:**“While the UE is camped on a cell, upon reselecting a suitable cell, it can use the OD-SIB1 request configuration ~~of another cell~~ from SIBxx valid in the camped cell to acquire OD-SIB1of that cell ~~for cell reselection~~, or it can apply the OD-SIB1 request configuration of the camped cell from SIBxx valid in the camped cell to acquire OD-SIB1 of the camped cell. While T311 is running, upon selecting a suitable cell, the UE can use the valid OD-SIB request configuration to acquire its OD-SIB1.” | I have proposed a simplification of this sentence based on Nokia and Ericsson proposals.The “while T311 is running” case is described above, so I think the addition might not be needed.  |
| Apple 004 | 15.4.2.x3“For adaptation of paging occasions in time domain, the value range for parameter N is extended to make it possible to have increased interval between PFs. The value range for Ns, which is the number of paging occasions within one paging frame, is increased to compensate the decrease in the number of PFs. UEs supporting paging adaption should monitor PEI according to the additional PEI configuration, if configured.”Similar to Apple 001, we suggest below change:UEs supporting paging adaption and PEI ~~should~~ monitor PEI according to the additional PEI configuration, if configured.” | Agree |
| CATT002  | Given that Section 15.4.2.5, specifies that “If a cell provides SIB1 on-demand, the cell can allow the access of UEs supporting OD-SIB1 but prevent the access of UEs not supporting OD-SIB1 based on no SIB1 indication in MIB as described in clause 7.3.1.”, We have the similar view as SAM 002. The agreement on “When the cell supporting on demand SIB1 is broadcasting SIB1 (e.g. upon SIB1 request), legacy UE can camp on the cell if the legacy UE is able to acquire the broadcasted SIB1.” needs to be shown in this procedure to avoid unclear understanding although the specification impact is not desired based on the agreement. Furthermore, in this case, it can be seen than the SIB1 indication is the legacy one, for example, where K\_SSB<24 for FR1 or K\_SSB<13 for FR2.So, it is suggested TP：“If a cell provides SIB1 on-demand, the cell can allow the access of UEs supporting OD-SIB1 but prevent the access of UEs not supporting OD-SIB1 based on no SIB1 indication in MIB as described in clause 7.3.1. If a cell supporting on demand SIB1 is broadcasting SIB1 (e.g. upon SIB1 request), the UEs not supporting OD-SIB1 may access to the cell if it could acquire the broadcast SIB1 based on SIB1 indication in MIB”, ” | As responded to SAM002, I don’t see any spec impact from this agreement. The NW is not mandated to change Kssb once it starts providing OD-SIB1 to UEs based on request and if it doesn’t change the Kssb then the legacy UEs cannot camp. The behavior of legacy UEs cannot be changed.  |
| vivo 001 | 9.2.5“The UE supporting paging adaptation shall also monitor separately signalled PEIs, if configured. ”Comment:Agree with NOK003 and further suggestion to keep aligned with the agreement to monitor legacy PEI otherwise:“The UE supporting paging adaptation and PEI shall ~~also~~ monitor separately signalled PEIs if configured, or the same PEIs for the UE not supporting paging adaptation otherwise.” | “and PEI” was added. In my understanding the “if configured” part covers the legacy case.  |
| vivo 002 | 15.4.2.x1“This solution is supported prior to or when the UE receives the SCell activation command or after the SCell activation complete. RRC and MAC-CE can indicate the activation/deactivation state of OD-SSB transmissions.”Comment:Agree with above observations and prefer Apple’s rewording version. | Rewording will be proposed based on Apple’s TP. |
| Ericsson | On terminology, should we use always OD-SSB and OD-SIB1 instead of the on demand version? | Since it is in the abbreviations section, I think we can use the “OD” versions unless the sentence describes the functionality itself. I changed it in a couple of places.  |
| Sharp 001 | **Observation:** The definition of OD-SIB1 cell is absent in the CR even the phrase “OD-SIB1 cell” is already included in the introduction of *SIBxx*. *- SIBxx* contains OD-SIB1 request configurations of serving and neighbour OD-SIB1 cells as defined in TS 38.331 [12].\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***Proposal: It is suggested to discuss whether ‘OD-SIB1 cell’ should be further specified in TS 38.300’.** 1. **If the answer is Yes,** then it is suggested to revise the wording in 5.2.5.5. In addition, in this proposal, it is further clarified that the OD-SIB1 request is transmitted from the UE to the OD-SIB1 cell, which aligns with RAN2 agreements.

5.2.5.5 Reception of SIB1The Master Information Block (MIB) on PBCH provides the UE with parameters (e.g. CORESET#0 configuration) for monitoring of PDCCH for scheduling PDSCH that carries the System Information Block 1 (SIB1). PBCH may also indicate that there is no associated SIB1, in which case the UE may be pointed to another frequency from where to search for an SSB that is associated with a SIB1 as well as a frequency range where the UE may assume no SSB associated with SIB1 is present. The indicated frequency range is confined within a contiguous spectrum allocation of the same operator in which SSB is detected. To an OD-SIB1 cell, the MIB on its PBCH may also indicate that SIB1 is not being broadcasted, in which case the UE may transmit OD-SIB1 request if it has a valid OD-SIB1 request configuration for this cell.1. **If the answer is No**, then it is suggested to revise the wording in SIBxx.

*- SIBxx* contains OD-SIB1 request configurations of serving and neighbour ~~OD-SIB1~~ cells which supports OD-SIB1 as defined in TS 38.331 [12]. | The definitions were proposed in one of the previous versions of the CR but several companies didn’t want to use them. Therefore I can propose a simple wording revision based on (2).  |
| Sharp 002 | Regarding Section 15.4.2.x2, the original wording “from” is a little bit unclear. Thus, we propose the following revision to better captures that the UE **first receives** the SIBxx containing OD-SIB1 request configuration of a cell and **then** **uses** the OD-SIB1 request configuration to acquire the OD-SIB1 of the cell, which aligns the following RAN2#128 agreement.

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| RAN2#128 Agreement8. A UE bars the NES/SIB1 less cell and/or excludes it as a candidate for reselection since the UE had no corresponding UL WUS configuration, the UE would treat this cell as if cell status is “not barred” and consider it as candidate for cell reselection once it has received a UL-WUS configuration to request SIB1 for this cell. |

15.4.2.x2 On-demand SIB1*While the UE is camped on a cell, it can use the OD-SIB1 request configuration of another cell it received in ~~from~~ SIBxx valid in the camped cell to acquire OD-SIB1 of that cell for cell reselection or it can apply the OD-SIB1 request configuration of the camped cell it received in ~~from~~ SIBxx valid in the camped cell to acquire OD-SIB1 of the camped cell.* | This sentence was removed and replaced with a simplified version based on Nokia006. But I don’t see the issue with the wording “from”. The UE cannot request SIB1 without a configuration (from SIBxx) so the sequence of events cannot be different.  |
| Qualcomm 001 | 9.2.5 Paging“**Paging adaptation for cell level energy saving** **for UEs in CM\_IDLE and RRC\_INACTIVE**: in order to increase gNB sleeping time, the value of N and Ns are extended to concentrate the POs in sparser PFs. The UE supporting paging adaptation shall monitor PDCCH in POs separately signalled for these paging adaptations, if configured. The UE supporting paging adaptation and PEI shall also monitor separately signalled PEIs, if configured.”Suggest:“**Paging adaptation for ~~cell level~~ network energy saving** **for UEs in CM\_IDLE and RRC\_INACTIVE**: in order to increase gNB sleeping time, the value of N and Ns are extended to ~~concentrate~~ increase the number of POs per PF with~~in~~ sparser PFs. The UE supporting paging adaptation shall monitor PDCCH in POs separately signalled for ~~these~~ paging adaptation~~s~~, if configured. The UE supporting paging adaptation and PEI shall also monitor PEIs separately signalled ~~PEIs~~ for paging adaptation, if configured.” |  |
| Qualcomm 002 | 15.4.2.x1 On-demand SSB SCell“The functionality supports on-demand SSB-based SCell operations for UEs in RRC\_CONNECTED configured with carrier aggregation (CA), applicable to both intra-band and inter-band CA configurations. OD-SSB transmissions facilitated through serving cell indications enable UEs to perform at least SCell activation, and are supported for FR1 and FR2 in non-shared spectrum. This solution is supported prior to or when the UE receives the SCell activation command. Additionally, the MAC-CE can update the transmission parameter of an activated OD-SSB after the SCell activation completion. RRC and MAC-CE can indicate the activation/deactivation state of OD-SSB transmissions.”Suggest:~~The functionality supports~~ O~~o~~n-demand SSB-based SCell operations are supported for UEs in RRC\_CONNECTED if configured with ~~carrier aggregation (CA), applicable to both~~ intra-band and/or inter-band CA configurations for FR1 and/or FR2 in non-shared spectrum. The OD-SSB transmission~~s facilitated through~~ indication from serving cell ~~indications~~ enables UEs to perform operations with at least SCell activation~~, and are supported for FR1 and FR2 in non-shared spectrum~~. ~~This solution~~ The OD-SSB transmission indication is transmitted ~~supported~~ prior to or when ~~the UE receives~~ the SCell activation command is transmitted. RRC and MAC-CE can indicate the activation/deactivation state of OD-SSB transmission. Additionally, the same MAC-CE can also update the transmission parameter of an activated OD-SSB transmission after the SCell activation completion. ~~RRC and MAC-CE can indicate the activation/deactivation state of OD-SSB transmissions~~ |  |
| Qualcomm 003 | 15.4.2.x2 On-demand SIB1“To facilitate reducing gNB downlink transmissions, the gNB can provide SIB1 on-demand, i.e., upon receiving OD-SIB1 request from the UE. OD-SIB1 is supported for UEs in RRC\_IDLE, RRC\_INACTIVE and RRC\_CONNECTED when T311 is running. A request for SIB1 triggers a random access procedure, in which case MSG1 is used for indicating OD-SIB1 request and the gNB acknowledges the request in MSG2. OD-SIB1 request configurations of one or more cells are included in SIBxx, which can be broadcasted in any cell, including cell’s own OD-SIB1 request configuration. UE may request SIB1 based on the OD-SIB1 request configuration from SIBxx in order to determine the suitability of a cell.”Suggest:“To ~~facilitate~~ reducing ~~gNB downlink~~ SIB1 transmissions, the gNB can provide SIB1 on demand ~~on-demand~~, i.e., upon receiving an OD-SIB1 request from ~~the~~a UE supporting OD-SIB1~~. OD-SIB1 is supported for UEs~~ in RRC\_IDLE, RRC\_INACTIVE, and RRC\_CONNECTED when T311 is running. A request for SIB1 triggers a random access procedure, ~~in which case~~where the MSG1 is used for indicating OD-SIB1 request and the gNB acknowledges the OD-SIB1 request in MSG2. OD-SIB1 request configurations of one or more cells supporting OD-SIB1 are included in SIBxx, which can be broadcast~~ed~~ or on-demand in any cell, including cell’s own OD-SIB1 request configuration. UE may request SIB1 based on the OD-SIB1 request configuration from SIBxx in order to determine the suitability of a cell.” |  |
| Qualcomm004 | 15.4.2.x3 Common signal/channel transmissions adaptation“For adaptation of paging occasions in time domain, the value range for parameter N is extended to make it possible to have increased interval between PFs. The value range for Ns, which is the number of paging occasions within one paging frame, is increased to compensate the decrease in the number of PFs. UEs supporting paging adaption and PEI monitor PEI according to the additional PEI configuration, if configured.Adaptation of SSB in time domain is supported for SCells for UEs in RRC\_CONNECTED configured with carrier aggregation (CA). Multiple SMTC configurations can be configured to the UE, and the UE selects one SMTC based on the SSB adaptation indication via DCI.Adaptation of PRACH configurations in time domain is supported for 4-step RACH CBRA.”Suggest: 15.4.2.x3 Common signal/channel transmissions adaptationFor adaptation of paging ~~occasions~~ *[note: not just PO, also PF]* in time domain, the value range for parameter N is extended to make it possible to have increased interval between PFs. The value range for Ns, which is the number of paging occasions within one paging frame, is increased to compensate the decrease in the number of PFs. UEs supporting paging adaption and PEI monitor PEI according to the additional PEI configuration, if configured.Adaptation of SSB in time domain is supported for SCells for UEs in RRC\_CONNECTED configured with carrier aggregation (CA). Multiple SMTC configurations can be configured to the UE, and the UE selects one SMTC based on the SSB adaptation indication via DCI.Adaptation of PRACH configurations in time domain is supported for 4-step RACH CBRA.  |  |