3GPP TSG-RAN WG2 #109bis-e R2-20xxxxx

Electronic Meeting, April 20th – 30th 2020

Agenda Item: 6.21

Source: Ericsson

Title: Summary of [AT109bis-e][056][OdSIBconn] Ondemand SI Open issue

Document for: Discussion, Decision

# 1 Introduction

This document is to kick off the following email discussion:

* [AT109bis-e][056][OdSIBconn] On demand SI Open issue (Ericsson)

Scope: Treat papers under 6.21, by treating R2-2003204, R2-2003203 and taking into account comments. SIB9 should not be discussed until IIOT WI has made some conclusions.

Part 1: Agreed Solutions, Deadline: April 24 0700 UTC (can be extended if need)

Part 2: Agreed-in-principle CR(s)

# 2 Discussion

Companies are requested to add their comments for each of the treated CRs of this email discussion in the boxes below (one for each CR to be treated).

### 2.1 Summary of [Post109e#29][OdSIBconn] Open Issues ([R2-2003204](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003204))

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| Company | Proposal  (Agree/Disagree) | Comments |
| MediaTek | P1: Agree  P2: Option 2 (UE implementation) | For P1, we think the email discussion outcome was pretty clear. The benefit of \*not\* doing this would seem to be only to save a bit in the reconfiguration message, and we don’t find this a convincing motivation to reduce the flexibility. Also, not having an explicit indication would delay the failure of receiving the SIB in the case that a UE with no CSS faces a Rel-15 network or a Rel-16 network that does not support the feature—the UE has to send the request and wait to see that it gets no SIB in response, instead of immediately knowing that the network does not support it and the operation should fail.  For P2, we supported the original option 2 (no re-triggering after a failure to receive the SIB), but we think leaving it to UE implementation is acceptable. We understand that anyway a sensible UE implementation will not repeat the request and there is no need for a prohibit timer. Besides that, a prohibit timer could interfere with the case where two separate events trigger requests close together; the UE should be able to request a different SIB for a new reason even if it recently had a failed request. |
| Nokia | P1: Can accept  P2: Option 1 (prohibit timer) | On P1, our preference is to have a broadcast indication, but we can accept the indication in *RRCReconfiguration* since that seem to have majority support (compared to broadcast indication).  On P2, we prefer the prohibit timer option and have a standard UE behaviour specified to reduce the uplink signalling load. |
| OPPO | P1: can accept, but…..  P2: option 1 | For P1, we are not sure whether the explicit indication in RRCReconfiguration is necessary or not.  The Connected UE requests some SIB should be based on one feature configuration in RRCReconfiguraiton. I think this configuration is one kind of implicit indication for connected mode SI request. If the gNB does not support the connected mode SI request, then the gNB will ensure the concerned SI is configured to the UE. If not, of course the UE should be allowed to perform connected mode SI request. |
| Samsung | P1: Discuss further  P2: Option 2 | P1: We prefer to decide this issue in the web session rather than email discussion. We understand there is majority view towards P1 but we would like to discuss the Observation 2 and Observation 3 from our contribution R2-2003543 if we go this direction  **Observation 2: The new explicit indication (dedicated) is able to forbid the UE to send SI request. If the UE is forbidden to send SIB request,**   * **NW shall broadcast the SIB so UEs having active BWP with CSS can acquire it** * **NW shall dedicatedly send the SIB so UEs having active BWP with no CSS can receive it**   **Observation 3: The argument that the OSI feature is optional to the network is valid, but in the context of introducing new explicit indication (dedicated) it does not help the network in any way.** |
| Ericsson | P1: Agree  P2: Option 1 | For P1, as clearly understood from the email discussion, the curring si-BroadcastStatus flag it does not always work as an explicit indication to allow the UE to requests SIB on-demand. Therefore, an explicit indication is needed and this can be in the RRCReconfiguration message. However, if majority wants to have it in SIB, we are also open to this possibility.  For P2, we believe that a prohibit timer is the cleanest solution to be adopted in this case (i.e., as all the messages triggered autonomously by the UE). However, we are open also to option 2 as far as a note clarify the possible UE actions. |
| Huawei | P1, Discuss Further  P2 Option2 |  |
| Lenovo | P1: Agree  P2: either Option 1 or Option 2 is acceptable | On P2, Option 2 it is not clear to us what is meant with “received with delay”. This needs to be clarified. |
| vivo | P1: Agree  P2: Option 1 | We understand the concerns from the network vendor that the prohibit timer is used for the congestion control. |
| CATT | P1: Agree  P2: Option 2 (UE implementation) | For P1, we think there is a clear majority view to support introducing an explicit indication within the *RRCReconfiguration* to enable/disable the on-demand SI feature in RRC\_CONNECTED.  For P2, our preference is to left UE implementation. Do not limit UE behavior. |
| NEC | P1: can accept  P2: Option 2 | P1: according to majority view, we can accept this now.  P2: given there is explicit indication in RRC Reconfiguration, now there is additiona network control and thus no more mechanism would not be necessary. |
| ZTE | P1: Agree  P2: Option 1(prohibit timer) |  |
| Intel | P1: Agree  P2: Option 1 | For P2: If UE is allowed to repeat, a prohibit timer should be used as is done for other UE autonomous dedicated signalling. |
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**Rapporteur input**: It seems that companies’ opinion is quite crystallize to the same understanding reached during the email discussion. Therefore, I believe that proposal that has been formulated in R2-2003204 still apply. According to this, we suggest:

1. RAN2 to introduce an explicit indication within the RRCReconfiguration to enable/disable the on-demand SI feature in RRC\_CONNECTED.
2. RAN2 to selected between the following two options on how the UE should handle the case on when the requested SIB(s) on-demand are not delivered:
   1. If the requested SIBs are not received, a prohibit timer is specified to forbid the UE to trigger the on-demand SI request too frequently.
   2. If the requested SIBs are not received, the UE behaviour is left to UE implementation (i.e., a NOTE is added to clarify this).

## 2.2 Feature summary for on-demand SIB in CONNECTED ([R2-2003203](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003203))

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| Company | Proposal  (Agree/Disagree) | Comments |
| MediaTek | P1: Can accept  P2: Agree  P3: Nothing needed | P1: As expressed in our paper, we see reasons to request SIB9 apart from the IIoT WI. But we can wait to see if IIoT decisions render this question moot.  P2: Seems clear.  P3: We agree with the rapporteur’s analysis that there is no spec impact for this question. To us it seems to be a question of UE implementation. |
| Nokia | P1: wait on IIOT  P2: Agree  P3: OK to discuss | On P1, we agree to let IIOT session handle it. It was already the plan to let IIOT session discuss and decide about on-demand SIB9 in connected state.  On P3, if prohibit timer is agreed then it can address the lack of response from the network in the current cell but upon change of cell, we expect the prohibit timer to be reset and it is up to UE whether it wants to send the request in the new cell or not. If the UE behaviour upon lack of response from network is up to UE implementation, then we expect for this mobility scenario also it is up to UE implementation whether to send the request in the new cell. |
| OPPO | P1: wait for IIOT  P2: Agree  P3: OK | For P3, I think the UE should stop the prohibit timer after HO. It is up to UE implementation to perform connected mode SI request again.  I also wonder whether the SI request command is forward to the target gNB or not. if do, the UE should not perform connected mode SI request again. The target gNB already know the request from the UE.  If the concerned SIB is area specific and the target cell is within the system information area, the UE also does not need to trigger the connected mode SI request again. |
| Samsung | P2: Agree  P3: Nothing to discuss | Agree with rapporteur summary for P2 and P3. |
| Ericsson | P1: Need to wait for IIOT  P2: Agree  P3: Nothing is needed | Regarding P3, current specification is not impacted and therefore nothing is needed on this. Still, even if the prohibit timer is agreed, this issue is purely a UE implementation. |
| Huawei | P1, wait for IIoT  P2, also need to discuss about the SIB for NPN  P3, ?? |  |
| Lenovo | P1: ok to discuss with IIOT  P2: Partly ok  P3: ok to discuss | To P2: The list of supported Rel-16 SIBs is not complete as SIB10 (HRNN) for NPN should be supported as well. The argument given by Huawei, HiSilicon (3070) is not correct. Manual NPN selection is supported in all RRC states, but in RRC\_CONNECTED it is left to UE implementation.  To P3: we disagree with the proposed UE behaviour. After HO to new PCell the UE should check the situation there first, i.e. whether the new PCell supports OSI in connected, si-broadcast status in SIB1. |
| vivo | P1: Wait for the conclusion from IIOT.  P2: Agree  P3: Nothing to change | Agree with MTK and Ericsson that this is a UE implementation. |
| CATT | P1: Can allow to request SIB9  P2: Agree  P3: Maybe a Note is enough to clarify this case | For P1, according to our paper in IIoT, we see the need to request SIB9. But based on Chairman’s guideline, we can wait IIoT conclusions.  For P2, besides SIB12, SIB13, and SIB14, we don’t see any reason to request SIB10 and SIB11 on-demand by UEs in RRC\_CONNECTED.  For P3, we can agree the intention but it can be left to UE implementation. We prefer to capture a NOTE to clarify this case. |
| NEC | P1: wait for IIoT  P2: agree  P3: OK to discuss | P3: we understand after PCell change, the UE checks if the intended SIB is sent via broadcast or on-deman based on SIB1 information within HO command. If on-demand, then UE initiates On-demand SI request again. |
| ZTE | P1: Wait for IIOT decision  P2: No strong view.  P3: To discuss | P1: There is ongoing discussion in IIOT session on how to request the referencetimeinfo for UE in connected and one possible solution is to request the SIB via *UEAssistanceInformation* message and network will provide the requested information via *DLInformationTransfer* message. If they decide to go for this solution, there is no need to use the *DedicatedSIBRequest* message and no discussion is needed in the main session.  P2: We do not see clear requirements from V2X session saying they want to support on demand SI request for SIB12-14. Maybe it is better to ask them to clarify whether there is any need for that.  P3: As explained in R2-2002766, there are two possible use cases in which network may not respond to UE’s SI request.  Case 1: Congestion happens at network side. In this case, we prefer to have a prohibit timer configured to UE so that UE will not transmit the SI request frequently to increase the burden on the network side.  Case 2: UE send SI request to the source node but handover happens before the source node get chance to respond. The target node, unaware of the SI request from UE, will not respond.  For case 2, having a prohibit timer to prevent UE from sending a SI request immediately seems to be not reasonable as the network is not overloaded and is able to handle such a request. Missing the SI request is simply a inevitable pity due to mobility at network side and the following options can be considered to deliver the SI request to the target node as soon as possible:  Option 1: UE repeats the SI request following each change of PCell.  Option 2: The source node transfer the SI request to the target node during handover preparation. In addition, the source node may receive the SI request after it initiated handover preparation, in which case it cannot provide the target node with up-to-date SI request. To ensure successful delivery of such SI request, UE repeats SI request within 1 second prior to handover and send it to the target node.  If we go for option 2, the source node need to store the on demand SI request and transfer it to the target node, which may have a lot of spec impact in both RAN2 and RAN3 while the UE still needs to repeat the SI request if the request is sent 1second prior to handover. In contrast, option 1 is quite simple and has less spec impact in RAN2 and is preferred by us.  With regards to whether we need to capture anything for this issue, there has been some general description saying UE shall apply the SI acquisition procedure after reconfiguration with sync completion in 5.2.2.1 while on demand SI request procedure in connected mode is also part of the SI acquisition procedure in 5.2.2.3.  => UE in connected shall send the SI request if the UE has not had a valid version of a required SIB, the SIB is not broadcasting and network allows on demand in connected (if agreed) after reconfiguration with sync completion (in which PCell change is also covered).  If this is the common understanding of the current specification, then we are ok to not specify anything further.  *5.2.2.2.1 SIB validity*  *The UE shall apply the SI acquisition procedure as defined in clause 5.2.2.3 upon cell selection (e.g. upon power on), cell-reselection, return from out of coverage, after reconfiguration with sync completion, after entering the network from another RAT, upon receiving an indication that the system information has changed, upon receiving a PWS notification, upon receiving a positioning request from upper layers; and whenever the UE does not have a valid version of a stored SIB.* |
| Intel | P1: OK to discuss in IIOT WI  P2: Agree  P3: Mostly OK without the “again“ | For P3: After HO, it is a new cell and hence there is no “again” in “the UE initiates again the on-demand SIB request procedure“ – it is a new request based on the requirements for that cell. |
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**Rapporteur input**: In line with the inputs provided in R2-2003203, pretty much all the proposals formulate there can be confirmed. However, two companies have a different understanding on whether the NPN SIB can be requested on-demand or not. For this reason, we suggest to further discuss this aspect and check the companies opinion on this. According to this, we suggest the following proposals:

1. SIB12, SIB13, and SIB14 can be requested on-demand by UEs in RRC\_CONNECTED.
2. RAN2 to discuss whether SIB10 can be requested on-demand by UEs in RRC\_CONNECTED.
3. RAN to discuss if, after completion of PCell change, the UE initiates again the on-demand SIB request procedure for CONNECTED if has not received the requested SIB from the previous PCell.

Please, note that no proposal on SIB9 has been formulate because, according to the Chairman instruction, is it already agreed that we need to wait for the IIOT WI outcome.

## 2.3 Introduction of on-demand SIB in CONNECTED with positioning ([R2-2003787](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003787))

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| Company | Comments |
| MediaTek | We find a few detailed issues with this CR as follows:   * Section 5.2.2.3.3a refers to RRCPosSystemInfoRequest as if it were a separate message, which it isn’t (it’s a critical extension of RRCSystemInfoRequest). So this section should talk about initiating transmission of the RRCSystemInfoRequest for positioning, rather than initiating transmission of the RRCPosSystemInfoRequest „message“. * Similarly, section 5.2.2.3.4a should be merged into section 5.2.2.3.4. * Section 5.2.2.3.6 has a grammatical problem: It should say „include requestedSIB-List in the onDemandSIB-RequestList to indicate the requested SIB(s)“ (and mutatis mutandis for posSIBs). * In section 5.2.2.4.2, the posSIB requirements talk about „required posSIB(s), in accordance with sub-clause 5.2.2.1“, but there are no posSIB requirements in 5.2.2.1; it’s not actually clear that there should be any requirements on acquiring posSIBs in response to receiving SIB1, as opposed to in response to receiving a positioning request from upper layers. * In the field description table for the message DedicatedSIBRequest, the description for requested-posSIB-List is missing its field name. * Per the ASN.1 conventions, the field name should be requestedPosSIB-List (without the first hyphen). * In RRCReconfiguration-v1600-IEs, the OCTET STRING should just contain SystemInformation; there is no PosSystemInformation message. * In PosSI-SchedulingInfo, the conditional MSG-1 is not defined (should be cloned from SI-SchedulingInfo). * In PosSI-SchedulingInfo, it seems wrong for posSI-BroadcastStatus to be OPTIONAL. What does it mean for it to be absent? This field is mandatory in SchedulingInfo for regular SI. |
| Nokia | The instructions for this email discussion says “Treat papers under 6.21, by treating R2-2003204, R2-2003203 and taking into account comments”. Why is this R2-2003787 and ASN.1 class 2 issues (section 2.4) part of this email discussion? The background on R2-2003787 is not described this discussion document and the CR cover for R2-2003787 is not clear as to which Tdoc containing the last agreed running CR for OSI for positioning was used to implement on top of 38.331 v16.0.0. |
| Samsung | We need more time to look into the details of the positioning CR but some general comments. We noticed procedural text is duplicated for the positioning aspects which makes the bulky. Since the functionality is similar for OSI request from IDLE/INACTIVE (i.e. SI message level) while for connected OSI request for regular SIBs is on SIB level while for positioning it is SI message level. Apart from this all the functionality in terms of info in SIB1 for regular SIBs is duplicated for positioning SIBs. With this background it would be desirable to merge procedural text if possible. We will provide details comments on the CR later. |
| Huawei,HiSilicon | We prefer tdoc R2-2003637 to be the baseline for introducing on-demand SI in CONNECTED mode for positioning, because this CR includes quite a lot of corrections that are not only applicable for OdSIB in connected for positioning, but also for the general OdSIB procedures |
| Lenovo | After first review the following issues were spotted:   * Cover page: WI code “NR\_unlic-Core” can be removed. My understanding is that OSI in connected does not need to be supported for NR-U. * 5.2.2.3.3a (Request for on demand Positioning system information): shouldn’t SI request in RRC IDLE/INACTIVE supported on supplementary uplink as well? * Constant “maxPosSIB-Message” is not defined in 6.4. Furthermore, it may be better renamed to “maxPosSIB”. * We have not agreed yet to support SIB12, SIB13, SIB14, and SIB10 may need to be supported as well, see my comment to the feature summary document. * RRCPosSystemInfoRequest is missing in the table in B.1. |
| CATT | 5.2.2.3.3a Request for on demand Positioning system information 2> if acknowledgement for *RRCPosSystemInfoRequest* IE~~message~~ is received from lower layers: Comments #1: “Message” should be changed into “IE” because RRCPosSystemInfoRequest is not a message. 5.2.2.3.5 Request for on demand system information in RRC\_CONNECTED The UE shall:   1. if the UE is in RRC\_CONNECTED with an active BWP not configured with common search space configured with the field *searchSpaceOtherSystemInformation* and the UE has not stored a valid version of a SIB or the UE has received a positioning request from higher layer,  Comments #2: Added positioning request from higher layer condition.5.2.2.4.2 Actions upon reception of the *SIB1* 3> if the UE has not stored a valid version of a posSIB, in accordance with sub-clause 5.2.2.2.1, of one or several required posSIB(s), in accordance with sub-clause 5.2.2.1:  Comments #3: The validity of posSIB is not mentioned in 5.2.2.2.1 while there is no posSIB validity. We share the same view of MTK’s. |
| ZTE | Agree with Nokia this CR is a little bit out of the scope of this email discussion but we are also interested in it. We would like to have more time to check all the details inside. |

## 2.4 ASN.1 class 2 Review issues

According to the agenda item 6.0.1, the following RILs have been added concerning the on-demand SIB procedure (i.e., including positioning).

On-demand SI in Connected

[R2-2003634](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_109bis-e\Docs\R2-2003634.zip) [H207][H208][H209][H211][H218] DraftCR for on-demand SI request for positioning in RRC\_CONNECTED Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core Late

[R2-2003635](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_109bis-e\Docs\R2-2003635.zip) [H221] DraftCR for DedicatedSIB-Request Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core Late

[R2-2003636](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_109bis-e\Docs\R2-2003636.zip) [H215][H216][H217][H219] DraftCR for Actions upon reception of the SIB1 Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core Late

[R2-2003637](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_109bis-e\Docs\R2-2003637.zip) [H222] DraftCR for on-demand SI request for positioning in RRC\_CONNECTED Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core Late

For what concern these contributions, the tdocs R2-2003634, R2-2003635, and R2-2003636 have been already addressed in the latest version of the Draft CR that has been submitted in this meeting (i.e., in R2-2003787). However, companies may provide additional comments on this three CRs.

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| R2-2003634, R2-2003635, and R2-2003636 | | |
| Company | Tdoc | Comments |
| Samsung | R2-2003634 | The below text in 5.2.2.3.5 need to be restored:  2> for the SI message(s) that, according to the *si-SchedulingInfo* in the stored SIB1, contain at least one required SIB and for which *si-BroadcastStatus* is set to *Broadcasting*:  3> acquire the SI message(s) as defined in sub-clause 5.2.2.3.2; |
| Samsung | R2-2002626 | The cross-referencing of the subclauses is not correct. See below yellow highlight:  2> else if the UE has an active BWP configured with common search space configured by *SearchSpaceOtherSystemInformation* and the UE has not stored a valid version of a SIB, in accordance with sub-clause 5.2.2.2.1, of one or several required SIB(s), in accordance with sub-clause 5.2.2.1:  3> for the SI message(s) that, according to the *si-SchedulingInfo*, contain at least one required SIB and for which *si-BroadcastStatus* is set to *broadcasting*:  4> acquire the SI message(s) corresponding to the requested SIB(s) as defined in sub-clause 5.2.2.3.2;  3> for the SI message(s) that, according to the *si-SchedulingInfo*, contain at least one required SIB and for which *si-BroadcastStatus* is set to *notBroadcasting*:  4> trigger a request to acquire the required SIB(s) as defined in sub-clause 5.2.2.3.5; |
| Lenovo | R2-2003635 | The list of supported Rel-16 SIBs is not complete as SIB10 (HRNN) for NPN should be supported as well.  The values of SIB-ReqInfo-16 can be simplified by “sib10”, “sib11” etc. Furthermore, we need to discuss whether to add extension marker in the ENUMERATED type. In general, extension markers should be added when otherwise extension is cumbersome. |
| Intel | [R2-2003634](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_109bis-e\\Docs\\R2-2003634.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_109bis-eDocsR2-2003634.zip) | Once the revision marks are gone in the final specs, the following is a bit difficult to read:  “with an active BWP not configured with common search space configured with the field *searchSpaceOtherSystemInformation*”  Can it be simplified for example as:  “if the active BWP does not have a common search space configured by *searchSpaceOtherSystemInformation*” |
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For the tdoc R2-2003637, instead, a further checking is needed since this Draft CR it was not implemented on top of the CR that I provided. Therefore, we would like to ask company to double check this contribution and provide comment on what should be implemented with respect to the Draft CR currently submitted in R2-2003787.

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| R2-2003637 | |
| Company | Comments |
| MediaTek | Adding „request from higher layer for posSIB“ to section 5.2.2.3.5 seems needed, and we slightly prefer this tdoc’s construction of section 5.2.2.3.6, as the version of 5.2.2.3.6 in R2-2003787 could be read to suggest that the procedure is either for SIBs or posSIBs (not both). |
| Samsung | We prefer the general approach suggested in the draft CR to implement the procedural text related to positioning OSI i.e. our earlier comment on the rapporteur CR was to avoid duplicate sub clauses and consider the approach in this draft CR |
| Huawei | Same view as MTK and SS |
| CATT | We think R2-2003637 on demand SI for positioning in Connected mode looks good in principle.  The text proposal in R2-2003637 can be merged into R2-2003787. |
| Intel | Agree with others that this draft CR R2-2003637 captures well the positioning SIBs handling. |
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# Conclusion

Based on the discussion in the previous sections we propose the following proposal as **EASY TO AGREE**:

1. RAN2 to introduce an explicit indication within the *RRCReconfiguration* to enable/disable the on-demand SI feature in RRC\_CONNECTED.
2. SIB12, SIB13, and SIB14 can be requested on-demand by UEs in RRC\_CONNECTED.

Further, the following proposals are classified as **NEED DISCUSSION**:

1. RAN2 to selected between the following two options on how the UE should handle the case on when the requested SIB(s) on-demand are not delivered:
   1. If the requested SIBs are not received, a prohibit timer is specified to forbid the UE to trigger the on-demand SI request too frequently.
   2. If the requested SIBs are not received, the UE behaviour is left to UE implementation (i.e., a NOTE is added to clarify this).
2. RAN2 to discuss whether SIB10 can be requested on-demand by UEs in RRC\_CONNECTED.
3. RAN to discuss if, after completion of PCell change, the UE initiates again the on-demand SIB request procedure for CONNECTED if has not received the requested SIB from the previous PCell.

# References

[1]