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 Part 2 of 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

In this part 2 of the email discussion, companies are asked to provide input on the draftCR uploaded on the draft folder only for what concern the positioning WI. Comments regarding the on-demand SIB for CONNECTED (i.e., no positioning) are handled in a separate document.

## 2.2 Comment on the on-demand SI(B) framework for positioning

According to this, companies are kindly requested to provide comment on the DraftCR for what concern the on-demand SI(B) only for what concern positioning.

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| On-demand SI(B) feature for positioning |
| Company | Comments |
| CATT | 5.2.1 IntroductionNOTE: The physical layer imposes...**Comment#1:** The format of Note above looks wrong. Please check it.Ericsson: Ok; yes it should be ok now.5.2.2.2.1 SIB validitya valid version of a stored or required SIB or posSIB**Comment#2:** We need to clarify where the posSIB validity is during the online meeting. Is it in upper layer or in RRC? The posSIB validity in LTE is located in upper layer.Ericsson: The value tag for posSIB is optionally provided in LPP signalling [49].The above is already in RRC text.5.2.2.3.3 Request for on demand system information**Comment#3:** The title can be updated as “Request for on demand system information in RRC\_IDLE/RRC\_INACTIVE, similar to 5.2.2.3.5 Request for on demand system information in RRC\_CONNECTED.Ericsson: Ok; this is legacy text/header; not sure if we can update it. We are as such not allowed to change that.5.2.2.3.3a Request for on demand Positioning system information**Comment#4:** The title can be added with “in RRC\_IDLE/RRC\_INACTIVE”. The same reason as above.Ericsson: We can change this but then it won’t be aligned with legay title.5.2.2.3.3a Request for on demand Positioning system information2> initiate transmission of the *RRCSystemInfoRequest* message for positioning in accordance with 5.2.2.3.4a;**Comment#5:** Typo. 5.2.2.3.4a should be 5.2.2.3.4.Ericsson: thanks corrected.5.2.2.3.5 Request for on demand system information in RRC\_CONNECTED3> acquire the requested SI message(s) corresponding to the requested SIB(s) as defined in sub-clause 5.2.2.3.2.**Comment#6:** This part “3>...” can be replaced as3> acquire the requested SI message(s) corresponding to receive RRCReconfiguration meesage. Because it can be aligned with the modification in 5.3.5.3.Ericsson: This comment should be for general on demand and not for positioning specific.5.2.2.3.5 Request for on demand system information in RRC\_CONNECTED2> for the SI message(s) that, according to the *posSI-SchedulingInfo* in the stored SIB1, contain at least one required SIB and for which *posSI-BroadcastStatus* is set to *notBroadcasting*:3> initiate transmission of the *DedicatedSIBRequest* message in accordance with 5.2.2.3.6;**Comment#7:** The action 4 as below was missed here which should follow the same procedure of “*si-BroadcastStatus* is set to *notBroadcasting*”. 4> acquire the requested SI message(s) corresponding to the requested SIB(s) as defined in sub-clause 5.2.2.3.2.**Ericsson: Thanks done.**5.2.2.4.2 Actions upon reception of the *SIB1*Upon receiving the *SIB1* the UE shall:1> store the acquired *SIB1*;**Comment#8:** The action as below should be added because upper layer should send the on demand request based on *PosSI-SchedulingInfo* in SIB1.1> Send the received *PosSI-SchedulingInfo* to upper layer.Ericsson: It is RRC layer which should send the on demand request right. Anyhow, I agree the above addition is needed. Good suggestion. Thanks.5.2.2.4.2 Actions upon reception of the *SIB1*3> if the UE has not stored a valid version of a posSIB:**Comment#9:** We need to clarify where the posSIB validity is first. The posSIB validity in LTE is located in upper layer. If the validity is made in upper layer, “3> ...” should be updated as “received request from higher layer”.Ericsson: as commented above posSIB validity is in LPP. In that view agree that received request from higher layer is correct.**Comment#10**: “3> ... set to *broadcasting*:” was missed between “3> if...” and “4> acquire...” shown as below:3> if the UE has not stored a valid version of a posSIB:3> for the SI message(s) that, according to the pos*SI-SchedulingInfo*, contain at least one required posSIB and for which *posSI-BroadcastStatus* is set to *broadcasting*:4> acquire the SI message(s) corresponding to the requested posSIB(s) as defined in sub-clause 5.2.2.3.2;**Comment#11:** The judgment of timer T351 can be moved to 5.2.2.3.5, because 5.2.2.3.5 also need evaluate the timer T351. When there is a upper layer request, UE can step into 5.2.2.3.5 directly without following 5.2.2.4.2.3> for the SI message(s) that, according to the *posSI-SchedulingInfo*, contain at least one required posSIB and for which *posSI-BroadcastStatus* is set to *notBroadcasting* and timer T351 is not running:4> start or restart timer T351 with the timer value set to the *onDemandPosSIBRequestProhibitTimer*;4> trigger a request to acquire the required posSIB(s) as defined in sub-clause 5.2.2.3.5;5.2.2.4.2 Actions upon reception of the *SIB1*2> else if the UE has 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, 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 or according to the request from upper layers:3> if *onDemandSibRequest* is set to *true* and timer T350 is not running:4> start or restart timer T350 with the timer value set to the *onDemandSIBRequestProhibitTimer*;4> trigger a request to acquire the required SIB(s) as defined in sub-clause 5.2.2.3.5;**Comment#12:** Positioning part was missed here. Again, we suggest to move T351 timer judgment into 5.2.2.3.5 as comment #11.– *RRCSystemInfoRequest**RRCSystemInfoRequest message*RRC-PosSystemInfoRequest-IEs-r16 ::= SEQUENCE { requested-PosSI-List BIT STRING (SIZE (maxSI-Message)), --32bits spare BIT STRING (SIZE (12))}**Comment#13:** size in “spare BIT STRING (SIZE (12))” should “11” because the choice is added as below.criticalExtensionsFuture-r16 CHOICE { rrcPosSystemInfoRequest-r16 RRC-PosSystemInfoRequest-IEs-r16, criticalExtensionsFuture SEQUENCE {} }Ericsson: Comment 13: Done ThanksB.1 Protection of RRC messages*RRCSystemInfoRequest* + + + Justification for A-I and A-C: the message can be sent in SRB0 in RRC\_INACTIVE state, after the AS security is activated.**Comment#14:** There is no need to add it.Ericsson: Right; it already exists. |
| MediaTek | 1. In section 5.2.2.4.2, the requirements in case T351 is not running include „start or restart timer T351“. We can’t restart it if it’s not running, so the highlighted part seems spurious.2. Section 5.2.2.4.2, typos: „uppler layers“ should be „upper layers“, and „acquisiotion“ should be „acquisition“. Also missing italics on „broadcasting“ in the next-to-last level 4 bullet.3. The definition of the IE PosSIB-ReqInfo is missing ::=, and missing the „r“ in its -r16 suffix.4. The field name onDemandPosSIBRequestProhibitTimer needs a hyphen: onDemandPosSIB-RequestProhibitTimer5. dedicatedPosSysInfoDelivery-r16 should probably be Need N, similar to the existing dedicatedSystemInformationDelivery.6. onDemandPosSibRequestConfig is missing from the field description table for RRCReconfiguration.7. In section 5.2.2.3.3a, there is a case of referring to „RRCPosSystemInfoRequest message“, instead of „RRCSystemInfoRequest for positioning“ (last level 2 bullet).8. Section 5.3.5.3 says:1> if the *RRCReconfiguration* message includes the *dedicatedPosSysInfoDelivery*:2> perform the action upon reception of System Information as specified in 5.2.2.4;This isn’t quite right, because dedicatedPosSysInfoDelivery doesn’t contain a SystemInformation message but a lower-level IE (PosSystemInformation-r16-IEs). We might instead say „perform the actions upon reception of the contained posSIB(s), as specified in sub-clause 5.2.2.4.16“. However, this is kind of a theoretical detail, because anyway there are no requirements in 5.2.2.4.16...9. In RRCReconfiguration-v16xy-IEs, onDemandPosSibRequestConfig-r16 should be onDemandPosSIB-RequestConfig-r16 („SIB“ is an acronym).10. In OnDemandPosSibRequest-r16, the larger values of onDemandPosSIBRequestProhibitTimer seem excessive. This could cause multiple positioning operations to fail because the prohibit timer is still running from the first operation.11. onDemandPosSIBRequestProhibitTimer needs a hyphen: onDemandPosSIB-RequestProhibitTimer.12. In RRC-PosSystemInfoRequest-IEs-r16, requested-PosSI-List should not have the first hyphen: requestedPosSI-List („requested“ is not an acronym). (It’s wrong in the legacy RRCSystemInfoRequest-IEs too.) |
| Nokia | 5.2.2.2.1: Why mention "required SIB/posSIB" here. 5.2.2.3 describes acquisition of all SIB/posSIB including the required SIB/posSIB. Don't see a need to highlight required SIB/posSIB here.5.2.2.3.2: Change to SIB1 in the following:3> determine the number *m* which corresponds to the number of SI messages with an associated *si-Periodicity* of 8 radio frames (80 ms), configured by *schedulingInfoList* in *SystemInformationBlockType1*;5.2.2.3.3a: Change Positioning to lower case in the section heading5.2.2.3.3a: Change references of “UE requires to operate within the cell” in the positioning case to “UE upper layers requires for positioning operations”5.2.2.3.3a: Change “initiate transmission of the RRCSystemInfoRequest message for positioning in accordance with 5.2.2.3.4” To: “initiate transmission of the *RRCSystemInfoRequest* message including *rrcPosSystemInfoRequest* in accordance with 5.2.2.3.4”5.2.2.3.3a: In “2> if SI request is based on RRCPosSystemInfoRequest message:” message name is incorrect. May be the text should be “if the *RRCSystemInfoRequest* message was sent including *rrcPosSystemInfoRequest*”5.2.2.3.4: UE should execute the steps in this section conditionally based on whether SIB or posSIB is required. Right now, it executes both steps for both SIB and posSIB requests.5.2.2.3.5: Change “or according to the request from upper layers” To: “or if requested by upper layers”5.2.2.3.5: In this section there are mentions of “stored SIB1”. Why mention “stored”. UE is free to check stored SIB1 if it has but the text should be mentioning just SIB15.2.2.4.2: “forward the received PosSI -SchedulingInfo to upper layers”. PosSI -SchedulingInfo should be lower case but I don’t think this should be forwarded to upper layers. This is a info from SIB1 used by RRC layer. It is up to inter-layer interactions, which is up to implementation, to forward relevant positioning assistance data. At most just the PosSIB-MappingInfo (PosSibType, GNSS ID, SBAS ID etc) is what can be forwarded to upper layers.5.2.2.4.2: Change “if onDemandSibRequest is set to true” To: “if UE is configured with *onDemandSibRequestConfig* and *onDemandSibRequest* is set to true”5.2.2.4.2: “3> if the UE has received request from higher layer:”. Change higher layer to upper layers6.2.2, DedicatedSIBRequest message: Field description of requestedSIB-List: change to “requested by the UE while in while in RRC\_CONNECTED”Field description of requestedPosSIB-List: change to “Contains a list of posSIB(s) requested by the UE while in RRC\_CONNECTED. See TS 37.355 [49]”6.2.2, RRCReconfiguration message: onDemandSIBRequest in OnDemandSibRequest-r16 is close in name to parent IE. Rename one of them.6.3.1a: Description missing for PosSI-SchedulingInfo IE6.3.1a: Confusing to read with two IEs close in name. PosSI-SchedulingInfo and PosSchedulingInfo. Rename PosSchedulingInfo6.3.1a: Type is defined as Pos-SchedulingInfo-r16 but it is referenced as PosSchedulingInfo6.3.1a: posSI-BroadcastStatus is missing -r16 suffix6.3.1a: In the conditional presence description for MSG-1 a space is missing after Need R6.3.2: si-RequestResources in SI-RequestConfig: Since the concatenated SI message list is doubled due to positioning, is maxSI-Message number of resources enough resources? Should we define a separate si-RequestConfig-r16?6.3.2: Since SI-RequestConfig is used by positioning also, it should be moved out to be a common IE?6.3.2: si-RequestResources: Description needs update to apply for positioning also. Right now it only references si-BroadcastStatus |
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## ANNEX Previous comments from Part 1

### A.1 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.
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| 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.
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| CATT | 5.2.2.3.3a Request for on demand Positioning system information2> 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\_CONNECTEDThe 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. |

## A.2 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%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003634.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%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003635.zip) [H221] DraftCR for DedicatedSIB-Request Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core Late

[R2-2003636](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003636.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%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003637.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 | 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:

# References

[1]