**3GPP TSG-RAN WG2 #113-e *R2-210xxxx***

**E-meeting, January 2021**

Agenda Item: 8.7.4

Source: OPPO

Title: Summary of [AT113-e][015][NR16 V2X MOB DCCA] RRC II (OPPO)

Document for: Discussion, Decision

# Introduction

This is for the following email discussion

* [AT113-e][015][NR16 V2X MOB DCCA] RRC II (OPPO)

 Scope: Treat R2-2100973, R2-2100101, R2-2100149, R2-2101702, R2-2100102, R2-2100103, R2-2100104, R2-2100974, R2-2100975, R2-2101535, R2-2101169, R2-2101182, R2-2101546

 Phase 1, determine agreeable parts, Phase 2, for agreeable parts Work on CRs.

 Intended outcome: Report and Agreed CRs.

 Deadline: Schedule A

# Discussion

## Coexistence of V2X and DAPS

This is for the following Tdocs

Discussion

[R2-2100973](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100973.zip) Coexistance of DAPS and Sidelink Ericsson discussion Rel-16 NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core

[R2-2100101](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100101.zip) Co-configuration of V2X and other features OPPO discussion Rel-16 NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

R2-2100149 DAPS HO and NR Sidelink Communication Samsung Electronics Co., Ltd               discussion            Rel-16    5G\_V2X\_NRSL-Core

CRs

R2-2101702 Clarification on DAPS HO configuration      vivo        CR          Rel-16    38.331   16.3.1               2430      -             F             5G\_V2X\_NRSL-Core

[R2-2100102](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100102.zip) CR on co-configuration of NR-V2X and other features OPPO CR Rel-16 38.331 16.3.1 2301 - F NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

Firstly, on whether the Sidelink and DAPS can be co-configured

In 0973:

P1: RAN2 to confirm that DAPS HO cannot be configured together with NR and V2X sidelink communications.

In 0101, which is in the similar position as 0973

P1: RAN2 confirms R16 UE is not expected to be configured with DAPS and sidelink together.

In 0149, the view is opposite to 0973/0101

P1: DAPS HO can be configured irrespective of whether UE is configured with NR sidelink communication or not.

**Q1-1: Can DAPS HO and NR sidelink communication be configured together?**

* **Yes**
* **No**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Samsung | Yes | We do not see any technical reason to not allow such configuration.DAPS HO is intended to reduce interruption on Uu during the handover. When the UE is configured with NR sidelink communication, UE is also involved in Uu communication and Uu DRBs carry the data of V2X services (e.g. for remote driving use case). For remote driving use case, the end-to-end latency requirement is quite stringent (5ms including CN latency). So, DAPS HO is beneficial and not allowing network to configure DAPS HO when UE is configured with sidelink communication is not a good option.During DAPS HO, the basic principles (i.e. using target cell configuration including exceptional pool and reset of SL operation in MAC) of SL communication during normal HO can be applied. |
| OPPO | No | We hold our understanding on the in-compatibility between NR SL and dual active Uu-MAC, i.e., there are not only RAN2 impact (e.g., UL/SL prioritization) but also RAN1 impact (e.g., power control). |
| Qualcomm Incorporated | No | We do not think this is essential combination of features. At the same time, additional work in RAN2, e.g. revisit band combination UE capability signalling is going to be significant. |
| Ericsson | No | Supporting the coexistence of the two feature require a standardization effort that cannot be taken now that Rel-16 has been frozen. |
| Xiaomi | No | This combination would introduce further standard impact. |
| Huawei, HiSilicon | No | To avoid further complicating the discussion and introduction of new features after Spec freeze |
| ZTE | No | If DAPS HO is configured together with NR and V2X sidelink communications, it will have much impacts on RAN2. Considering that the Rel-16 has been frozen, we think it is better that R16 UE is not expected to be configured with DAPS and sidelink together. |
| vivo | No | We have the same concern to complicate the design at this time being and the coexistence of sidelink/DAPS could be considered in the future if needed. |
| Nokia | No for Rel. 16 if it impacts specifications(Yes for future Rel.) | If the above question is applicable to NR sidelink for Rel. 16 (which is our understanding) we think it is not feasible to introduce the combination of two features after Rel.16 is already frozen. If this can be supported without specification modifications and technical issues, we are fine to allow it the UE capabilities make it clear whether UE supports the joint case or not.However, since the specification impact may be significant (and NR SL WI still deals with corrections) it is not reasonable at all to start specification work for Rel.16. In general, we are supportive of the simultaneous DAPS HO and NR sidelink for future releases, however it has to be included in the work plan prior to the start of the release. |
| Intel | No | Considering we did not discuss how to support DAPS+sidelink, additional efforts are foreseen, e.g. question in Q1-2. Therefore, we prefer not support it in Rel-16 at such late stage.  |
| Apple | No | We shared Qualcomm’s view. The combination is not essential, and needs more time and discussion for the standardization. |
| Sharp | No | The combination of V2X and DAPS may have further standard impact, so we prefer not to support the combination in R16. |
| Spreadtrum | No | At least not for Rel-16. |
| MediaTek | No | Same view as Qualcomm: Not essential and too much specification impact. |
| CATT | No | Combining DAPS and Sidelink will introduce additional specification efforts. Considering R16 has been frozen, it had better not support this combination. |
| Google | No | It is too late for Rel-16 to do so. |
| LG | No | WE do not think it is necessary, but if we attempt to allow this combination, we need to address several but non-trivial issues. We simply do not have time to discuss that in R16 time frame. So we cannot support this.  |

If one believes that DAPS/Sidelink can be configured, the follow-up question is as raised in 0149, i.e., which Uu-MAC for the UE to follow for the SL operation

**Proposal 2: RAN2 should further discuss and agree on one of the following:**

* **Option 1: Target MCG MAC entity is used for NR V2X Communication**
	+ **A) Partial reset of source MCG MAC entity is needed so that source MCG MAC entity stops performing any operation related to SL.**
	+ **B) In case DAPS HO fails and RLF is not detected on source PCell, UE should perform NR V2X Communication using the source MCG MAC entity. SL configuration of source MCG should be applied for NR V2X Communication.**
* **Option 2: Source MCG MAC entity is used for NR V2X Communication**

**Proposal 3: If option 2 in proposal 2 is agreed, RAN2 should further discuss and agree on one of the following:**

* + **Option 1: UE continue to use dedicated sidelink configuration of source PCell until HO is completed.**
		- **In this case exceptional pool of target PCell should not be used while T304 is running.**
	+ **Option 2: UE uses the dedicated sidelink configuration of target PCell**
		- **In case DAPS HO fails and RLF is not detected on source PCell, for NR V2X communication UE revert back to the UE configuration used in the source PCell**

**Q1-2: If Yes to Q1-1, which option(s) do you prefer for the operation of NR Sidelink during DAPS HO:**

* **Option-1: to rely on target MCG MAC;**
* **Option-2: to rely on source MCG MAC and the source-cell SL configuration during HO;**
* **Option-3: to rely on source MCG MAC and target-cell SL configuration during HO;**
* **Others**

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| --- | --- | --- |
| Company | Option | Comment |
| Samsung | Option 1 | During normal HO, UE uses target cell configuration including exceptional pool and reset of SL operation in MAC is performed. Same principles can be applied.Since target cell configuration is applied to target MCG MAC during DAPS HO, target MCG MAC can be used and SL operation in source MCG MAC is reset. |
| Nokia | comments | For Q1-1 our answer is “No”, but we want to provide our view, which (as we think) proves that the introduction of this feature needs extensive discussion and should be postponed to future releases:As per the agreements in RAN2#107, the target gNB can provide the SL CG in the Handover (HO) command and the UE can start using it once it has received it. In this case Option-3 might be feasible and in case the HO fails i.e. T304 expires, then the UE should switch to exceptional pool resources.However as the source MCG MAC entity remains active during DAPS (for new UL data until the UE completes RA at the target, for other transmissions until the source cell is released by the network) then the UE may also continue with source MAC entity at least until the UE completes RA at the target (option-2) |
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Or if one does not believe that DAPS/Sidelink can be configured, it may worth some specification clarification:

In 1702, the suggested change is a NOTE to section 5.8.1 (the “General” section for sidelink)

NOTE4: DAPS HO is not configured when UE is configured with NR sidelink communication

In 0102, the suggested change is to revise the condition description for the configuration of DAPS

|  |  |
| --- | --- |
| *DAPS* | The field is optionally present, need N, in case masterCellGroup includes ReconfigurationWithSync, SCell(s) and SCG are not configured, multi-DCI/single-DCI based multi-TRP are not configured in any DL BWP, ethernetHeaderCompression is not configured for the DRB, and sidelink is not configured. Otherwise the field is absent. |

In 0973, no CR/TP is provided, but it is proposed

Proposal 2 During DAPS HO, the network needs to release all NR and LTE sidelink communication configurations before the handover command is sent to the UE.

Rapporteur understands the P2 in 0973 is in the same direction of the two CRs above.

**Q1-3: If No to Q1-1, which CR do you prefer for stage-3 clarification in 38.331**

* **Option-1: 1702 as baseline**
* **Option-2: 0102 as baseline;**
* **Other;**
* **Option-3: No Spec impact. Rely on NW implementation.**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comment |
| Samsung | Option-1 | A note is fine. |
| OPPO | Option-2 | Proponent.We understand the co-configuration restriction has already been addressed in the condition, so good to align. |
| Qualcomm Incorporated | Option-2 | Covering it in a form of general principle looks better. |
| Ericsson | No spec impact(Option 1 as alternative) | We think that there is no need to have any spec impact in the current clarification. However, if majority of company believe something is needed, we would like to emulate the same it was already done for DAPS+DC and DAPS+CA and having a note in stage2 to clarify that DAPS cannot be configured with SL. |
| Xiaomi | Option 2 | Better to describe the restriction in one place. |
| Huawei, HiSilicon | Option-3 | For some features (e.g. IAB), it seems we already assumed that it is up to NW implementation whether these features can be configured simultaneously with other features, i.e. if the NW sees no problem for simultaneous configuration, it may do that; otherwise, it won’t. In case such NW-implementation based assumption holds for any other feature, we fail to understand why such assumption cannot work for V2X which needs intentional discussion or further Spec impact. So we question the necessity for further discussions and potential impacts for such simultaneous configuration. |
| ZTE | Option 2 | Option-2 is clearer than just a note. |
| vivo | Option-1 | Proponent.Option-2 is workable but we think a simple note would be enough. |
| Nokia | Option-1 or Option-3 | Note is sufficient (if anything is needed), and could even be in Stage-2 instead of Stage-3 (as with other similar clarifications).  |
| Intel | Option 2, and/or stage 2 correction. | RAN2 already agreed stage 2/3 CRs in last meeting on coexistence between CA/DC and DAPS. Same changes should be done for sidelink. Therefore we need stage 3 changes as option 2, and also need stage 2 changes similar to the proposal in R2-2100487. |
| Apple | Option 2 | The description is aligned with other restrictions (e.g. CA, DC, multi-TRP, SUL) in DAPS HO. |
| Sharp | Option 1 | A note is simple and enough. |
| Spreadtrum | Option 1 |  |
| MediaTek | Option-2 | This is in line with how we have handled the other features listed in the condition. We could accept Option-1 if there is a majority view, but we disagree with Ericsson’s interpretation that no spec impact is needed. From the UE implementation pov, if nothing in the spec says that DAPS will not be configured together with sidelink, we have to be prepared for the possibility that the network configures them together. |
| CATT | Option 2 |  |
| Google | Option 2 and stage-2 correction | We share the same view as Intel. |
| LG | Option-1 | A note is sufficient. We do not think specifying it as restrictive configuration in 331 is better, since DAPS+SL may be required to enable some advanced V2X use cases in the future release |

Another issue raised in 0973 is as follows:

P3: When DAPS is executed, the sidelink UE can continue to use the dedicated sidelink configuration and the exceptional pool of the source PCell until the DAPS HO is completed.

Based on rapporteur understanding, it is to propose the UE to continue using the dedicated SL configuration even after it is released (as proposed in P1 in 0973) by network. If that is true, rapporteur think it is more of detailed aspects of sidelink, and is somehow against the general design principle for SL, i.e., reply on dedicated RRC when in RRC\_CONNECTED.

**Q1-4: For the P3 of 0973 above, do you agree?**

* **Yes;**
* **No;**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Samsung | See comment | This question is applicable if answer to Q 1-1 is Yes.If “DAPS is not configured when UE is configured with NR SL communication” then the P3 is incorrect. In our understanding this is basically option 2 of Q 1-2 |
| OPPO | No | Similar understanding as Samsung.P3 is somehow contradictory to P1.. |
| Qualcomm Incorporated | No | We share confusions from other companies. More explanation from the proponent is appreciated. |
| Ericsson (Proponent) |  | We agree that the proposal stands only if is agreed to support DAPS and SL together. Sorry if this was not clear from our contribution. |
| Xiaomi | No | If DAPS and SL can’t be configured together, this is not supported. |
| Huawei, HiSilicon | See comments | If the UE releases the dedicated SL configuration which is de-configured after DAPS is configured, then it seems the only way-out for the UE is to use exceptional pools/normal pools on the SL carrier got from the SIB of the cell selected for NR SL or included in pre-configuration. This is what the current NR SL TX/RX procedure in 5.8.7 and 5.8.8 says, and we didn’t find problems to follow this. |
| ZTE | No | It seems contradictory to Q1-3, if DAPS HO is not configured when UE is configured with NR sidelink communication, P3 case will not happen,  |
| vivo | No | we don’t see a big motivation here to support this, and agree with Huawei the UE can simply rely on pre-configuration.  |
| Nokia | No |  |
| Intel | No | Same view as Rapporteur, the UE should not use the SL configuration if it has been deleted by network. |
| Apple | No | We donot support the simultaneous configuration the SL and DAPS.  |
| Sharp | No |  |
| Spreadrum | No |  |
| MediaTek | No | This is not an issue if DAPS and sidelink are not configured together. |
| CATT | No | This case will not happen because DAPS will not be configured if sidelink is configured as we proposed in the answer of Q1-1 |
| Google | No |  |
| LG | No | If we do not support DAPS+SL, this case does not happen |

## Coexistence of V2X and DC

This is for the following Tdocs

[R2-2100101](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100101.zip) Co-configuration of V2X and other features OPPO discussion Rel-16 NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

CRs

[R2-2100102](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100102.zip) CR on co-configuration of NR-V2X and other features OPPO CR Rel-16 38.331 16.3.1 2301 - F NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

[R2-2100103](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100103.zip) CR on Co-configuration of NR-V2X and MR-DC OPPO CR Rel-16 37.340 16.4.0 0245 - F 5G\_V2X\_NRSL-Core

As clarified in the cover page of 0103,

RAN2#110 ruled out the configuration of EN/NE-DC for NR sidelink

*=> RAN2 can attempt to introduce signaling for PC5 BC for (NG)EN/NE-DC scenario in CR implementation. If not so complicated, we introduce the signaling but otherwise we do not introduce it. Note with introduction of signaling, it does not mean RAN4 should introduce the corresponding BC now.*

RAN2#111 ruled out the configuration of NR-DC for NR sidelink

*=> No consensus for introduction of the signaling for NR-DC, so a parameter to indicate whether UE supports PC5 BC when NR Uu BC is configured as NR-DC is not supported in this release. The consequence from not introducing this signaling is NW may not be able to configure SN for the UE to perform SL communication.*

In order to reflect that, a stage-2 CR is proposed in 0103, i.e., to remove the support in DC scenario

13.2 Void

**Q2-1: Do you agree with the stage-2 CR in 0103 which reflects the agreement above?**

|  |  |  |
| --- | --- | --- |
| Company | Agree/Not-agree | Comment |
| Samsung | See comment | We do not have a strong view but fine to leave it as informative. |
| OPPO | Yes | ProponentWe do not the reason to keep the misalignment between stage-2 and stage-3 spec. |
| Qualcomm Incorporated | Yes |  |
| Ericsson | No | Current text in stage 2 is correct and we prefer to keep it. There are no benefits in voiding a section that stating something that is correct. |
| Xiaomi | Yes |  |
| Huawei, HiSilicon | Yes |  |
| ZTE | Yes |  |
| vivo | Yes |  |
| Nokia | No | Our understanding is that MR-DC is NOT supported in Rel.16 NR SL – however the statement that “only MN is allowed to configure UE(s) performing NR Sidelink” is correct. Removing the sentence could create more confusion (so better keep it since it is correct). |
| Intel | Yes |  |
| Apple | Yes |  |
| Sharp | Yes  |  |
| Spreadtrum | Yes |  |
| MediaTek | Yes | Considering the agreements quoted from RAN2#110-e and RAN2#111-e, the current text is at best vacuous. |
| CATT | Yes |  |
| Google | No | The agreement only prevents configuring the SN for the UE in MR-DC to perform the SL communication. However, the agreement does not prevent that the MN controls the UE in MR-DC to perform the SL communication. |
| LG | No | We are not sure if the agreement in R2#111 necessarily means that any SL configuration is not possible at all when NR-DC is configured. We think MN can still configure the UE with SL operation parameters.  |

And in order to reflect that, a stage-3 CR is proposed in 0102 (change-2), i.e., to remove the behaviour related to T316 for DC architecture

**Q2-2a: Do you agree with that UE is not expected to be configured with t316 (for DC scenario) and sidelink together?**

|  |  |  |
| --- | --- | --- |
| Company | Agree/Not-agree | Comment |
| Samsung | Agree |  |
| OPPO | Agree | Proponent |
| Qualcomm Incorporated | Agree |  |
| Ericsson | Disagree | We did agree that, in case of DC, is only the MCG that can configured a sidelink UE and that the SCG is not allowed to do so. In such a case, the T316 is still configured only by the MCG that is also the node that configure sidelink.We do not see any conflict with the configuration of T316 and sidelink as T316 is only configured by the MCG. |
| Xiaomi | Agree |  |
| Huawei, HiSilicon | Yes |  |
| ZTE | Agree |  |
| vivo | Agree |  |
| Nokia | No | We share same view as Ericsson |
| Intel | Agree |  |
| Apple | Agree |  |
| Sharp | Agree  |  |
| Spreadtrum | Agree |  |
| MediaTek | Agree |  |
| CATT | Agree |  |
| Google | No | We share the same view as Ericsson |
| LG | No |  |

**Q2-2b: If Agree to Q2-2a, do you agree the stage-3 CR in 0102 which reflects the agreement above?**

|  |  |  |
| --- | --- | --- |
| Company | Agree/Not-agree | Comment |
| Samsung | Agree |  |
| OPPO | Agree |  |
| Qualcomm Incorporated | Agree |  |
| Ericsson | Disagree | See reply in Q2-2a |
| Xiaomi | Agree |  |
| Huawei, HiSilicon | Yes |  |
| ZTE | Agree |  |
| vivo | Agree |  |
| Nokia | Disagree | See above |
| Apple | Agree |  |
| Sharp | Agree  |  |
| Spreadtrum | Agree |  |
| MediaTek | Agree |  |
| CATT | Agree |  |
| Google | Disagree |  |
| LG | Disagree |  |

## Coexistence of CHO and UAI/SUI message

This is for the following Tdocs:

[R2-2100101](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100101.zip) Co-configuration of V2X and other features OPPO discussion Rel-16 NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

[R2-2100102](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100102.zip) CR on co-configuration of NR-V2X and other features OPPO CR Rel-16 38.331 16.3.1 2301 - F NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

[R2-2100104](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100104.zip) CR on co-configuration of CHO and UAI and SUI report OPPO CR Rel-16 36.331 16.3.0 4544 - F 5G\_V2X\_NRSL-Core, NR\_Mob\_enh-Core

[R2-2101169](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2101169.zip) Retransmission of UE information after CHO Google Inc. CR Rel-16 36.331 16.3.0 4569 - F MBMS\_LTE\_SC-Core, SPIA\_IDC\_LTE-Core, LTE\_feMob-Core, 5G\_V2X\_NRSL-Core, LTE\_eDDA-Core

[R2-2101182](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2101182.zip) Retransmission of UE information after CHO Google Inc. CR Rel-16 38.331 16.3.1 2389 - F NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, NR\_UE\_pow\_sav-Core

R2-2100680 UE information transmission in NR CHO case SHARP Corporation, Ericsson discussion NR\_Mob\_enh-Core R2-2010253

R2-2100681 UE information transmission in LTE CHO case SHARP Corporation, Ericsson discussion Rel-16 NR\_Mob\_enh-Core R2-2010251

R2-2100526 Transmitting SL UE Information after CHO Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.3.1 2331 - F NR\_Mob\_enh-Core

One issue is raised in the documents above: when CHO is utilized, how to handle the triggers for UAI/SUI re-transmission to target cell, for which the legacy triggers are as follows (as indicated by 0681, the same issue is applicable to InDeviceCoexIndication and MBMSInterestIndication)

2> if the UE initiated transmission of a *UEAssistanceInformation* message for the corresponding cell group during the last 1 second, and the UE is still configured to provide the concerned UE assistance information for the corresponding cell group:

3> initiate transmission of a *UEAssistanceInformation* message for the corresponding cell group in accordance with clause 5.7.4.3 to provide the concerned UE assistance information;

3> start or restart the prohibit timer (if exists) associated with the concerned UE assistance information with the timer value set to the value in corresponding configuration;

2> if *SIB12* is provided by the target PCell; and the UE initiated transmission of a *SidelinkUEInformationNR* message indicating a change of NR sidelink communication related parameters relevant in target PCell (i.e. change of *sl-RxInterestedFreqList* or *sl-TxResourceReqList*) during the last 1 second preceding reception of the *RRCReconfiguration* message including *reconfigurationWithSync* in *spCellConfig* of an MCG:

3> initiate transmission of the *SidelinkUEInformationNR* message in accordance with 5.8.3.3;

So the first question is whether the co-configuration is necessary.

**Q3-1: Do you think UE may be configured with CHO and the UAI message (for LTE and NR), SUI message (for LTE and NR), *InDeviceCoexIndication* message (for LTE) and *MBMSInterestIndication* message (for LTE) report together?**

* **Yes**
* **No**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| OPPO | Yes | Proponent |
| Samsung | Yes |  |
| Qualcomm Incorporated | Yes |  |
| Ericsson | Yes |  |
| Xiaomi | Yes |  |
| Huawei, HiSilicon | See comments | First, we would say that the co-existence of UE Assistance Information and CHO within the same UE is NOT a V2X specific issue, because UE assistance information includes a lot of Uu features, with V2X specific part being only a small portion of this message. This is also why V2X session concluded to deal with this issue in main room last meeting. Then, it seems overkilling to prohibit any of these features to co-exist with CHO; In this case, it seems necessary to consider the co-existence of UE assistance information and CHO. Coexistence of other UL reporting information for Uu and CHO may also need to be considered with the same reason above.Then for Sidelink UE Information, it does not depend on NW configuration. As long as the UE is capable of this feature and the NW broadcasts V2X-specific SIB, it will report Sidelink UE Information. Therefore, it makes sense to consider co-existence between Sidelink UE information and CHO.We should follow a way that the issue should be first concluded for the coexistence of UE Assistance information and CHO, which is a common issue, and then directly apply the solution to the co-existence of Sidelink UE information and CHO, as there seems no special handling specific for SL in this regards. |
| ZTE | Yes |  |
| vivo | Yes | We also agree that a general principle for coexistence of UAI and CHO can be considered. |
| Nokia | Yes |  |
| Intel | Yes |  |
| Apple | Yes |  |
| Sharp | Yes  |  |
| Spreadtrum | Yes |  |
| MediaTek | Yes |  |
| CATT | Yes with comment | Similar as Huawei, the sidelink UE information does not depends on NW configuration. |
| LG | Yes |  |

If co-configuration is reasonable, the next question is how to revise the trigger.

In 0101/0104/0102 (Change-1) and also 0680/0681, the proposal is that

*Proposal 2 RAN2 confirm for R16 UE configured with CHO, the reporting of UAI/SUI message to target cell includes the UAI/SUI sent to source cell 1) 1s before the reception of ConditionalReconfiguration, and 2) after the reception of ConditionalReconfiguration.*

In 1169/1182 and 0526, the proposal is that

3> if the UE has initiated the transmission of an *InDeviceCoexIndication* message during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo* or conditional reconfiguration execution:

**Q3-2: if Yes to Q3-1, which trigger should be used for the message re-transmission to target cell if CHO is configured?**

* **Option-1: message sent to source cell during 1s before the reception of ConditionalReconfiguration, plus those sent to source cell after the reception of ConditionalReconfiguration;**
* **Option-2: message sent to source cell during 1s before the conditional reconfiguration execution;**
* **Other**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comment |
| OPPO | 1 | ProponentAs clarified in 0101, our understanding is that target cell obtained the related message via HO preparation procedure which happened before CHO command delivery, instead of CHO execution. |
| Samsung | Option-1 |  |
| Ericsson | Option-1 | Case C in R2-2100680 will not be covered with option 2. If UAI is received just before CHO is configured there is not enough time for the network to take it into account in the CHO configuration. The current source configuration is only sent to the target cell when CHO is configured, it is not sent again later. If that should be done, the whole CHO configuration needs to be done again including reconfiguring the UE, which causes a lot of overhead, much more than sending UAI again. |
| Xiaomi | Option 2 | We think option 1 is a bit over specified solution. CHO could be reconfigured before CHO execution. After CHO configuration, UE may wait for more than 1s to execute CHO, due to condition not fulfilled. During this waiting time, source cell could update target cell with latest UAI/SUI and target cell could choose whether to reconfigure CHO. Option 1 may introduce unnecessary report, in the case that target cell is updated and choose not to reconfigure the CHO. If SUI/UAI was sent prior to 1s before CHO execution, there is enough timer for source cell to update target cell. |
| Huawei, HiSilicon | Option-2 | We prefer the ways of change in R2-2101169 and R2-2101182, as they can work in a simpler way. Also, Option 2 follows the logic of legacy HO. |
| ZTE | Option-1 |  |
| vivo | Option-2 | we think both options are feasible and option-2 is simpler to us. |
| Nokia | Option 3 (Option-2 may be acceptable with clarifications) | The proposal in 0526 is neither Option 1 nor Option 2: It proposes that the message can be retransmitted if it was sent to the source within 1 second before the RA at the target cell was completed (which is similar to existing behaviour for repeating UAI for other cases).Note that the reception of the CHO configuration is almost irrelevant here: The configuration can occur when UE enters a cell, which could be long before the CHO execution. That's why the UAI retransmission shuld be tied to CHO execution and not to receiving CHO configuration. |
| Intel | Option 1 |  |
| Apple | Option 2 | If target gNB can acquire the UAI/SUI in source cell during the period between receiving CHO command and performing CHO execution, we prefer Option 2, since Option 1 cause unnecessary reporting of UAI/SUI and waste UE power. The UAI/SAI only need to be re-sent if it happened within the 1s window before the CHO execution. |
| Sharp | Option 1 | Option 1 can cover all the cases in R2-2100680. |
| Spreadtrum | Option 2 | No need to re-send UAI/SUI which is sent long time before the CHO execution. |
| MediaTek | See comment | There is some complexity in tracking the timestamps for all received CHO messages and all transmitted UAI/SUI messages in relation to each other. The UE has to track each individual CHO candidate and the NW could add/release/reconfigure CHO candidates before CHO execution, which would make the design really complicated. We think a simpler approach would be that the UE simply transmits the messages to the target cell always, for the features that are supported in the target, based on the latest UE status. |
| CATT | Option-1 |  |
| Google | Option 2 |  |
| LG | Option 2 | We are also fine with blind TX to the target cell as MTK suggested for CHO case.  |

For option-1, after checking, rapporteur understand the intention is the same for the CR in 0104/0102 (change-1) and in 0680/0681, while the key difference is 0680/0681 tends to believe the following statement includes the case of CHO command reception already (this applies to SUI in NR spec, and also all messages, i.e., SUI, UAI, InDeviceCoexIndication and MBMSInterestIndication in LTE spec), so the change is only for “after CHO command reception” case

2> if *SIB12* is provided by the target PCell; and the UE initiated transmission of a *SidelinkUEInformationNR* message indicating a change of NR sidelink communication related parameters relevant in target PCell (i.e. change of *sl-RxInterestedFreqList* or *sl-TxResourceReqList*) during the last 1 second preceding reception of the *RRCReconfiguration* message including *reconfigurationWithSync* in *spCellConfig* of an MCG; or

2> if the *RRCReconfiguration* is applied due to a conditional reconfiguration execution for the PCell and if the UE transmitted a *SidelinkUEInformationNR* message since the conditional reconfiguration configuration was received:

While 0104/0102 (change-1) adopts the explicit wording to differentiate

2> if *SIB12* is provided by the target PCell; and the UE initiated transmission of a *SidelinkUEInformationNR* message indicating a change of NR sidelink communication related parameters relevant in target PCell (i.e. change of *sl-RxInterestedFreqList* or *sl-TxResourceReqList*) during the last 1 second preceding reception of the *RRCReconfiguration* message including *reconfigurationWithSync* in *spCellConfig* of an MCG if the *RRCReconfiguration* message is not applied due to a conditional reconfiguration; or

2> if *SIB12* is provided by the target PCell; and the UE transmitted a *SidelinkUEInformationNR* message indicating a change of NR sidelink communication related parameters relevant in target PCell (i.e. change of *sl-RxInterestedFreqList* or *sl-TxResourceReqList*) after or during the last 1 second preceding reception of the *ConditionalReconfiguration* of an MCG if the *RRCReconfiguration* message is applied due to a conditional reconfiguration:

**Q3-3a: If option-1 for Q3-2, which CR is preferred as baseline?**

* **Option-A: CR in 0104/0102 (change-1)**
* **Option-B: CR in 0680/0681**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comment |
| OPPO | A | Proponent |
| Samsung | Option-B |  |
| Ericsson | Option-B | Proponent. Sharp lifted this issue already two meetings ago in R2-2007718. |
| ZTE | Option-A with comments | Considering the UE may receive multiple conditional reconfiguration configuration via multiple RRCReconfiguration message, we think it’s better to clearly state that the conditionalReconfiguration includes the RRCReconfiguration message that is applied to conditional reconfiguration execution. |
| Nokia |  | Both options have the same issue: They tie to the reception of ConditionReconfiguration, which could be long before the execution. This means that UE having sent UAI 1s before the CHO configuration could resent it, even if the UAI was no longer valid. |
| Intel | Option A |  |
| Sharp  | Option B | Proponent. |
| CATT | Option B |  |

**Q3-3b: If option-2 for Q3-2, which CR is preferred as baseline?**

* **Option-A: CR in 1169/1182**
* **Option-B: CR in 0526**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comment |
| Xiaomi | Option A |  |
| Huawei, HiSilicon | A with comments | The CRs in different Options are basically with the same technical essence, having just some minor differences in writing style. We slightly prefer Option-A’s CRs. However, the details of the CR anyway need to be discussed in Ph-2. |
| vivo | Option A |  |
| Nokia | B (proponent) |  |
| Apple | Option A | We do not see much difference between the two options. We support to discuss detail wording in Phase 2. |
| Spreadtrum | Option A |  |
| Google | Option A |  |

## Measurement for V2X/POS

This is for the following Tdocs

[R2-2100974](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2100974.zip) Correction to meaqsResultServingMOList impacting EN-DC Ericsson CR Rel-16 38.331 16.3.1 2371 - F NR\_newRAT-Core, 5G\_V2X\_NRSL-Core

[R2-2100975](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100975.zip) Correction to measResultPCell impacting EN-DC Ericsson CR Rel-16 36.331 16.3.0 4557 - F NR\_newRAT-Core, 5G\_V2X\_NRSL-Core

[R2-2101535](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2101535.zip) CR on measurement object modification ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.1 2418 - F NR\_pos-Core, 5G\_V2X\_NRSL-Core

Firstly, 0974/5 raised an issue that the meaqsResultServingMOList/measResultPCell

* Should be ignored in the inter-RAT scenario (without DC being configured), where the configuration is included in the RRC container in another RAT;
* Should not be ignored in the DC scenario (NGEN-DC and NE-DC), where the configuration is also included in the RRC container in another RAT;

**Q4-1a: Do you agree with the intention of 0974/0975?**

* **Yes**
* **No**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Samsung | Yes |  |
| Qualcomm Incorporated | Yes |  |
| Ericsson | Yes | Proponent |
| Xiaomi | No | In 2.2, seems companies agreed coexistence of sidelink and MR-DC is not supported. So there should be no impact to EN-DC. |
| Huawei, HiSilicon | No (but see comments) | If the UE follows procedure text, what is in the "consequences if not approved" cannot occur, so nothing is broken.The text proposed to be changed is only a warning that the contents are irrelevant because the procedure text for SL does not require the UE to fill that field.This is a wording improvement. It could be merged to something else. |
| ZTE | Yes |  |
| vivo | Yes |  |
| Nokia | Yes | As agreements in RAN2#110 and RAN2#111 ruled out NG EN-DC, EN-DC and NR-DC the RRC container in another RAT should be ignored |
| Intel | Yes |  |
| Apple | Yes |  |
| Sharp  | Yes  |  |
| Spreadtrum | Yes |  |
| MediaTek | Yes |  |
| CATT | Yes |  |
| Google | Yes |  |

**Q4-1b: If yes to Q4-1a, do you agree with the CR in 0974/0975?**

* **Yes**
* **No**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Samsung | Yes |  |
| Qualcomm Incorporated | Yes |  |
| Ericsson | Yes | Proponent |
| ZTE | Yes |  |
| vivo | Yes |  |
| Nokia | Yes |  |
| Intel | Yes |  |
| Apple | Yes |  |
| Sharp  | Yes  |  |
| Spreadtrum | Yes |  |
| MediaTek | Yes |  |
| CATT | Yes |  |
| Google | Yes |  |

Secondly, 1535 propose to add the following IEs into the MO

3> reconfigure the entry with the value received for this *measObject*, except for the fields *cellsToAddModList*, *blackCellsToAddModList*, *whiteCellsToAddModList*, *cellsToRemoveList*, *blackCellsToRemoveList*, *whiteCellsToRemoveList*, *tx-PoolMeasToRemoveList*, *tx-PoolMeasToAddModList*, *ssb-PositionQCL-CellsToRemoveList*,and *ssb-PositionQCL-CellsToAddModList*;

**Q4-2a: Do you agree with the intention of 1535?**

* **Yes**
* **No**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Samsung | Yes |  |
| Qualcomm Incorporated | Yes |  |
| Ericsson | Yes |  |
| Xiaomi | Yes |  |
| Huawei, HiSilicon | Yes with comments | We share the intention of this CR, and think the change seem essential because it means the UE may replace the list and not keep previous ones (this is clear, unlike what consequences if not approved say), so that the configuration will be incorrect and this can seriously affect the features.However, we fail to understand what relation this change has with the POS WI. Note that the signalling in *ssb-PositionQCL-CellsToRemoveList* and *ssb-PositionQCL-CellsToAddModList* were introduced for the meassurment of NR-U, instead for POS. Therefore, if this CR is to be agreed, the impacted WI code in the cover page should be revised to 5G V2X and NR-U, w/o POS. |
| ZTE | Yes (Proponent) | Sorry to make a mistake on work item code, we will update the CR coversheet to correct it. |
| vivo | Yes |  |
| Nokia | Yes | Please observe use of non-inclusive language for some IEs e.g. *black/whiteCells.*  |
| Intel | Yes | Seems correct since there are corresponding descriptions on these exceptions. |
| Apple | Yes |  |
| Sharp  | Yes  |  |
| Spreadtrum | Yes |  |
| MediaTek | Yes |  |
| CATT | Yes |  |
| Google | Yes |  |

**Q4-2b: If yes to Q4-2a, do you agree with the CR in 1535?**

* **Yes**
* **No**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Samsung | Yes |  |
| Qualcomm Incorporated | Yes |  |
| Ericsson | Yes |  |
| Xiaomi | Yes |  |
| Huawei, HiSilicon | See comments | The coversheet needs to be updated for the impacted WI code, as commented above. In addition, further cover page update should be done as follows:**Consequences if not approved**It should say that the UE may replace the list for tx-PoolMeasToAddModList and for ssb-PositionQCL-CellsToAddModList so that there will be a mismatch between the UE and the network in the UE configuration of measureents, that can result in not getting reports and seriously affect the features**Interoperability**It is not correct: the problem exists also if only the UE or only the network implements the changes. |
| ZTE | Yes (Proponent) | Thanks for comments from Huawei, we will update the CR coversheet as suggested. |
| vivo | Yes |  |
| Nokia | Yes |  |
| Intel | Yes |  |
| Apple | Yes |  |
| Sharp  | Yes  |  |
| Spreadtrum | Yes |  |
| MediaTek | Yes |  |
| CATT | Yes |  |
| Google | Yes |  |

## Other

This is for the following Tdoc

[R2-2101546](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2101546.zip) Clarification on ULInformationTransferMRDC message ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.1 2419 - F NR\_Mob\_enh-Core, LTE\_NR\_DC\_CA\_enh-Core

1546 is to clarify the initiation condition for UL information transfer MRDC by the two changes below, i.e.,

A UE in RRC\_CONNECTED initiates the UL information transfer for MR-DC procedure whenever there is a need to transfer MR-DC dedicated information. I.e. the procedure is not used during an RRC connection reconfiguration involving NR or E-UTRA connection reconfiguration, in which case the MR DC information is piggybacked to the *RRCReconfigurationComplete* message, except in the case the UE executes a CPC.

And

The *ULInformationTransferMRDC* message is used for the uplink transfer of MR-DC dedicated information (e.g. for transferring the NR or E-UTRA RRC *MeasurementReport* message, the *FailureInformation* message, the *UEAssistanceInformation* message, the *RRCReconfigurationComplete* message or the NR or E-UTRA RRC *MCGFailureInformation* message).

**Q5-1: Do you agree with the intention of 1546?**

* **Yes**
* **No**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Samsung | Yes |  |
| Qualcomm Incorporated | Yes |  |
| Ericsson | Yes |  |
| Xiaomi | No | In the existing description, there is already a restriction for not using the UL information transfer procedure, which is ‘in which case the MR DC information is piggybacked to the *RRCReconfigurationComplete* message’. In the case of CPC execution, there is no *RRCReconfigurationComplete* message to be piggybacked, so existing spec already excludes the CPC execution case. |
| Huawei, HiSilicon | No (but see comments) | The UE procedure text is correct and these are uplink messages, so there cannot be any functional problem.Besides, the field descriptions of ul-DCCH-MessageNR/EUTRA do not capture certain messages that can also be included according to procedure text.If a change is to be made as a wording improvement (i.e. not a standalone CR), we suggest removing the lists of messages and the field descriptions because they are redundant with procedure text and increase maintenance work for no gain. |
| ZTE | Yes (Proponent) | Regarding Xiaomi’s comment, in case of CPC execution, the UE shall transmit ULInformationTransferMRDC message to the MN including an embedded RRCReconfigurationComplete message to the SN, if SRB3 is not configured. That’s why we think the CPC case should be excluded.Regarding Huawei’s comment, although the change has no impact on the function, we think it’s necessary to correctly describe the related information in the spec to avoid some ambiguities. |
| vivo | Yes  | We understand this as a correct clarification considering UE shall use the UL information transfer for MR-DC procedure to transmit *ULInformationTransferMRDC* in CPC. |
| Nokia | Yes but | This is only relevant for the case when SRB3 is not used, but this is not mentioned in the changes or made simpler e.g. like this:I.e. the procedure is not used during an RRC connection reconfiguration involving NR or E-UTRA connection reconfiguration, in which case the MR DC information is piggybacked to the *RRCReconfigurationComplete* message, except in the case the UE executes a CPC without SRB3. |
| Intel | No | We do not see the need for second change, i.e. why NR/LTE should be added. For the first change, it will cause more confusion since “except in the case the UE executes a CPC”, looks like normal configuration can be used if CPC is executed.  |
| Apple | Yes |  |
| Sharp  | Yes  |  |
| Spreadtrum | Yes |  |
| MediaTek | Yes |  |
| CATT | Partially yes | For change 1, we think the change can make it clearer;change 2 is unnecessary. |
| Google | Yes |  |
| LG | Partially yes | Agree with 1st change only. 2nd change is not needed.  |

**Q5-2: If yes for Q5-1, do you agree with the CR of 1546?**

* **Yes**
* **No**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Samsung  | Yes | This is merely editorial clarifications partially which can be included rapporteur CR. |
| Qualcomm Incorporated | Yes |  |
| Ericsson | Yes but | First, we agree that this can be included in the Rapporteur’s CR. Second, it is already known that this message will not be used for inter-SN CPC (as the MN will build the conditional reconfiguration in that case), so the added sentence could say “except for the case the UE executes an intra-SN CPC” instead |
| ZTE | Yes (Proponent) | Regarding Ericsson’s comment, it seems fine to use “CPC” to refer to intra-SN CPC in Rel-16 spec (as the term used in other places within the current spec) since only intra-SN CPC is supported in Rel-16. We can distinguish the intra-SN CPC and inter-SN CPC in Rel-17 spec, if needed. |
| vivo | Yes | No strong view on this, we can accept the current text and the change to ‘intra-SN’ is also reasonable. |
| Apple | Yes |  |
| Sharp  | Yes  |  |
| Spreadtrum | Yes |  |
| MediaTek | Yes |  |
| CATT | Partially yes | For change 1, we think the change can make it clearer, and agree with Ericsson suggestion, due to it is only used for the case of intra-SN CPC without MN involvement. Agree to be included rapporteur CR.change 2 is not necessary. |
| Google | Yes |  |
| LG | Partially yes | Agree with 1st change only. 2nd change is not needed.  |

1. xxx.

# Conclusion

We have the following proposals

[Proposal 1 xxx.](#_Toc62216175)

# Reference

1. R2-2100973 Coexistance of DAPS and Sidelink Ericsson discussion Rel-16 NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core
2. R2-2100101 Co-configuration of V2X and other features OPPO discussion Rel-16 NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core
3. R2-2100149 DAPS HO and NR Sidelink Communication Samsung Electronics Co., Ltd discussion Rel-16 5G\_V2X\_NRSL-Core
4. R2-2101702 Clarification on DAPS HO configuration vivo CR Rel-16 38.331 16.3.1 2430 - F 5G\_V2X\_NRSL-Core
5. R2-2100102 CR on co-configuration of NR-V2X and other features OPPO CR Rel-16 38.331 16.3.1 2301 - F NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core
6. R2-2100103 CR on Co-configuration of NR-V2X and MR-DC OPPO CR Rel-16 37.340 16.4.0 0245 - F 5G\_V2X\_NRSL-Core
7. R2-2100104 CR on co-configuration of CHO and UAI and SUI report OPPO CR Rel-16 36.331 16.3.0 4544 - F 5G\_V2X\_NRSL-Core, NR\_Mob\_enh-Core
8. R2-2100974 Correction to meaqsResultServingMOList impacting EN-DC Ericsson CR Rel-16 38.331 16.3.1 2371 - F NR\_newRAT-Core, 5G\_V2X\_NRSL-Core
9. R2-2100975 Correction to measResultPCell impacting EN-DC Ericsson CR Rel-16 36.331 16.3.0 4557 - F NR\_newRAT-Core, 5G\_V2X\_NRSL-Core
10. R2-2101535 CR on measurement object modification ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.1 2418 - F NR\_pos-Core, 5G\_V2X\_NRSL-Core
11. R2-2101169 Retransmission of UE information after CHO Google Inc. CR Rel-16 36.331 16.3.0 4569 - F MBMS\_LTE\_SC-Core, SPIA\_IDC\_LTE-Core, LTE\_feMob-Core, 5G\_V2X\_NRSL-Core, LTE\_eDDA-Core
12. R2-2101182 Retransmission of UE information after CHO Google Inc. CR Rel-16 38.331 16.3.1 2389 - F NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, NR\_UE\_pow\_sav-Core
13. R2-2101546 Clarification on ULInformationTransferMRDC message ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.1 2419 - F NR\_Mob\_enh-Core, LTE\_NR\_DC\_CA\_enh-Core
14. R2-2100680 UE information transmission in NR CHO case SHARP Corporation, Ericsson discussion NR\_Mob\_enh-Core R2-2010253
15. R2-2100681 UE information transmission in LTE CHO case SHARP Corporation, Ericsson discussion Rel-16 NR\_Mob\_enh-Core R2-2010251
16. R2-2100526 Transmitting SL UE Information after CHO Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.3.1 2331 - F NR\_Mob\_enh-Core