3GPP TSG-RAN WG2 #112e R2-20xxxxx

Electronic meeting, November 2nd – 13th 2020

Agenda Item: 6.4.2

Source: Ericsson

Title: Summary of [AT112-e][710][V2X] Left issue on UE capability

Document for: Discussion, Decision

# 1 Introduction

This document is to kick off the following email discussion:

* [AT112-e][710][V2X] Left issue on UE capability (Ericsson)

Discuss proposals in R2-2009707, R2-2009708, R2-2009716, R2-2009717, R2-2009719, R2-2009403, and R2-2010443 and prepare the endorsable CR in R2-2010941 (discussion summary in R2-2010940 if needed). CR will be endorsed by email. Deadline is 12:00pm 11/10/2020 (UTC).

**Deadline Phase 1:** Collect companies’ views and formulate proposals, by Friday November 6th 12:00 UTC

**Deadline Phase 2:** Further review proposals and related CRs, by Monday November 9th 1800 UTC

# 2 Contact Information

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# 3 Discussion

## 3.1 Correction on UECapabilityEnquirySidelink

R2-2009707 Correction on UECapabilityEnquirySidelink (Alt.2) Ericsson CR Rel-16 38.331 16.2.0 2112 - F 5G\_V2X\_NRSL-Core

R2-2009708 Correction on UECapabilityEnquirySidelink (Alt.1) Ericsson CR Rel-16 38.331 16.2.0 2113 - F 5G\_V2X\_NRSL-Core

1. According to the ASN.1 for the UECapabilityEnquirySidelink message, the field that is used to enquiry sidelink capabilities from the peer UE is OPTIONAL. This mean that the initiating UE it may send the enquiry message without really requesting any capability or to just simply inform the peer UE of the initiating UE capabilities.

This is of course not the intended behaviour since the UE should always include the field frequencyBandListFilterSidelink-r16 when sending the sidelink enquiry capability message.

1. Further, the IE description of FreqBandList need also to address the case of NR sidelink communication as this IE is also used for this purpose.
2. In addition to this, it is also not clear how the UE should prioritize the band combinations, in case not all of them can be included in the capability message due to message or list size.

According to this, companies are requested provide their feedback on whether the issue is valid and, if yes, which of the proposed option should be pursued.

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| Company | Agree with the issue? | Alt1 or Alt2? | Comments |
| OPPO | Yes | 2 | For 1 (Alt2) and 3 above, it is OK for us by assuming it is merely to mimic the NOTE for Uu interface in 331, i.e.,  NOTE 1: Capability enquiry without *frequencyBandListFilter* is not supported.  While Alt1 as NBC change is not acceptable.  NOTE 3: If the UE cannot include all feature sets and feature set combinations due to message size or list size constraints, it is up to UE implementation which feature sets and feature set combinations it prioritizes.  For 2, OK for us as editorial clarification. |
| MediaTek | Yes | 2 | Alt1 is out of the question as it’s NBC. Alt2 looks OK. |
| Ericsson | Yes | 2 | Even if we proposed two alternatives, we also think that Alt2 is more reasonable. |
| CATT | Yes | 2 | Since Alt1 is NBC change, we perfer Alt2. |
| ZTE | Yes | 2 | Since a Note “NOTE: The initiating UE is not allowed to send the *UECapabilityEnquirySidelink* message without including the field *frequencyBandListFilterSidelink.*” is added in section 5.8.9.2.3, “The UE always provides this field.” can be removed in the field description. |
| Samsung | Yes | 2 | We prefer Alt 2 |
| Huawei, HiSilicon | Yes | Alt2 | Alt1 is a NBC change, and thus cannot be accepted at the current stage. |
| Intel | Yes | 2 |  |

## 3.2 Clarification on field description for supportedBandCombinationListSidelinkEUTRA-NR

R2-2009716 Clarificationon on field description for supportedBandCombinationListSidelinkEUTRA-NR Ericsson CR Rel-16 38.331 16.2.0 2120 - F 5G\_V2X\_NRSL-Core

R2-2009719 Clarification on field description for supportedBandCombinationListSidelinkEUTRA-NR Ericsson CR Rel-16 38.306 16.2.0 0434 - F 5G\_V2X\_NRSL-Core

In the RAN2#109bis-e meeting, the following agreements have been taken in the context of sidelink UE capabilities:

Agreements

1: For LTE-Uu controlling NR-PC5, define the NR PC5 band combination in UE-EUTRA-Capability.

2: For NR-Uu controlling LTE-PC5, define the NR PC5 band combination in UE-NR-Capability.

According to this, the field supportedBandCombinationListSidelinkEUTRA-NR has been introduced in order to report the NR and E-UTRA band conbination that the UE support for NR sidelink communication and V2X communication.

However, the handling of this new paramernter is was absent and it is, indeed, unclear how and when the UE should include this new field when the capability transfer procedure is triggered by the network.

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| Company | Agree with the CRs (Y/N)? | Comments |
| OPPO | See comment | It is fine to add field description into 331, and copy related text into 306.  But the text of „*This field includes only band combinations filtered in accordance with the capability enquiry provided by the NW*“ is wrong, RAN2 has not ever agreed to use the band filter in Uu capability enquiry message to restrict the reported PC5 band, since LTE-V2X. |
| MediaTek | Almost | Same comment as OPPO. |
| Ericsson | Yes with comment | OPPO suggesting is in principle fine, but we believe that if the initiating UE has already exchanged the capability with the network, when asking the capability to the peer what is asked should be aligned with what has been already provided to the network.  Should it work differently? Whatever decision we will make, it would be good to clarify this aspect in the specification. |
| CATT | See comment | Agree with OPPO |
| ZTE | See comment | R2-2009716 seems fine. Since the handling of this parameter is described in the filed description in R2-2009716, it is not necessary to repeat in R2-2009719. |
| Samsung | See comment | Agree with OPPO |
| Huawei, HiSilicon | No with comments | The correction is needed, but not right. The corresponding agreement is: “Merge the sidelink BC lists in UE-NR-Capability, i.e., pure LTE sidelink BC list, pure NR sidelink BC list and mixed LTE-NR sidelink BC list, into one“. So "pure LTE sidelink BC list" is missing. |
| Intel | See comment | Agree with Ericsson that we should clarify the “filtration wrt capability enquiry by the NW” aspect before adding that particular sentence in the field description. The rest of the addition is ok |

## 3.3 Correction on setting frequencyBandListFilterSidelink over PC5

R2-2009717 Correction on setting frequencyBandListFilterSidelink over PC5 Ericsson CR Rel-16 38.331 16.2.0 2121 - F 5G\_V2X\_NRSL-Core

Over PC5, the field frequencyBandListFilterSidelink is exchanged between two sidelink UEs when the capability transfer procedure is triggered. However, the filter should be aligned to what has been requested already by the network in the UECapabilityEnquiry message (if the UE that triggered the sidelink capability procedure already exchanged its capabilities with the network) in order to not cause any misalignment.

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| Company | Agree with the CRs (Y/N)? | Comments |
| OPPO | No | RAN2 has never agreed on something like this. |
| MediaTek | No | Agree with OPPO—there is no agreement to do this. We don’t understand the „misalignment“ that is claimed in the coversheet. |
| Ericsson | Yes | We believe that if the initiating UE has already exchanged the capability with the network, when asking the capability to the peer what is asked should be aligned with what has been already provided to the network.  Should it work differently? Whatever decision we will make, it would be good to clarify this aspect in the specification. |
| CATT | No | We think whether to align between *frequencyBandListFilterSidelink* and *UECapabilityEnquiry* is left to Tx UE implementation. Thus, there is no need to clarify anything. |
| ZTE | No | We are not sure why the filter in sidelink should be aligned with the network request. UE follows network request to report its own capability in UECapability message and reports peer UE’s capability obtained over PC5 in SUI message. On the other hand, this is an UE implementation issue, no spec impacts. |
| Samsung | No | We have same view that RAN2 has no agreement on the alignment. |
| Huawei, HiSilicon | No with comments | This correction is needed in case the UE “adopts SL configurations from the network“, NOT only “in coverage“. The reason is that when out-of-coverage for sidelink, the UE may perform NR sidelink communication using inter-carrier NR sidelink configurations from the network. |
| Intel | No | Agree with ZTE |

## 3.5 Correction on the definition of RLC-ParamentersSidelink

R2-2009403 Correction on the definition of RLC-ParametersSidelink-r16 Huawei, HiSilicon CR Rel-16 38.331 16.2.0 2068 - F 5G\_V2X\_NRSL-Core

In the current TS 38.331, the same IE RLC-ParametersSidelink-r16 is defined in two different places, i.e. within both IE SidelinkParameters (for Uu RRC) and UECapabilityInformationSidelink (for PC5 RRC). However, such a duplicated definition may not follow the convention of RRC Spec, where the same IE should only be defined once, in order to avoid occurrence of different definitions of the same IE which can further lead to the confusion on which one should actually be applied. Also, such duplicated definition results in extra burden of ensuring any future extension for the same IE to be made in every place it appears, as otherwise the inconsistent definitions for the same IE will occur. Considering that RLC-ParametersSidelink-r16 is future extensible, such duplicated definition for this IE should be avoided from the very first release it is introduced.

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| Company | Agree with the CRs (Y/N)? | Comments |
| OPPO | See comment | The current change is fine by assuming it is BC change.  On the other hand, it is doubt that „*Considering that RLC-ParametersSidelink-r16 is future extensible, such duplicated definition for this IE should be avoided from the very first release it is introduced.*“, since the main reason to define the sidelink capability carried by Uu-RRC and PC5-RRC is they may have different content.. |
| MediaTek | Yes | We tend to think this was a mistake and the IE should have been imported in the first place. In our understanding it is a BC change since the actual definition of the IE (and thus the bits on the line) will not change. |
| Ericsson | No | Even if this change looks cosmetic (it is indeed BC) is does not bring any benefits since it make the specification less clear. Since current ASN.1 is correct and is not broken, we prefer to not have any change. |
| CATT | See comment | We don’t have strong view but perfer to keep the current ASN.1, since the current text is correct and has benefit if Uu-RRC and PC5-RRC have different content. |
| ZTE | Yes | We are fine with the correction. |
| Samsung | No | We prefer to keep the current format. |
| Huawei, HiSilicon | Yes | The problem is that, what if the same extension is made for both Uu and SL for this IE in future. Shouldn’t we do twice extensions respectively for Uu and SL, with the risk that we do one but miss the other? If we can avoid such missing, why not?  On the other hand, we don’t understand companies’ argument that to have exactly the same IE defined in two places is necessary for the parameter differentiation of Uu and of SL. If this holds, shouldn’t every IE with same functionality be defined separately for Uu and SL twice in different places, making the IMPORT have no sense at all? |
| Intel | Yes | As MediaTek mentioned, this does seem like a mistake and there is no BC issue to change it, so we support this change |

## 3.6 Correction on sidelink capability transfer procedure

R2-2010443 Correction on sidelink capability transfer procedure Huawei, HiSilicon CR Rel-16 38.331 16.2.0 2224 - F 5G\_V2X\_NRSL

In TS 38.331, the PC5 RRC procedure for a UE is specified from the UE’s own perspective, i.e., for a UE, what if the UE initiates the transmission of a PC5 RRC message, what if the UE receives a PC5 RRC message. Therefore, unlike the Specs in other WGs (e.g. SA2/SA3), there should not be such role distinction of “initiating UE” for NR sidelink unicast as now specified in the “Sidelink UE capability transfer” procedure. Such termonologies, may, on the contrary, lead to potential ambiguity and misleading on whether the “initiating UE” mentioned by the RRC Spec refer to exactly the same “initiating UE” as specified in SA2/SA3 specifications (e.g. TS 33.536).

Therefore, it is better to remove such descriptions of “initiating UE” in the “Sidelink UE capability transfer” procedure.

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| Company | Agree with the CRs (Y/N)? | Comments |
| OPPO | No | Considering we agreed to use a enquiry-response procedure for capability, our understanding is that within a unicast UE pair, there would be only one UE as the one who send out the enquiry message, and the other UE as the one who send out the response message. Maybe opposite to this proposal, it is helpful for RAN2 to clarify which UE would be the one who send out the enquiry message, e.g., by align with the initiating UE definition in RAN2 and CT1. |
| MediaTek | No | We don’t think there’s a real problem with ambiguity here. The „initiating UE“ is the UE that initiates the procedure; this seems in line with how the phrase is used in e.g. 33.536. |
| Ericsson | No |  |
| CATT | No | Same view as OPPO and MediaTek. |
| ZTE | Yes | Fine with the correction. |
| Samsung | No | Agree with OPPO and MediaTek |
| Huawei, HiSilicon | Yes | We just don’t want to introduce unnecessary new/creative concept, but if majority thinks there is no problem, we are fine to change nothing. |
| Intel | Yes | We have no strong view, but the change seems simple enough to support |

# 4 Conclusion

According to the previous sections the following proposals are made: