**3GPP TSG-RAN WG1 Meeting #102-e R1-200xxxx**

**e-Meeting, 17 – 28 August 2020**

**Title:** [draft] Reply LS on UE capability

**Response to:**

**Release:** Rel-16

**Work Item:** 5G\_V2X\_NRSL

**Source:** OPPO [RAN1]

**To:** RAN2

**Cc:** RAN4

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**Attachments:**

**1. Overall Description:**

RAN1 thank RAN2’s LS in R2-2008346 and would like to provide our answers to the following questions.

**Q1**: In the received latest version of RAN1 feature list, there is a following NOTE referring to an undefined table “Table 5.2E-1” in 38.101-1. RAN1 is respectfully asked to provide feedback on how it should be corrected (e.g., to “Table 5.2-1” or “Table 5.2E.1-1”).

Note: configuration by NR Uu is not required to be supported in a band indicated with only the PC5 interface in 38.101-1 Table 5.2E-1

**Answer to Q1**: According to the latest version of TS 38.101-1 v16.4.0, the correct table number should be “Table 5.2E.1-1”. We will provide updates of this in the next version of RAN1 UE features list for NR and LTE.

**Q2**: In the received latest version of RAN1 feature list, there is a component defined in FG 15-2 (for NR) / 5-2 (for LTE)

Up to 8 configured grants can be configured for a UE.

Considering RAN2 has agreed in RAN2#109bis that

8: For SL capability report on Uu-RRC, introduce MAC parameters: a) LCP restriction, b) Logical channel SR-delay timer, c) Multiple CGs.

RAN2 understands in FG 15-2 (for NR) / 5-2 (for LTE), the “8 configured grants” is for maximum value that the UE supports, while UE reports the specific number of supported configured grants via the agreed capability at RAN2 as follows. RAN1 is respectfully asked to provide feedback if any concern.

| ***multipleConfiguredGrantsSidelink-r16***Indicates whether UE supports 8 sidelink configured grant configurations (including both Type 1 and Type 2) in a resource pool. If absent, for each resource pool, the UE only supports one sidelink configured grant configuration. | UE | No | No | No |
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**Answer to Q2:** RAN1 confirms RAN2’s understanding.

**Q3:** In the received latest version of RAN1 feature list, there is a component defined in FG 15-16 (for NR) / 5-11 (for LTE), on simultaneous *transmission* of uplink and sidelink, RAN1 is respectfully asked to provide feedback on whether and how for network to know whether UE support simultaneous *reception* of downlink and sidelink, on the preferred way between the two following solutions:

Alt-1: a separate capability for simultaneous reception of downlink and sidelink is defined as in LTE V2X;

Alt-2: simultaneous reception is automatically supported if the same Uu-BC/PC5-BC is reported to support simultaneous transmission of uplink and sidelink;

According to TS 36.306, the following is defined for simultaneous reception of downlink and sidelink in LTE V2X.

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| 4.3.5.27 *v2x-SupportedTxBandCombListPerBC-r14, v2x-SupportedRxBandCombListPerBC-r14*This field indicates, for a particular band combination of EUTRA, the supported band combination list among *v2x-SupportedTxBandCombinationList* or *v2x-SupportedRxBandCombinationList* on which the UE supports simultaneous transmission and reception of EUTRA and V2X sidelink communication respectively. |

Company are invited to provide preference and views on which alternative to take.

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| **Company** | **Preference** | **Comments** |
| OPPO | Alt-1 | It is not certain for us that it can be assumed that a UE automatically support simultaneous reception in the same Uu/PC5 band combination(s) for simultaneous uplink and sidelink transmission as in Alt-2. Since there is not much time to evaluate and discuss this topic, Alt-1 is a safer option at this stage. Also, since Alt-1 is one of the preferred solutions mentioned, in our understanding there would be no concern to introduce a new FG 15-24 (for NR) and FG 15-18 (for LTE) for simultaneous reception of downlink and sidelink in RAN2. The new FG could look something like in the following for NR and LTE, respectively. |
| Qualcomm | Alt-1 | Supporting simultaneous reception is different from simultaneous transmission and requires differences in implementation. Therefore, it’s necessary to have a separate FG in our view as was done in LTE.We support the proposed FG 15-24 below with the change to per feature set instead of per band combination. |
| Ericsson | Alt-1 | We are supportive of a capability similar to the defined in LTE-V2X. |

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| 15-24 | Simultaneous reception of downlink and sidelink | UE supports simultaneous reception of NR downlink and NR sidelink ~~(in different bands)~~ in a band combination for which the UE indicated simultaneous sidelink and downlink support in a band combination. | 15-1 | Yes | No |  | [Per feature set] | N.A. | N.A. | N.A. |  | Optional with capability signalling. |

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| 5-18 | Simultaneous reception of downlink and sidelink | UE supports simultaneous reception of LTE downlink and NR sidelink ~~(in different bands)~~ in a band combination for which the UE indicated simultaneous sidelink and downlink support in a band combination. | 5-1 | Yes | N/A |  | [Per feature set] | N.A. | N.A. |  |  | Optional with capability signalling. |

**Answer to Q3**: RAN1 has the opinion that a separate capability for simultaneous reception of downlink and sidelink should be defined (Alt-1). RAN1 will add in the NR and LTE features list separately a new FG for this.

**Q4:** In the received latest version of RAN1 feature list, there is a NOTE defined for 15-2 (for NR) / 5-2 (for LTE) and 15-3 (for NR) / 5-3 (for LTE), there is a NOTE:

Note: the UE supports up max(B, C) as the total number of sidelink HARQ processes across both Mode 1 and Mode 2

Since RAN2 has agreed in RAN2#109-E that no simultaneous mode-1 and mode-2,

10: Simultaneous operation of NR Sidelink Mode 1 and 2 is not supported for a UE performing transmission of NR sidelink communication.

the NOTE above is not to be captured. RAN1 is respectfully asked to provide feedback if any concern.

**Answer to Q4:** RAN1 does not have any concern and RAN1 will remove this this NOTE from FG 15-2/-3 and FG5-2/-3 in the NR and LTE feature list, respectively.

**2. Actions:**

**To RAN2 group**

RAN1 respectfully requests RAN2 to take the above responses into account in their future work.

**3. Date of Next TSG-RAN1 Meetings:**

RAN1#103-e 26 October - 13 November 2020 E-Meeting

RAN1#104 1-5 March 2021 Athens