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

**August 17th – 28th, 2020**

**Agenda item:** 7.2.4.4

**Source:** Moderator (Qualcomm)

**Title:** Email Discussion for In-device Coexistence Aspects in NR-V2X

**Document for:** Discussion and Decision

# Introduction

This document provides a summary of the email discussion [102-e-NR- 5G\_V2X\_NRSL-InDevice-Coex-01]:

[102-e-NR- 5G\_V2X\_NRSL-InDevice-Coex-01] Email discussion/approval regarding

* processing time for prioritization of LTE sidelink and NR sidelink (Issue #1 in the summary)

by 8/20, followed by potential TPs, also including

* issue #2 (to start after 8/20) regarding capturing the agreement on prioritization of multiple overlapping transmissions between NR sidelink and LTE sidelink

by 8/25 – Gabi (Qualcomm)

# Discussion on Issue #1: Prioritization Timeline

The first issue to discuss is the value of UE processing time when performing prioritization between LTE sidelink and NR sidelink. TS 38.213 discusses the prioritization procedure in subclause 16.2.4.1 and uses the variable *T* to reference the processing time [1]:

16.2.4.1 Simultaneous NR and E-UTRA transmission/reception

If a UE

- would transmit a first channel/signal using E-UTRA radio access and a second channel/signal using NR radio access, and

- a transmission of the first channel/signal would overlap in time with a transmission of the second channel/signal, and

- the priorities of the two channels/signals are known to the UE $T$ msec prior to the start of the earlier of the two transmissions

the UE transmits only the channel/signal with the higher priority as determined by the SCI formats scheduling the transmissions or, in case of a S-SS/PSBCH block or a sidelink synchronization signal using E-UTRA radio access, as indicated by higher layers or, in case of PSFCH, equal to the priority of the corresponding PSSCH.

If a UE

- would respectively transmit or receive a first channel/signal using E-UTRA radio access and receive or transmit a second channel/signal using NR radio access, and

- a transmission or reception of the first channel/signal would respectively overlap in time with a reception or transmission of the second channel/signal, and

- the priorities of the two channels/signals are known to the UE $T$ msec prior to the start of the earlier transmission or reception

the UE transmits or receives only the channel/signal with the higher priority as determined by the SCI formats scheduling the transmissions or, in case of a S-SS/PSBCH block or a sidelink synchronization signal using E-UTRA radio access, as indicated by higher layers or, in case of PSFCH, equal to the priority of the corresponding PSSCH

Some contributions discussed this issue and proposed solutions on how to complete specification regarding the value *T* [2][3][4][5].

## Initial Discussion

Potential values for UE processing time based on company submissions are:

* Alt 1: $T=T\_{proc,1}^{SL}$, where $T\_{proc,1}^{SL}$ is 2ms +1 slot, i.e. {3, 5, 9, 17} slots for {15, 30, 60, 120} kHz sub-carrier spacing, respectively. This is based on the maximum $T\_{1}$ value required to prepare an NR sidelink transmission.
* Alt 2: $T=4$ ms, based on the maximum $T\_{1}$ value required to prepare an LTE sidelink transmission.
* Alt 3: $T=20$ ms based on the maximum inter-module communication delay.
* Alt 4: Leave $T$ up to UE implementation.
* Alt 5: Others.

Table 1 Company views on values for T

|  |  |  |
| --- | --- | --- |
| Company | Option | Comments |
| OPPO | Alt 4 | In NR V2X, $T\_{3}$ or $T\_{proc,1}^{SL}$ is the preparation time for encoding PSCCH / PSSCH and 4ms in LTE without considering the inter-module communication delay. But for the case of cross-RAT prioritization, the inter-module delay can vary from 0 to up to 20ms depending on UE capability reporting of a timing delay. Therefore, it would be difficult to impose a single timing requirement $T$ ms prior to the start of the earlier transmission or reception. Furthermore, the issue of $T$ ms in cross-RAT prioritization is related to in-device coexistence and therefore does not impact to other UEs or network scheduling. Also, in many instances it is agreed when the priorities of both LTE and NR sidelink transmissions are not known to both RATs prior to time of transmission, it is then up to UE implementation to handle the overlap.So based on the above, it is not critical to define a value for $T$ ms in the spec and it can be leave it to UE implementation. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# Discussion on Issue 2

[This discussion will commence after August 20th]

# References

1. 3GPP TS 38.213 V16.2.0, NR, Physical Layer Procedures for Control (Release 16).
2. R1-2005744, “Discussion on essential corrections in in-device coexistence,” LG Electronics.
3. R1-2006438, “Correction for in-device coexistence in SL,” Ericsson.
4. R1-2006771, “In-device Coexistence between LTE and NR sidelink,” Qualcomm Incorporated.
5. R1-2006869, “Discussion on processing time restriction for in-device coexistence,” ASUSTeK.