**3GPP TSG-RAN** **WG2 Meeting #112-e R2-200xxxx**

**Electronic, 2nd – 13rd November 2020**

**Agenda Item: 5.4.3**

**Source: Huawei, HiSilicon**

**Title: Summary of offline 026 Rel-16 miscellaneous RAN4 issues**

**Document for: Discussion and decision**

# Introduction

This document summarizes the following offline discussion for Rel-16 R4 related issues.

* [AT112-e][026][R4 NR16] Miscellaneous (Huawei)

 Treat R2-2008747, R2-2010598, R2-2010599, R2-2010358, R2-2008741, R2-2009346, R2-2010226, R2-2009245, R2-2009544

 Intended outcome: Determine agreeable parts. For agreeable parts, agreed CRs.

 Deadline: Intermediate deadline(s) by Rapporteur, Final: Discussion stop at Wed Nov 11, 1200 UTC, If feasible, NR UE caps 38306 38331 deadline Nov 6.

# Contact from companies

|  |  |
| --- | --- |
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| Qualcomm Incorporated | Masato Kitazoe <mkitazoe [at] qti.qualcomm.com> |
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# Discussion

## Part 1 discussion: to achieve agreeable principle

Part 1 discussion is focusing on reaching conclusion whether the proposals/CRs can be agreed in principle, and Part 2 discussion would then focus on detailed changes for those agreeable contributions.

### 3.1.1 CGI reading with autonomous gaps

The corresponding LS and CRs are in [1]-[4]. The intention is to capture RAN4’s agreement accordingly.

The CRs in [2][3][4] have common modification to apply 5 seconds to T321 for the case of CGI reading configured by NR towards FR2 cells with autonomous gaps.

The CR in [4] additionally aligned LTE specification to apply the value of 150ms to T321 for the case of CGI reading configured by NR towards EUTRAN cells with autonomous gaps

**Q1-1 Do companies agree to apply 5 seconds to T321 for the case of CGI reading configured by NR towards FR2 cells with autonomous gaps?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes |  |
| MediaTek | Yes |  |
| Samsung | Yes |  |
| vivo | Yes |  |
| Huawei, HiSilicon | Yes |  |
| ZTE | Yes | And both 38.331 and 36.331 need update. |
| Nokia | Yes |  |
| Apple | Yes |  |
| CATT | Yes |  |
| Ericsson | Yes | As per the RAN4 LS. |
| Intel | Yes |  |
| OPPO | Yes  |  |

**Q1-2 Do companies agree to apply 150 ms to T321 for the case of CGI reading configured by NR towards EUTRAN cells with autonomous gaps?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | No | It is our understanding that RAN4 hasn’t concluded on T321 value. Only CGI identification time is agreed, same as LTE, 150ms. T321 value however needs to take into account other processes that the UE undergoes, e.g. inter-RAT switch back and forth. |
| MediaTek | Yes, but | We are also fine to wait RAN4 to provide the value. |
| Samsung | Yes, but | We are also fine to wait RAN4 to provide the value. |
| vivo |  | We are also fine to wait for further RAN4 inputs. |
| Huawei, HiSilicon | Yes | We understand RAN4 would not have discussion anymore as it is straight forward to reuse LTE value. If companies feel safe to double check with RAN4, we think it would be good to send an LS confirming with RAN4. |
| ZTE | No | Although it is probably ok to reuse LTE value, we are afraid RAN2 cannot make such decision by our own. At least we(ZTE) are planning to bring contribution to next RAN4 meeting to clarify this, so we can wait for further inputs from RAN4.  |
| Nokia | No | No conclusion in RAN4 yet |
| Apple |  | We are also fine to wait RAN4 to provide the value. |
| CATT | No | Wait for input from R4 |
| Ericsson | Yes |  |
| Intel | No | Wait for input from RAN4.  |
| OPPO | No | Wait for input from RAN4.  |

### 3.1.2 Support of HPUE

The corresponding LS and CRs are in [5]-[7]. The main intention is to support capabilities for high power UE.

**Q2-1 Do companies agree with the major principle in [6][7]**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | No | We understand this has been taken care of in the email discussion 900 before the meeting. |
| MediaTek |  | Since this has been discussed in general capability CR, we don’t have to discuss this here. |
| Samsung |  | Agree with QC. |
| vivo |  | Agree with Qualcomm. |
| Huawei, HiSilicon |  | There was some misunderstanding on what was captured in the MEGA CR and now we confirm it was already there and CRs are not needed. |
| Nokia |  | Already in the main capability CR |
| Apple |  | Agree with QC |
| CATT |  | Agree with QC |
| Ericsson |  | Agree with QC |
| Intel |  | maxUplinkDutyCycle-interBandENDC-FDD-TDD-PC2-r16 is included in the current mega CR.  |
| OPPO  |  | Follow majority view. |

### 3.1.3 UL Tx switching clarification

The CR is in [8], and the intention is to clarify the condition of supporting UL Tx switching for CA case.

**Q3 Do companies agree with the major principle of the CR?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes | This is acceptable compromise. |
| MediaTek | Yes |  |
| Samsung | Yes |  |
| vivo | Yes |  |
| Huawei, HiSilicon | No | In RAN1 feature list, the prerequisites of UL Tx switching in UL CA case and EN-DC case are clearly indicated as 6-6 normal UL CA and EN-DC respectively. This was explicitly discussed and concluded in RAN1. We think RAN2 should not revert RAN1's conclusion. In addition, we understand the design of UL Tx switching in UL CA and EN-DC case in RAN4 and RAN1 is based on legacy UL CA and EN-DC framework, e.g. power control, regardless of option1 or option2, therefore if RAN2 makes this change, this is not consistent with RAN4 conclusion as well. So we do not agree with the proposal. |
| ZTE | Yes | ProponentAs we know, when RAN1 discussing the prerequisite, companies did not touch such detail differentiation of option1/option2. So there is no explicit conclusion saying it applies to both option1/option2 cases. Technically, for “option1 only” capable UEs, they do not support 1T+1T UL transmission in UL Tx switching, then asking them to mandate support 1T+1T UL CA does not make much sense. |

|  |  |  |
| --- | --- | --- |
| Nokia | No (updated) | We have same view with Huawei. We shall not revert RAN1 decision in RAN2.It’s fine to add the prerequisite text, but making it contingent on dualUL support is NOK since it goes against the WI purposes: The point was that UE supporting UL CA can use the Tx to do UL MIMO on one carrier. This is clearly stated in the. WI, as well as in the the RAN1 feature list. If the pre-requisite is UL CA, RAN2 cannot by itself change it. |
| Apple | Yes | We feel the logic is correct since for 1P+0P it’s hardly to say it is UL CA. |
| CATT | No | We hare Huawei’s concern.  |
| Ericsson |  | We could confirm this with RAN1. |
| Intel |  | We agree with the intention to add the pre-requisition. Regarding the change from ZTE, we need to check with RAN1 clearly before we change RAN1 conclusion. Additional comment is that the perquisition should be added to *uplinkTxSwitching-OptionSupport-r16* than *supportedBandCombinationList-UplinkTxSwitch-r16*. |
| OPPO |  | Confirm this with RAN1. |

### 3.1.4 CA additional spectrum emission requirements

The CR is in [9], and the main intention is to clarify the limitation that same emission requirements should be applied for each uplink carrier on same band and configured value is applicable for all uplink carriers of same band.

**Q4 Do companies agree with the major principle of the CR?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes |  |
| MediaTek | Yes, but | We would like to check whether this is Rel-16 only issue. Do we need this in Rel-15?In the CR cover page on “reason for change” “*In the WI NR\_RF\_FR1-Core a support for CA is being added.*”I assume that NR CA is already supported from Rel-15. Or does it try to say that intra-band CA is introduced in Rel-16 ?  |
| Samsung | Yes |  |
| vivo | Yes | We understand this is only for Rel-16.  |
| Huawei, HiSilicon | Yes | We also understand this is only for Rel-16. |
| ZTE | Yes |  |
| Nokia | Yes (proponent) | Only Release 16 – CA of uplink carriers of same band is not supported in release 15 |
| Apple | Yes |  |
| CATT | Yes | Agree that this starts from R16. |
| Ericsson | Yes |  |
| Intel | Yes |  |
| OPPO | Yes  |  |

##  Part 1 discussion summary

### 3.2.1 CGI reading with autonomous gaps

12 companies joined the discussion and all companies agree the changes in [R2-2010598](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010598.zip) and [R2-201059](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010598.zip)9. The extra changes proposed in [R2-2010358](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010358.zip) cannot reach consensus as 9 companies would like to have confirmation from RAN4. Thus it is proposed to pursue [R2-2010598](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010598.zip) and [R2-201059](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010598.zip)9.

Proposal 1: [R2-2010598](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010598.zip) and [R2-201059](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010598.zip)9 are pursued. Detailed comments to the CRs, if any, can be further reviewed in Part 2.

### 3.2.2 Support of HPUE

All companies agree this has already been addressed in the UE capability MEGA CR and thus [R2-2009346](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2009346.zip) and [R2-2010226](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010226.zip) are not pursued.

Proposal 2: [R2-2009346](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2009346.zip) and [R2-2010226](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010226.zip) are not pursued as they are already covered by UE capability MEGA CR.

### 3.2.3 UL Tx switching clarification

12 companies joined the discussion, 6 companies supported the proposal, 3 companies are against the proposal because the proposal is not consistent with RAN1/RAN4 agreement, 3 companies also think RAN2 should not change the agreement without RAN1 confirmation. There is no consensus and thus it is suggested to go online to decide whether to pursue this change.

Proposal 3: [R2-2009245](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2009245.zip) needs an online discussion for decision.

### 3.2.4 CA additional spectrum emission requirements

All companies support this change and 1 company has the question on whether this is also applied to Rel-15. As responded by several companies, this change is only applied to Rel-16 as UL CA for some bands is supported in Rel-16.it is therefore suggested to pursue the CR in [R2-2009544](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2009544.zip).

Proposal 4: [R2-2009544](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2009544.zip) is pursued. Detailed comments to the CR, if any, can be further reviewed in Part 2.

## Part 2 discussion: TBD

To be updated after Phase I discussion

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# Reference

1. [R2-2008747](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2008747.zip) Reply LS on CGI reading with autonomous gaps (R4-2012156; contact: ZTE) RAN4
2. [R2-2010598](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010598.zip) Correction to 38.331 on T321 for autonomous gap based CGI in FR2 ZTE Corporation, Sanechips
3. [R2-2010599](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010599.zip) Correction to 36.331 on T321 for autonomous gap based CGI in FR2 ZTE Corporation, Sanechips
4. [R2-2010358](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010358.zip) 38331 CR on CGI reading with autonomous gaps Huawei, HiSilicon
5. [R2-2008741](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2008741.zip) LS on UE capability for PC2 inter-band EN-DC (LTE FDD+NR TDD) (R4-2011787; contact: China Unicom) RAN4
6. [R2-2009346](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2009346.zip) 38306 CR for the support of EN-DC FDD+TDD HPUE China Unicom, Huawei, HiSilicon
7. [R2-2010226](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2010226.zip) support of EN-DC TDD-FDD HPUE Huawei, HiSilicon, China Unicom
8. [R2-2009245](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2009245.zip) CR to add prerequisite of UL Tx switching capability ZTE Corporation, Sanechips
9. [R2-2009544](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_112-e/Docs/R2-2009544.zip) NR CA additional spectrum emission requirements Nokia, Nokia Shanghai Bell