**3GPP TSG-RAN WG4 Meeting #107 R4-2310037**

**Incheon, KR, May 22nd – May 26th, 2023**

**Agenda item:** 10.3

**Source:** Moderator (Apple)

**Title:** Topic summary for [107][154] NR\_reply\_LS\_UE\_RF

**Document for:** Information

# Introduction

This email thread is focused on the following RF topics under AI 10. Note that R4-2308375, R4-2308376, R4-2308377, R4-2308378, R4-2308379 are moved from AI 4.1 to AI 10.2.3.

1. On Rel-16 UL Tx switching period (R1-2302198)
2. LS on intraBandENDC-Support (R2-2304431)

# Topic #1: On Rel-16 UL Tx switching period (R1-2302198)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2307160 | Huawei, HiSilicon | ***Observation 1: the RRC signaling uplinkTxSwitchingPeriodLocation is used to indicate the carrier location rather than time domain location of switching period.*** ***Observation 2: The transmission on the carrier that is indicated FALSE by uplinkTxSwitchingPeriodLocation is not impacted by uplink Tx switching.******Observation 3: The time mask of uplink Tx switching to illustrate the frequency domain location of switching period is only applicable to the case that the length between the end of the UL transmission on the switch-from carrier and the start of the UL transmission on the switch-to carrier is shorter than the duration of switching period.******Observation 4:* *Fixed time domain switching period location for Rel-16/17 is not backward-compatible.******Proposal 1: RAN4 don't support defining time domain location of switching period in Rel-16/17*** |
| R4-2307746 | Ericsson, Sony | Regarding the time T0 we observe that**Observation 1: the starting time of uplink transmission “from network scheduling perspective” and the expected starting time of “actual uplink transmission from UE perspective” is always one the same, the actual starting time subject to the timing requirements specified in 38.133.** **According to 38.214, an uplink transmission starting at *T0* is that scheduled by DCI(s) received before** *T0-Toffset* **or that configured by higher layers, the switching period/gap in its entirety part of the transmission preparation for transmissions actually starting at *T0*.** The time masks for uplink Tx switching in 38.101-1 with configured locations of switching periods are not consistent with the UE behavior specified in 38.214. **Observation 2: the time masks for Tx switching in 38.101-1 are supposedly applicable when the switch is not completed at T0 due to scheduled or configured transmissions such that the transmission gap before T0 is not long enough to cover the switching period and dropped transmissions are acceptable on the carrier configured with the switching period by RRC. This is not consistent with 38.214 according to which the switch and any dropped transmissions shall occur before T0.** Notwithstanding the inconsistent specification, we propose to**Proposal 1: make clear in the specifications that the UE shall ignore the configuration of the switching period by RRC when the network provides a transmission gap before T0 long enough to absorb the entire switching period, where T0** **is the start of transmissions after the switch “from network scheduling perspective” and the start of “actual uplink transmission from UE perspective”.** **Proposal 2: amend the endorsed CR with a specification of the transient period locations for the case when the network provides a transmission gap before T0 long enough to absorb the entire switching period for all cases in clause 6.1.6 using the notions of 38.214. This existing time masks in 38.101-1 do not apply for this case.** A CR for UL CA and SUL is provided in [3] based on the endorsed CR [2], the corresponding for EN-DC in [4].This could perhaps reconcile the different interpretations the time masks for uplink Tx switching and limit the impact on legacy implementations compliant with the existing conformance specification 38.521-1. |
| R4-2307747/8/9 | Ericsson | CRs to 38.101-1 R16/17/18 |
| R4-2307750/1/2 | Ericsson | CRs to 38.101-3 R16/17/18 |
| R4-2308067 | Nokia, Nokia Shanghai Bell | **Observation 1:** The figures 6.3A.3.3.5-1a and -1b of 38.101-1 place a time instant at the boundary of slot/sub-slot, but it is not obvious what constitutes as the slot/sub-slot boundary.**Observation 2:** Contrary to the statement in clause 6.1.6, the TS 38.214 does not define the time-location of the switching period. This was one of the triggers to the RAN1 discussions and lead to the LS to RAN4**Observation 3**: For CA and SUL-based switching the TS 38.101-1 defines whether the switching period is located in time before or after a switching reference point in time, but the reference point used is a slot/sub-slot boundary, which is not clear.**Observation 5:** RAN4 have endorsed draft CRs to 38.101-1 at RAN4#106bis addressing the issues and ambiguity raised by RAN1.**Observation 4: The switching period location as depicted in Figure 3 and Figure 4 is obviously wrong.** When the scheduler leaves a gap between the end of the switch-from transmission and the start of the switch-to transmission it would be pointless to nevertheless impose a switching period on a scheduled part of the transmission.**Proposal 1: RAN4 shall agree to the CR to 38.101-1 Rel-16 in [2] and Rel-17 in [3].****Proposal 2: RAN 4 shall agree Cat-A CRs for 38.101-1 Rel-18 in [4]. This with the understanding that it is to serve as baseline for further discussion and potential additional modifications****Observation 6:** For EN-DC based switching the TS 38-101-3 unambiguously defines the switching period location relative to the E-UTRAN subframe boundary so that the switching period is always on the NR side of the sub-frame boundary. However, it is not clear what happens if the NR transmission doesn’t start right at the LTE sub-frame boundary.**Observation 7:** RAN4 have endorsed draft CRs to 38.101-3 at RAN4#106bis addressing the issues and ambiguity raised by RAN1.**Proposal 3: RAN4 shall agree to the CR to 38.101-3 Rel-16 in [5] and Rel-17 in [6].****Proposal 4: RAN 4 shall agree Cat-A CRs for 38.101-1 Rel-18 in [7]. This with the understanding that it is to serve as baseline for further discussion and potential additional modifications** |
| R4-2309621/R4-2308069/ R4-2308070 | Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Huawei, Hisilicon, Vivo | CRs to 38.101-1 R16/17/18 |
| R4-2309622/ R4-2308072/ R4-2308073 | Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Huawei, Hisilicon, Vivo | CRs to 38.101-3 R16/17/18 |
| R4-2309481 | Apple | **1. Overall Description:**RAN4 thanks RAN1 for the LS on Rel-16 Multi-carrier enhancement for NR.RAN4 would like to provide a response to the following RAN1 agreement on the question of Uplink Tx Switching related interruption to the uplink and downlink transmissions when the network provided a gap between the end of the switch-from carrier’s UL transmission and the start of the switch-to carrier’s transmission that was sufficiently long to absorb the switching period**RAN1 Agreement*** If the gNB provides sufficient time between the end of the UL transmission on the switch-from carrier and the start of the UL transmission on the switch-to carrier to absorb the switching period,
	+ The time of no UL transmission allocated absorbs the switching period
	+ Neither of the uplink transmissions (the one ending on the switch-from carrier nor the one starting on the switch-to carrier) are interrupted by the switching period.
	+ The setting of *uplinkTxSwitchingPeriodLocation* has no impact.
	+ Defer the discussion on whether/how to define the exact location of the switching period indicated by the UE capability in time domain to RAN4
		- From RAN1 point of view, for Rel-16, the implication is to the time domain location of potential interruption of downlink reception if reported by the UE for the band combination
	+ Defer the potential RAN1 spec change until RAN4 has had the time to react to the RAN1 LS to RAN4.
* Send an LS to RAN4 requesting RAN4 to, in this regard, clarify TS38.101-1 subclauses 6.3A.3.3.2 and 6.3C.3.1 for CA, and SUL based UL Tx Switching, and to TS38.101-3 subclause 6.3B.4.1 for EN-DC.

**Reply to RAN1 Agreement**RAN4 would prefer the switching period end to be anchored to the start of the UL allocation in the “switch to” carrier with the assumption that DL interruption will be applied for the band pair involved in the switching, as highlighted in Tables 5.2A.2.1-1, 5.2A.2.2-1, and 5.2A.2.3-1 of Release 18 specifications. |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Before f2f meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions..*

### Sub-topic 1-1

*Sub-topic description:*

*Open issues and candidate options before f2f meeting:*

**Issue 1-1-1: Clarification on switching period**

* Proposals
	+ Option 1: “When switching from one carrier to another, if there is no uplink transmission scheduled or configured on the switch-from carrier for at least the duration of the switching period (X µs) before the point in time the UE is scheduled or configured to start the transmission on the switch-to carrier, the switching period is fully contained in the time period between the end of the transmission on the switch-from carrier and the start of the transmission on the switch-to carrier. In addition, the RRC signalling uplinkTxSwitchingPeriodLocation is ignored by the UE and does not take effect in this case.” (Ericsson)
	+ Option 2: “When switching from one carrier to another, if there is no uplink transmission scheduled or configured on the switch-from carrier for at least the duration of the switching period (X µs) before the point in time the UE is scheduled or configured to start the transmission on the switch-to carrier, the switching period is fully contained in the time period between the end of the transmission on the switch-from carrier and the start of the transmission on the switch-to carrier. In addition, the RRC signalling uplinkTxSwitchingPeriodLocation does not take effect in this case.”
* Recommended WF
	+ TBA

**Issue 1-1-2: Clarification on transient period**

* Proposals
	+ Option 1: “The following applies for the uplink switching cases specified in clause 6.1.6.2 of [38.214] with uplinkTxSwitchingOption set to either switchedUL or dualUL when the configuration of the location of the switching period by uplinkTxSwitchingPeriodLocation is ignored by the UE:
		- - if an uplink switching is triggered for an uplink transmission starting at T0 based on higher layer configuration(s) or DCI(s) received before T0 − Toffset as specified in 38.214 and the UE is not scheduled or configured with uplink transmissions for a duration of at least the uplink switching gap on any of the carriers before T0, transient periods of 10 ms are located at the end of the last symbol(s) scheduled on the carriers before T0 and at the start of the first symbol(s) scheduled or configured after T0.”(Ericsson)
	+ Option 2:
* Recommended WF
	+ TBA

**Issue 1-1-3: LS**

* Proposals
	+ Option 1: “RAN4 would prefer the switching period end to be anchored to the start of the UL allocation in the “switch to” carrier with the assumption that DL interruption will be applied for the band pair involved in the switching, as highlighted in Tables 5.2A.2.1-1, 5.2A.2.2-1, and 5.2A.2.3-1 of Release 18 specifications. “(Apple)
	+ Option 2:
* Recommended WF
	+ TBA

# Topic #2: LS on intraBandENDC-Support (R2-2304431)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2307161 | Huawei, Hisilicon | ***Observation 1: In RAN2’s understanding, if the UE reports ‘both’ with intraBandENDC-Support for 48C+n48A, it supports*** * ***Configuration #1: DL DC\_(n)48CA, UL DC\_(n)48AA, and***
* ***Configuration #2: DL DC\_48C\_n48A, UL DC\_48A\_n48A.***

***Observation 2: In RAN2’s understanding, Case 3 can be indicated by ‘Non-contiguous’ with intraBandENDC-Support-UL and absent with intraBandENDC-Support.******Observation 3:* *DL DC\_48A\_(n)48AA, UL DC\_(n)48AA is an intra-band contiguous EN-DC configuration according to RAN2 LS. And the configuration is in the table defined for mixed intra-band contiguous and non-contiguous EN-DC in RAN4 specification.******Observation 4: In RAN2’s understanding, Case 4 can be indicated by ‘both’ with intraBandENDC-Support-UL and absent with intraBandENDC-Support .******Observation 5: From RAN2’s perspective, the new signaling intraBandENDC-Support-UL has to be introduced to indicate Case 3 and Case 4.******Observation 6: Case 4 includes two configurations for DC\_48A\_(n)48AA.***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Scenario#** | ***intraBandENDC-Support*** | ***intraBandENDC-Support-UL*** | **UE supports in DL / UL (if applicable)** | **Configuration for** DC\_48A\_(n)48AA |
| 1 | Absent (Contiguous) | Absent | * Contiguous/Contiguous
 | * DL DC\_48A\_(n)48AA
* UL DC\_(n)48AA.
 |
| 2 | Absent (Contiguous) | Non-contiguous | * Contiguous/Non-contiguous
 | * DL DC\_48A\_(n)48AA
* UL DC\_48A\_n48A
 |

***Proposal 1: The configuration of DL DC\_48A\_(n)48AA, UL DC\_(n)48AA should be moved to the tables defined for intra-band contiguous EN-DC configuration Table 5.3B.1.2-1 and Table 5.5B.2-1 in 38.101-3.*** ***Proposal 2: RAN4 should clarify in 38.101-3 the EN-DC configurations in the following table that need to be indicated by the new signaling intraBandENDC-Support-UL introduced in RAN2.***

|  |  |
| --- | --- |
| EN-DCconfiguration | Uplink EN-DCconfiguration |
| DC\_(n)48CA | DC\_48A\_n48A |
| DC\_(n)48DA | DC\_48A\_n48A |
| DC\_48A\_(n)48AA | DC\_48A\_n48A |

***Proposal 3: Combinations of EN-DC configurations indicated by ‘both’ with intraBandENDC-Support or intraBandENDC-Support-UL are not required to be reflected in RAN4 specification as in the following table.***

|  |  |
| --- | --- |
| EN-DCconfiguration | Uplink EN-DCconfiguration |
| DC\_48A\_(n)48AA | DC\_(n)48AADC\_48A-n48A |

 |
| R4-2307162 | Huawei, Hisilicon | **1. Overall Description:**RAN4 appreciate RAN2’s great efforts figuring out the solution to the complicated issue on the inconsistency issue for intra-band EN-DC band combinations. RAN4 would like to clarify that the following UL EN-DC configurations should be indicated with ‘non-contiguous’ by the signalling intraBandENDC-Support-UL introduced in RAN2#121bis-e.

|  |  |
| --- | --- |
| EN-DCconfiguration | Uplink EN-DCconfiguration |
| DC\_(n)48CA | DC\_48A\_n48A |
| DC\_(n)48DA | DC\_48A\_n48A |
| DC\_48A\_(n)48AA | DC\_48A\_n48A |

In addition, RAN4 understands that according to RAN2’s LS, ‘both’ indicated by intraBandENDC-Support or intraBandENDC-Support-UL includes at least two EN-DC configurations for the same band entry. RAN4 would only need to reflect the UE capability according to each configuration in the specification rather than the combinations indicated by ‘both’.**2. Actions:****To RAN2:**RAN4 respectfully ask RAN2 to take the information above into consideration, and inform RAN4 if RAN2 have any concern. **To RAN:**RAN4 would like to thank RAN for the RAN task to solve the inconsistency issue on band combination.RAN4 and RAN2 have good coordination on discussing the issue and agree on the solution of introducing intraBandENDC-Support-UL to indicate the configurations in Case 3 and Case 4. RAN4 has agreed the CR R4-23xxxxx/xxxx/xxxx for Rel-16/17/18 on the issue. |
| R4-2307163/4/5 | Huawei, Hisilicon, Nokia, Nokia Shanghai Bell, Xiaomi, OPPO | CRs to 38.1-1-3 R16/17/18 |
| R4-2307499 | Nokia, Nokia Shanghai Bell | ***Proposal 1: Intra-band EN-DC configuration DC\_48A-(n)48AA with UL DC\_(n)48AA in 5.3B.1.3-2 (mixed case) should be moved to in 5.3B.1.2-1 (contiguous case).*** |
| R4-2307987 | ZTE | **Observation 1 The origin of the confusion in indicating the support of intra-band ENDC configuration is that the current IE *intraBandENDC-Support* is used for both UL and DL without distinguishing them.****Observation 2 A new capability IE *intraBandENDC-Support-UL* to be introduced in RAN2 to represent the intra-band EN-DC support in UL can completely sovle the inconsistency issue of intra-band ENDC indication. The restriction to the existing capability *intraBandENDC-Support* to DL is needed.****Observation 3 There is no need to further discuss the future extension for the support of intra-band ENDC since the introduction of new IE *intraBandENDC-Support-UL* eliminates the inconsistencies.****Observation 4 There is case in current RAN4 spec which supports non-contiguous intra-band EN-DC in DL and contiguous in UL.****Proposal 1 It is supposed to agree the new signalling solution outlined by RAN2 except for “Principle 4” since such case already exists in RAN4. The corresponding changes in RAN4 spec for intra-band ENDC configuration should be done accordingly.****Proposal 2 For mixed intra-band EN-DC configurations with different contiguous and non-contiguous aspects in DL and UL, it is suggested to set a new sub-clause in TS 38.101-3.****Proposal 3 There is no need to emphasize “both” value for *intraBandENDC-Support* and *intraBandENDC-Support-UL*** **in RAN4 intra-band ENDC configuration tables.** |
| R4-2307988 | ZTE | RAN4 would like to thank RAN2 for the reply LS on intraBandENDC-Support.RAN4 discussed RAN2’s solution on introducing a new IE *intraBandENDC-Support-UL*. RAN4 think the introduction of the new IE is beneficial to distinguish the support of DL and UL respectively. Regarding to the principle proposed for the new IE, since the following configuration with “non-contiguous” in DL while “contiguous” in UL has already been supported in RAN4, there is no need to add a restriction on “Principle 4” that support for non-contiguous intra-band EN-DC in DL and contiguous in UL to be considered as an invalid case.

|  |  |  |
| --- | --- | --- |
| EN-DCconfiguration | Uplink EN-DCconfiguration(NOTE 1) | Single UL allowed |
| DC\_48A-(n)48AA | DC\_(n)48AA | Yes |

RAN4 agree the solution proposed for new IE *intraBandENDC-Support-UL* except for the restriction on the case that non-contiguous in DL but contiguous in UL. RAN4 would like to ask RAN2 to further consider if such restriction is needed. |
| R4-2307989/90/91 | ZTE | CRs to 38.101-3 R16/17/18 |
| R4-2308809 | Xiaomi | **Proposal 1: Keeping previous conclusion that case 3 is invalid.****Proposal 2: DC\_48A\_(n)48AA with UL DC\_(n)48AA is an intra-band contiguous EN-DC configuration. It should move to Table 5.3B.1.2-1 for intra-band contiguous EN-DC from Table 5.3B.1.3-2 for mixed intra-band contiguous and non-contiguous EN-DC.****Proposal 3: Suggest RAN2 modify the description of intraBandENDC-Support to indicate the status of contiguous/non-contiguous is only for adjacent LTE carrier and NR carrier rather than all LTE and NR carriers.****Proposal 4: For case 3, Option 2c can’t be agreed.** |
| R4-2308993 | Google | **Proposal 1: In Rel-16 and Rel-17, to extend the meaning of “both” in IE *intraBandENDC-Support* to include “contiguous(DL)/non-contiguous(UL)” for intra-band DL/UL EN-DC configuration.****Proposal 2: To introduce IE *intraBandENDC-Support-UL* from Rel-18.****Proposal 3: Send the reply LS to RAN2 in Annex.** |
| R4-2308994 | Google | RAN4 would like to thank RAN2 for the Reply LS on intraBandENDC-Support. RAN4 has discussed the solutions for Case 3 and Case 4 and make the decisions as below. * In Rel-16 and Rel-17, to extend the meaning of “both” in IE *intraBandENDC-Support* by including “contiguous(DL)/non-contiguous(UL)” for intra-band DL/UL EN-DC configuration
* In Rel-18, to introduce IE *intraBandENDC-Support-UL*.

The supported intra-band DL/UL EN-DC configuration for Case 3 and Case 4 can be referred to the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Scenario#** | ***intraBandENDC-Support*** | ***intraBandENDC-Support-UL*** | **Reporting EN-DC bandwidth class** | **Supported DL/UL EN-DC configuration** |
| **To extend the meaning of “both” in *intraBandENDC-Support*** | **To introduce IE *intraBandENDC-Support-UL*** |
| 1 | Absent (Contiguous) | Absent | LTE-DL: 48C/48D | DC\_(n)48CA with UL DC\_(n)48AADC\_(n)48DA with UL DC\_(n)48AA | DC\_(n)48CA with UL DC\_(n)48AADC\_(n)48DA with UL DC\_(n)48AA |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| LTE-DL: 48A-48A | DC\_48A\_(n)48AA with UL DC\_(n)48AA | DC\_48A\_(n)48AA with UL DC\_(n)48AA |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| 2 | Absent (Contiguous) | Non-contiguous | LTE-DL: 48C/48D | X | DC\_(n)48CA with UL DC\_48A\_n48ADC\_(n)48DA with UL DC\_48A\_n48A**[Case#3]** |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| LTE-DL: 48A-48A | X | DC\_48A\_(n)48AA with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| 3 | Non-contiguous | Absent | LTE-DL: 48C/48D | DC\_48C\_n48A with UL DC\_48A\_n48ADC\_48D\_n48A with UL DC\_48A\_n48A | DC\_48C\_n48A with UL DC\_48A\_n48ADC\_48D\_n48A with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| LTE-DL: 48A-48A | DC\_48A-48A\_n48A with UL DC\_48A\_n48A | DC\_48A-48A\_n48A with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| 4 | Both | Absent | LTE-DL: 48C/48D | DC\_(n)48CA with UL DC\_(n)48AADC\_(n)48DA with UL DC\_(n)48AADC\_48C\_n48A with UL DC\_48A\_n48ADC\_48D\_n48A with UL DC\_48A\_n48ADC\_(n)48CA with UL DC\_48A\_n48ADC\_(n)48DA with UL DC\_48A\_n48A**[Case#3]** | DC\_(n)48CA with UL DC\_(n)48AADC\_(n)48DA with UL DC\_(n)48AADC\_48C\_n48A with UL DC\_48A\_n48ADC\_48D\_n48A with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| LTE-DL: 48A-48A | DC\_48A\_(n)48AA with UL DC\_(n)48AADC\_48A\_(n)48AA with UL DC\_48A\_n48A**[Case#4]**DC\_48A-48A\_n48A with UL DC\_48A\_n48A | DC\_48A\_(n)48AA with UL DC\_(n)48AADC\_48A-48A\_n48A with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| 5 | Both | Non-contiguous | LTE-DL: 48C/48D | X | DC\_(n)48CA with UL DC\_48A\_n48ADC\_(n)48DA with UL DC\_48A\_n48A **[Case#3]**DC\_48C\_n48A with UL DC\_48A\_n48ADC\_48D\_n48A with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| LTE-DL: 48A-48A | X | DC\_48A\_(n)48AA with UL DC\_48A\_n48ADC\_48A-48A\_n48A with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| 6 | Absent (Contiguous) | Both | LTE-DL: 48C/48D | X | DC\_(n)48CA with UL DC\_(n)48AADC\_(n)48DA with UL DC\_(n)48AADC\_(n)48CA with UL DC\_48A\_n48ADC\_(n)48DA with UL DC\_48A\_n48A**[Case#3]** |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| LTE-DL: 48A-48A | X | DC\_48A\_(n)48AA with UL DC\_(n)48AADC\_48A\_(n)48AA with UL DC\_48A\_n48A**[Case#4]** |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| 7 | Both | Both | LTE-DL: 48C/48D | X | DC\_(n)48CA with UL DC\_(n)48AADC\_(n)48DA with UL DC\_(n)48AADC\_(n)48CA with UL DC\_48A\_n48ADC\_(n)48DA with UL DC\_48A\_n48A**[Case#3]**DC\_48C\_n48A with UL DC\_48A\_n48ADC\_48D\_n48A with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |
| LTE-DL: 48A-48A | X | DC\_48A\_(n)48AA with UL DC\_(n)48AADC\_48A\_(n)48AA with UL DC\_48A\_n48A**[Case#4]**DC\_48A-48A\_n48A with UL DC\_48A\_n48A |
| LTE-UL: 48A  |
| NR-DL: n48A |
| NR-UL: n48A |

 RAN4 respectfully asks RAN2 to take the above decisions into account to update RAN2 specifications. |
| R4-2308375 | MediaTek | **Observation 1: In the current RAN2 specs, the IE “*intraBandENDC-Support*” does not differentiate UL and DL, therefore implies the same spectrum contiguity of both UL and DL.****Observation 2: The reported capability of “both” should be interpreted by network as the support of configurations of Config#1 where both UL and DL are contiguous, Config#2 where both UL and DL are non-contiguous, and Config#3 where UL and DL has different contiguity.****Proposal: RAN4 to specify Config#1 (both UL and DL has contiguous spectrum), Config#2 (both UL and DL has non-contiguous spectrum) and Config#3 (UL and DL has different contiguity) in different sub-clauses corresponding to different values reported in intraBandENDC-Support.** |
| R4-2308376/7/8 | MediaTek | CRs to 38.101-3 R16/17/18 |
| R4-2308379 | MediaTek | RAN4 continues discussion on the intra-band EN-DC support in RAN4#107, and reached the following consensus:From RAN4’s perspective the configurations for intra-band EN-DC can be grouped into three sets:* Config#1: the configuration set where both UL and DL are operated in a contiguous spectrum
* Config#2: the configuration set where both UL and DL are operated in a non-contiguous spectrum
* Config#3: the configuration set where UL and DL has different contiguity

And the network can interpret the reporting of the IE *intraBandENDC-Support* for intra-band EN-DC support as following:* *“contiguous”*: it means the UE supports Config#1
* *“non-contiguous”*: it means the UE supports Config#2
* *“both”*: it means the UE supports Config#1, Config#2 and Config#3.

RAN4 has also revised the corresponding sub-clauses in TS 38.101-3 to reflect the above agreements. |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Before f2f meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions..*

### Sub-topic 2-1:

*Sub-topic description:*

*Open issues and candidate options before f2f meeting:*

**Issue 2-1-1: Based on the RAN2 LS, the configuration of DL DC\_48A\_(n)48AA and UL DC\_(n)48AA should be moved to the tables defined for intra-band contiguous EN-DC configuration Table 5.3B.1.2-1 and Table 5.5B.2-1 in 38.101-3.**

* Proposals
	+ Option 1: Yes
	+ Option 2: No
* Recommended WF
	+ TBA

**Issue 2-1-2: Other Changes**

* Proposals
	+ Option 1: change the note from “The UE supporting these configurations indicates ‘both’ by IE intraBandENDC-Support” to “The UE supporting these configurations indicates ‘non-contiguous’ by IE intraBandENDC-Support-UL” for tables for mixed intra-band contiguous and non-contiguous EN-DC.
	+ Option 2: In Rel-16 and Rel-17, to extend the meaning of “both” in IE intraBandENDC-Support by including “contiguous(DL)/non-contiguous(UL)” for intra-band DL/UL EN-DC configuration
	+ Option 3: For mixed intra-band EN-DC configurations with different contiguous and non-contiguous aspects in DL and UL, it is suggested to set a new sub-clause in TS 38.101-3.
* Recommended WF
	+ TBA

**Issue 2-1-3: LS reply based on**

* Proposals
	+ Option 1: Huawei LS
	+ Option 2: ZTE LS
	+ Option 3: Google LS
* Recommended WF
	+ Suggest wait until issues 2-1-1 and 2-1-2 are resolved.