**3GPP TSG-RAN WG4 Meeting # 97-e R4-200XXXX**

**Electronic Meeting, 2 – 13 November, 2020**

**Agenda item:** 4.2.3

**Source:** Moderator (Huawei)

**Title:** Email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3

**Document for:** Information

# Introduction

This email discussion handles the contributions submitted to agenda item 4.2.3, 4.2.3.1, 4.2.3.2 and 4.2.3.3. The scope of this email discussion covers Rel-15 UE RF requirements maintenance on TS 38.101-3, which specifies the UE RF requirements for EN-DC operations. There are 4 topics (Simultaneous Rx/Tx UE capability, Rx requirements, Tx requirements and others) in this email discussion and multiple sub-topics within each of them. Note that since this discussion is mainly maintenance work we will start to agree on CRs and mirror CRs in the first round. In the second round only the contentious issues are discussed. There is no GTW time slot planned so far for this email discussion.

# Topic #1: Simultaneous Rx/Tx UE capability

Topic #1 handles the issue identified upon UE capability of simultaneous Rx/Tx operation under NR CA, SUL, EN-DC and NR-DC combinations. The moderator uses colours for mapping between papers/proposals and sub-topics.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2016469 | Huawei, HiSilicon | Discussion on simultaneous RxTx UE capability:Observation 1: For TDD-FDD CA/EN-DC combinations, besides the combinations with mandatory simultaneous Rx/Tx operation, for combinations without any note indication, UE shall signals the capability if the UE does support simultaneous Rx/Tx based on its implementation, otherwise, if capability is not reported or absent, it means that the band combination does not support simultaneous Rx/Tx.Observation 2: simultaneous Rx/Tx capability is not consistent for the band combinations in the spec for inter-band CA.Observation 3: According to RAN2 spec, if the capability of the fallback mode is different from that of the higher order combination, the capability of fallback mode should be reported additionally. From the RAN2 spec, if the network considers the fallback mode simultaneous Rx/Tx capability as well to decide the UL/DL scheduling for the higher order band combination, this issue can be solved.Observation 4: there is no obvious judgement that simultaneous Rx/Tx cannot be supported for the FDD-TDD band combination, which means UE shall report simultaneous Rx/Tx capability for all FDD-TDD two-band combinations by default unless otherwise indicated. Observation 5: Indications of mandatory capability for a higher order band combination are not specified in a consistent and generic method. **Proposal 1: If the simultaneous capability of the fallback mode is different from that of the higher order combination, the network shall also refer to the fallback mode capability to decide the UL/DL scheduling for the band combination. Some clarification may be needed in RAN2 specification. Draft LS should be sent to RAN2 for the clarification.****Proposal 2: For FDD-TDD CA/EN-DC band combinations, remove the indication of mandatory simultaneous Rx/Tx operation condition in the spec, instead, only indicate non-simultaneous Rx/Tx for the band combination if identified, and by default UE shall report simultaneous Rx/Tx capability for two-band FDD-TDD band combinations.** **Proposal 3: The restriction note similar to non-simultaneous Tx/Rx operation should also be considered for fall back mode to support mandatory simultaneous Tx/Rx operation.****Proposal 4: Revise the Notes in the spec to make the capability consistent for all of the fall back and higher order combinations for TDD-TDD and TDD-FDD CA/EN-DC combinations.** |
| R4-2016472 | Huawei, HiSilicon | CR for TS 38.101-3 correction CR for simultaneous Tx/Rx operation (R15) |
| R4-2016473 | Huawei, HiSilicon | Mirror CR to R4-2016472 |
| R4-2016470 | Huawei, HiSilicon | CR for TS 38.101-1: correction CR for simultaneous Tx/Rx operation (R15)Submitted to 4.2.1.1 |
| R4-2016471 | Huawei, HiSilicon | Mirror CR to R4-2016470Submitted to 4.2.1.1 |
| R4-2015337 | OPPO | CR on simultaneous Tx-Rx for EN-DCCatF R15Coversheet error |
| R4-2015338 | OPPO | CR on simultaneous Tx-Rx for EN-DC (R16 mirror CR)CatF R16 submitted to 7.19.3Coversheet error |
| R4-2015016 | NTT DOCOMO | CR to TS 38.101-1[R15]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1Submitted to 4.2.1.2 |
| R4-2015017 | NTT DOCOMO | Mirror CR to R4-2015016Submitted to 4.2.1.2 |
| R4-2016238 | Skyworks | CR 38101-3 R15 Band 10 protection and DC\_42\_n79 |
| R4-2016241 | Skyworks | Mirror CR to R4-2016238 |
| R4-2014917 | Apple | LS response on simultaneous Rx/Tx for inter-band NR-DCSubmitted to 16.2 |
| R4-2016001 | ZTE | Draft reply LS on simultaneous Rx/Tx for inter-band NR-DCSubmitted to 4.1 |

## Open issues summary

### Sub-topic 1-1

For certain Two-Band combos, specs specify that it is mandatory to support simultaneous Rx/Tx for the UE. It is ambiguous whether the UE is mandatory to support simultaneous Tx/Rx for the Two-Band combos with neither any specification of *simultaneous* nor *non-simultaneous* in the specs. It might be different between TDD-TDD and FDD-TDD combos but it is general for all CA, SUL and EN-DC.

**Issue 1-1: Whether the UE is mandatory to support simultaneous Rx/Tx on the Two-Band combos without any indication in the specs, generally for CA, SUL and EN-DC**

* For FDD-TDD combos
	+ Option 1.1: If not indicated otherwise, the UE is mandatory to support simultaneous Rx/Tx on all FDD-TDD. This means that the UE needs to report simultaneous capability by default.
	+ Option 1.2: if not indicated otherwise, no restrictions. This means that the UE is allowed to not report on any of the combos without case-by-case mandatory indication in the spec.
* For TDD-TDD combos
	+ Option 2.1: if not indicated otherwise, no restrictions. This means that the UE is allowed to not report on any of the combos without case-by-case mandatory indication in the spec.
* Recommended WF
	+ Discuss the above two issues; Agree on option 2.1 if no other voice is heard

### Sub-topic 1-2

It is ambiguous whether the fallback and higher-order combos have the same characteristics in terms of UE capability of simultaneous Rx/Tx. This is in general the case for all CA, SUL and EN-DC combos. Under the cases that the UE has different characteristics of supporting simultaneous Rx/Tx on the fallback and the higher-order combos (e.g., support under two-band combo but not support under higher-order), it has to report differently for both combos respectively. The network has to schedule/configure correspondingly. This may need RAN2 clarifications in the spec.

**Issue 1-2: How to consider whether the UE is mandatory to support simultaneous Rx/Tx for higher-order combos?**

* The UE is allowed to not report supporting simultaneous Rx/Tx for higher-order combos unless otherwise specified
	+ Option 1.1: Yes. Under the cases that the UE has different characteristics of supporting simultaneous Rx/Tx on the fallback and the higher-order combos (e.g., support under two-band combo but not support under higher-order), it has to report differently for both combos respectively.
* Whether an LS is needed to RAN2?
	+ Option 2.1: Yes. RAN2 may need to clarify that the network needs to be aware of the possible differences between fallback and higher-order combos in terms of UE supporting simultaneous Rx/Tx operation.
* Recommended WF
	+ Discuss and agree on the issue; send LS to RAN2 if needed

### Sub-topic 1-3

Following sub-topic 1-2, the issues for CA\_n77-n79 and CA\_n78-n79 are that: it is not clear whether the higher-order combos also have the same restrictions.

**Issue 1-3: the issues of CA\_n77-n79 and CA\_n78-n79 higher-order combos**

* Higher-order combos of CA\_n78-n79 also have the restriction that simultaneous Rx/Tx capability is not reported if UE is using n77 implementation for n78
	+ Option 1.1: Yes
	+ Option 1.2: No. case by case discussion is needed
* CA\_n77-n79 and its higher-order combos have the restriction that the minimum requirements apply only when there is non-simultaneous Rx/Tx between n77 and n79
	+ Option 1.1: Yes
	+ Option 1.2: No. case by case discussion is needed
* Recommended WF
	+ Discuss on the above issues considering the outcome of sub-topic 1-2

### Sub-topic 1-4

R4-2016238 from skyworks proposes two corrections: 1) remove EUTRA band 10 protection; 2) clarify that it is not feasible for n77 implementation to support simultaneous Rx/Tx on DC\_42\_n79.

**Issue 1-4: Whether the CR can be agreed**

* Band 10 correction
	+ Option 1.1: agreeable
* Simultaneous Rx/Tx on DC\_42\_n79 correction
	+ Option 2.1: agreeable
	+ Option 2.2: not agreeable
* Recommended WF
	+ Discuss if the CR is agreeable

### Sub-topic 1-5

Ran2 sent an LS in R4-2014159 asking for guideline on whether simultaneous RxTx UE capability is needed for inter-band NR-DC. We understand that the Rx/Tx simultaneous capability issue discussed for CA, SUL and EN-DC combos also applies for NR DC.

**Issue 1-5: An reply LS needs to be sent to RAN2 about RAN4 consensus on UE capability of Rx/Tx simultaneous operation on NR DC combos**

* NR DC UE capability follows any specifications for the corresponding combo of NR CA
	+ Option 1.1: Yes
* Recommended WF
	+ Agree on the above proposal and send LS to RAN2; One LS can cover conclusions from both sub-topic 1-2 and 1-5

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Sub-topics** | **Comments** |
| Issue 1-1: Whether the UE is mandatory to support simultaneous Rx/Tx on the Two-Band combos without any indication in the specs, generally for CA, SUL and EN-DC? | Company 1: Company 2:….[OPPO] Option 1.2 for FDD-TDD, Option 2.1 for TDD-TDD, i.e. should be optional support simultaneous Rx/Tx if no mandatory indication in the spec.According to 38.306, the capability ***simultaneousRxTxInterBandENDC*** is defined to indicate whether UE supports simultaneous transmission and reception in TDD-TDD and TDD-FDD, and it further clarified that the mandatory combinations are clearly specified in 38.101-3. We can see that if one band combination is mandatory then it should be specified explicitly in the spec, if no explicit indication then this band combination can report whether it supports simultaneousRxTx via this capability report.

|  |
| --- |
| ***simultaneousRxTxInterBandENDC***Indicates whether the UE supports simultaneous transmission and reception in TDD-TDD and TDD-FDD inter-band (NG)EN-DC/NE-DC. It is mandatory for certain TDD-FDD and TDD-TDD band combinations defined in TS 38.101-3 [4]. |

 |
| Issue 1-2: How to consider whether the UE is mandatory to support simultaneous Rx/Tx for higher-order combos? | [OPPO] Agree with option 1.1. The *simultaneousRxTxInterBandENDC* capability is a per-band combination capability that means UE can report different simultaneous Rx/Tx capability between higher or lower band combinations.No strong view whether an LS is sent to RAN2, but actually RAN2 current signaling is enough and no more thing needs to be done in RAN2. |
| Issue 1-3: the issues of CA\_n77-n79 and CA\_n78-n79 higher-order combos | [OPPO] Clarification is needed what is the “higher-order combinations”, is it only these two bands with more intra-band CC or is it inter-band combinations with other bands. In general, our understanding is case by case discussion is needed if UE is required to mandatory support. |
| Issue 1-4: Whether the CR can be agreed | [OPPO] CR is ok. |
| Issue 1-5:NR DC UE capability follows any specifications for the corresponding combo of NR CA? | [OPPO] Option 1.1, yes. |
| Others: |  |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2016472R4-2016473 | [OPPO] Regarding “*Unless otherwise indicated, all two-band TDD-FDD inter-band NR CA, SUL or inter-band EN-DC configurations shall report the simultaneousRxTx capability*”, our understanding is that unless otherwise indicated the simultaneousRxTx is optionally support.Regarding mandatory report the simultaneousRxTx capability if the band combination is a mandatory simultaneous RxTx band combination or UE support simultaneous RxTx, for clarification is there a UE support simultaneous RxTx but do not report the capability? |
| Company B |
|  |
| R4-2016470R4-2016471 | [OPPO] Same comment as R4-2016472. |
|  |
|  |
| R4-2015337R4-2015338 |  |
|  |
|  |
| R4-2015016R4-2015017 |  |
|  |
|  |
| R4-2016238R4-2016241 |  |
|  |
|  |
| R4-2014917 |  |
|  |
|  |
| R4-2016001 |  |
|  |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #2: Receiver requirements

Receiver requirements corrections are covered in Topic #2. Please see the below details. The moderator uses colours for mapping between papers/proposals and sub-topics.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2014165 | Qualcomm | CR CatF Cross Band Noise DC\_1\_n40\_highBW |
| R4-2014166 | Qualcomm | CR CatA Cross Band Noise DC\_1\_n40\_hignBWUploaded  |
| R4-2014682 | Anritsu, Apple | UL output power for spurious response and general Rx |
| R4-2014683 | Anritsu, Apple | Mirror CR to R4-2014682 |
| R4-2015796 | KDDI | CR to correct MSD of DC\_1A-41A\_n77A&n78ACatF R15 |
| R4-2015797 | KDDI | CR to correct MSD of DC\_1A-41A\_n77A&n78ACatF R16 submitted to 7.19.3 |
| R4-2016085 | VODAFONE | CR to 38.101-3 DC\_1A-20A\_n28A Missing MSDCatF R15 |
| R4-2016087 | VODAFONE | CR to 38.101-3 DC\_1A-20A\_n28A Missing MSD (Rel-16)CatA R16 submitted to 7.5.1 |
| R4-2016225 | vivo | CR to TS38.101-3[R15] Applicability of 2Rx requirements |
| R4-2015226 | vivo | Mirror CR to R4-2016226 |

## Open issues summary

Mainly maintenance CRs.

### Sub-topic 2-1

R4-2014165 and its mirror CR add a NOTE 4 in uplink config table for REFSENS exception due to cross band isolation. The note says for 80MHz UL bandwidth on band n40, the RBs are located at position 15.

**Issue 2-1: Agree on R4-2014165?**

* Proposals
	+ Option 1: Yes
	+ Option 2: No
* Recommended WF
	+ Discussion is needed

### Sub-topic 2-2

R4-2014682 corrects the UL power levels for spurious responses. The same corrections were agreed for OOBB in the last meeting. It also corrects a few errors in referring section numbers.

**Issue 2-2: Agree on R4-2014682?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2014682 and its mirror CR

### Sub-topic 2-3

R4-2015796 and its mirror CR correct the testing points for DC\_1A-41A\_n77A and DC\_1A-41A\_n78A.

**Issue 2-3: Agree on R4-2015796?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2015796 and its mirror CR

### Sub-topic 2-4

R4-2016085 adds IMD5 test points for DC\_1A-20A\_n28A for DC\_20A\_n28A interfering band 1 DL. The value is proposed as 8.9dB MSD.

**Issue 2-4: Agree on R4-2016085?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2016085 and ask for a tdoc mirror CR

### Sub-topic 2-5

R4-2016225 clarifies in EN-DC spec that for the Rx requirements the UE is only tested with 4 antenna ports when it claims 4 antenna port on a certain band. Similar corrections were agreed for NR CA in the last meeting.

**Issue 2-5: Agree on R4-2016225?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2016225 and its mirror CR

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Sub-topics** | **Comments** |
| Issue 2-1: Agree on R4-2014165 | Company 1: Company 2:…. |
| Issue 2-2: Agree on R4-2014682? |  |
| Issue 2-3: Agree on R4-2015796? |  |
| Issue 2-4: Agree on R4-2016085? |  |
| Issue 2-5:Agree on R4-2016225? |  |
| Others: |  |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2014165R4-2014166 | Company A |
| Company B |
|  |
| R4-2014682R4-2014683 |  |
|  |
|  |
| R4-2015796R4-2015797 |  |
|  |
|  |
| R4-2016085R4-2016087 |  |
|  |
|  |
| R4-2016225R4-2015226 |  |
|  |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #3: Transmitter requirements

Transmitter requirements corrections are covered in Topic #3. Please see the below details. The moderator uses colours for mapping between papers/proposals and sub-topics.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2014309 | SoftBank | Clarification of additional spurious emission requirements on Inter-band EN-DC(R15)CatF |
| R4-2014310 | SoftBank | Clarification of additional spurious emission requirements on Inter-band EN-DC(R16)CatA uploaded |
| R4-2014900 | Apple | Coexistence cleanup for 38.101-3 Rel15CatF |
| R4-2014901 | Apple | Coexistence cleanup for 38.101-3 Rel16CatF submitted to 7.19.3 |
| R4-2016496 | Huawei, HiSilicon | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R15)CatF |
| R4-2016497 | Huawei, HiSilicon | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R16)CatF |
| R4-2015805 | ETSI MCC | Correction of CR0325 implementation |
| R4-2016054 | Ericsson | Correction of p-Max I.E and corresponding references R16 CatA uploadedCoversheet error |
| R4-2016055 | Ericsson | Correction of p-Max I.E and corresponding references R15 CatFCoversheet error |
| R4-2016485 | Huawei, HiSilicon | CR for 38.101-3 Correction on EN-DC synchronous carriers (R15) |
| R4-2016486 | Huawei, HiSilicon | Mirror CR to R4-2016485 |
| R4-2016492 | Huawei, HiSilicon | CR for TS 38.101-3: correction of delta Tib for UE supporting multiple band combinations (R15) |
| R4-2016493 | Huawei, HiSilicon | Mirror CR to R4-2016492 |
| R4-2016482 | Huawei, HiSilicon | CR for TS 38.101-3: correction of power class for EN-DCMoved to [115] |
| R4-2016498 | Huawei, HiSilicon | CR for TS 38.101-3: Adding delta TIB requirement for DC\_2-7-7-13\_n66 (R16)Moved to [116] |
| R4-2016595 | Huawei, HiSilicon | Withdrawn? |
| R4-2015992 | CHTTL | CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DCMoved to topic #4 |
| R4-2015999 | CHTTL | Mirror CR to R4-2015992Moved to topic #4 |

## Open issues summary

Mainly maintenance CRs.

### Sub-topic 3-1

It is proposed in R4-2014309 that *Unless otherwise stated, for inter-band EN-DC with uplink assigned to one LTE band and one NR band, the requirements for additional spurious emissions apply when one of the bands in a combination is subject to an additional spurious emission requirement (i.e. in clause 6.6.3.3 of TS36.101[4] or clause 6.5.3.3 of TS38.101-1[2]) and the other band shall also protect the same band or range in the spurious emission for UE co-existence requirement (i.e. in clause 6.6.3.2 of TS36.101[4] or clause 6.5.3.2 of TS38.101-1[2]), with the indication of the relevant network signalling(NS) in the former band.*

**Issue 3-1: EN-DC UE has to meet additional single band spurious emission requirements (signalled by NS\_X) on both ULs?**

* Proposals
	+ Option 1: Yes
	+ Option 2: No
* Recommended WF
	+ Discussion is needed

### Sub-topic 3-2

Coexistence cleanup CRs are submitted in 4900 4901 6496 6497.

**Issue 3-2: How to handle the CRs?**

* Check the contents in all CRs and agree on only one sets: one for R15 and one for R16
	+ Option 1: Yes
* Recommended WF
	+ Merge all into one set.

### Sub-topic 3-3

R4-2015805 is from MCC.

**Issue 3-3: Agree on R4-2015805?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2015805

### Sub-topic 3-4

R4-2016055 corrects reference number errors.

**Issue 3-4: Agree on R4-2016055?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2016055 and its mirror CR

### ~~Sub-topic 3-5~~

~~R4-2016482 corrects configured powers by adding clarifications on deltaPpowerclass,nr. Only Rel-15 needs to be corrected since UE is not able to report the corresponding capability.~~

**~~Issue 3-5: Agree on R4-2016225?~~**

* ~~Proposals~~
	+ ~~Option 1: Yes~~
* ~~Recommended WF~~
	+ ~~Agree on R4-2016482~~

### Sub-topic 3-6

R4-2016485 further clarifies that the requirements specified for DC\_20A\_n28A apply when the two bands are collocated-deployed.

**Issue 3-6: Agree on R4-2016485?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2016485 and its mirror CR

### Sub-topic 3-7

For UE supporting multiple band combinations, ∆TIB,c could be different for these combinations. Unlike ∆RIB,c , how to use ∆TIB,c in this case is not clearly specified. R4-2016492 proposes to clarify this issue. When the operating band frequency range is ≤ 1 GHz, the applicable additional ∆TIB,c shall be the average value for all band combinations; When the operating band frequency range is > 1 GHz, the applicable additional ∆TIB,c shall be the maximum value for all band combinations.

**Issue 3-7: Agree on R4-2016492?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2016492 and its mirror CR

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Sub-topics** | **Comments** |
| Issue 3-1: EN-DC UE has to meet additional single band spurious emission requirements (signalled by NS\_X) on both ULs? | Company 1: Company 2:….[OPPO] Option 1: Yes |
| Issue 3-2: How to handle the CRs? |  |
| Issue 3-3: Agree on R4-2015805? |  |
| Issue 3-4: Agree on R4-2016055? |  |
| ~~Issue 3-5:~~~~Agree on R4-2016055?~~ |  |
| Issue 3-6:Agree on R4-2016485? | [OPPO] No strong view. The note content itself is ok, but not sure whether this kind of note is necessary or not in the spec.[Nokia] This issue has been discussed already and has not been agreeable. UE specification should not have network deployment aspects. |
| Issue 3-7:Agree on R4-2016492? |  |
| Others: |  |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2014309R4-2014310 | Company A |
| Company B |
|  |
| R4-2014900R4-2014901 | [Nokia] for DC\_12\_n66 can E-UTRA bands 42 and 43 be moved to first row as there is no note? |
|  |
|  |
| R4-2016496R4-2016497 |  |
|  |
|  |
| R4-2015805 |  |
|  |
|  |
| R4-2016054R4-2016055 |  |
|  |
|  |
| ~~R4-2016482~~ |  |
|  |
|  |
| R4-2016485R4-2016486 | [Nokia] This issue has been discussed already and has not been agreeable. UE specification should not have network deployment aspects. |
|  |
|  |
| R4-2016492R4-2016493 |  |
|  |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #4: Others

Several other issues are covered in Topic #4. Please see the below details. The moderator uses colours for mapping between papers/proposals and sub-topics.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2014914 | Apple | CR for TS 38.101-3: Corrections for intra-band contiguous EN-DC configurationsCatF R15 |
| R4-2014915 | Apple | CR for TS 38.101-3: Corrections for intra-band contiguous EN-DC configurationsCatF R16 submitted to 7.19.3 |
| R4-2015034 | ZTE | CR to TS 38.101-3: Some corrections on the ENDC |
| R4-2015035 | ZTE | Mirror CR to R4-2015034 |
| R4-2015992 | CHTTL | CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC |
| R4-2015999 | CHTTL | Mirror CR to R4-2015992 |
| R4-2015089 | Nokia | Discussion:Clarification of *intra-bandENDC-Support* |

## Open issues summary

Mainly maintenance CRs.

### Sub-topic 4-1

Correct intra-band EN-DC configurations*.*

**Issue 4-1: Agree on R4-2014914?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2014914

### Sub-topic 4-2

R4-2015034 proposes mainly to clarify that for EN-DC with FR2, suffix D requirements do not apply. Also it proposes to change each CC to individual sub-block for intraband NC EN-DC SEM.

**Issue 4-2: Agree on the changes in R4-2015034?**

* Agree on removal of suffix D references in TS 38101-2.
	+ Option 1.1: Yes
* Agree on the wording changes on SEM intraband NC EN-DC
	+ Option 2.1: Yes
	+ Option 2.2: No. needs discussion.
* Recommended WF
	+ Discuss and revise if needed

### Sub-topic 4-3

For the intra-band EN-DC and NE-DC combinations, as the indication of single UL allowed is due to potential emission issues, there is no need to check whether the IM2 or IM3 falls into own primary downlink channel bandwidth or not when determining dual uplink is mandatory support or not. The description for the equation of the self IM interference includes the intra-band configuration tables in the current specification, which might cause confusion.

**Issue 4-3: Agree on R4-2015992?**

* Proposals
	+ Option 1: Yes
* Recommended WF
	+ Agree on R4-2015992 and its mirror CR

### Sub-topic 4-4

As the proponent sees some ambiguity in the definition of *intraBandENDC-Support*, it is proposed in R4-2015089 to have some clarifications in RAN4 and ask RAN2 to incorporate the RAN4 consensus.

**Issue 4-4: clarify this ambiguity spotted in R4-2015089?**

* RAN4 clarifies the ambiguity raised in the paper in Rel-16
	+ Option 1: Yes
	+ Option 2: No
* If yes, in which way?
	+ Option 1: Contiguous EN-DC or non-contiguous EN-DC is based on whether the configuration is included the Table 5.3B.1.2-1 or Table 5.3B.1.3-1.
		- Although non-contiguous uplink is included in Table 5.3B.1.2-1, they shall be supported by UE capable only of intra-band contiguous EN-DC.
	+ Option 2: Clarify the definition of intraBandENDC-Support such that this is only related the adjacent LTE and NR carriers
		- This option is the first interpretation described above. If the adjacent LTE and NR carriers are contiguous according to the channel spacing criteria in TS 38.101-3, UE support such configuration, even if LTE part or NR part includes non-contiguous sub-blocks.
		- UE can support the configuration of contiguous downlink and non-contiguous uplink, only if UE signals the support of both contiguous EN-DC and non-contiguous EN-DC.
	+ Option 3: Clarify the definition of intraBandENDC-Support such that all the carriers shall be contiguously spaced to be a contiguous EN-DC, otherwise, its non-contiguous.
		- This option is the second interpretation described above. Only if all the LTE and NR carriers are contiguously spaced according to the channel spacing criteria in TS 36.101, TS 38.101-1, and TS 38.101-3, then, UE capable of contiguous EN-DC can supports such configuration.
		- UE can support the configuration of contiguous downlink and non-contiguous uplink, only if UE signals the support of both contiguous EN-DC and non-contiguous EN-DC.
	+ Option 4: Restructure UE capability signaling.
		- If none of the solutions (option 1-3) works well, revision of UE capability signaling structure can be further discussed.
	+ Option 5: other options.
* Recommended WF
	+ Discussion is needed

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Sub-topics** | **Comments** |
| Issue 4-1: Agree on R4-2014914? | Company 1: Company 2:…. |
| Issue 4-2: Agree on the changes in R4-2015034? |  |
| Issue 4-3: Agree on R4-2015992? | [OPPO] ok with the clarification. |
| Issue 4-4:clarify this ambiguity spotted in R4-2015089? |  |
| Others: |  |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2014914R4-2014915 | Company A |
| Company B |
|  |
| R4-2015034R4-2015035 |  |
|  |
|  |
| R4-2015992R4-2015999 |  |
|  |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |