**3GPP TSG-RAN WG4 Meeting #100-e R4-2115025**

**Electronic Meeting, August 16-27, 2021**

**Agenda item:** 8.43

**Source:** Moderator (Huawei, HiSilicon)

**Title:** Email discussion summary for [100-e][125] Simultaneous\_RxTx

**Document for:** Information

# Introduction

This email thread discuss Rel-17 WI on Simultaneous\_RxTx. The contributions are in agenda 8.43, which includes:

* Topic #1: Principles for simultaneous Rx/Tx capability
  1. Issue 1-1: Rules to decide simultaneous Rx/Tx capability for a band combination
  2. Issue 1-2: Simultaneous Rx/Tx capability and sync/async condition
* Topic #2: CR for simultaneous Rx/Tx

# Topic #1: Principles for simultaneous Rx/Tx capability

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2112833**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112833.zip) | CHTTL | **Proposal 1: For issue 1-2-1: Simultaneous Rx/Tx capability for FR1+FR1 FDD-TDD band combination**  **- At least the following condition #1 which was already agreed in the previous RAN4 meeting should be continually applied.**  **- Condition #1: *For TDD-FDD combinations, the capability shall be mandatory if low-band (below 1GHz) is aggregated with high (i.e. 2.69GHz and above) and mid-band (1GHz to 2.69GHz) TDD cells.***  **- For the band combinations that are not under the condition #1, RAN4 can further agree on other criteria (ex: frequency separation…) to determine whether simultaneous Rx/Tx capability can be mandatory supported without any discussion.**  (Note that if no further consensus can be reached, case-by-case discussion is applied for the band combinations that are not under the condition #1) |
| [**R4-2112913**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112913.zip) | ZTE | FR1+FR1 FDD-TDD  **Proposal 1. Combining option 1 with option 2**  *FR1+FR2 TDD-TDD*  **Proposal 2. Mandatory simultaneous Rx/Tx capability should be supported for all of the FR1 (<7.125 GHz)+FR2 TDD-TDD CA band combination.**  *FR2+FR2 TDD-TDD*  **Proposal 3. case by case for FR2+FR2 TDD-TDD band combination.** |
| [**R4-2113304**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113304.zip) | Xiaomi | **Proposal 1: for FR1+FR1 FDD-TDD band combination, option 3 is preferable on how to decide Simultaneous Rx/Tx capability.**  **Proposal 2: Simultaneous Rx/Tx capability for FR1+FR2 TDD-TDD band combination can be mandatory support in the case of current FR1 and FR2 frequency range.**  **Proposal 3: for FR2+FR2 TDD-TDD band combination, Simultaneous Rx/Tx capability shall be decided by case by case.** |
| [**R4-2113895**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113895.zip) | OPPO | ***Observation 1: Supporting simultaneous RxTx means in any case this capability is supported and mainly represent the hardware capability in interference rejection.***  ***Observation 2: In current scheme, BS cannot schedule simultaneous RxTx in any case if UE doesn’t support Simultaneous RxTx.***  ***Observation 3: For UE without simultaneous RxTx capability, it is possible that NW can still schedule both bands working under simultaneous RxTx scenario if the capability applicable NW sync/async condition are provided.***  ***Proposal 1: It is proposed to evaluate the benefits of enable NW schedule UE without simultaneous RxTx capability working in simultaneous RxTx status, and study the possibility of reporting sync/async condition to NW to facilitate scheduling incapable UEs.*** |
| [**R4-2113896**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113896.zip) | OPPO | ***Proposal 1: It is proposed to adopt following combined principle for FDD-TDD band combinations***   * + - Simultaneous RxTx is the default capability in FDD-TDD FR1 band combinations     - MSD will be defined for band combinations which potentially have problems like harmonics/IMD, etc. as usual     - For band combinations whose MSD is larger than a threshold (value FFS), further discuss whether simultaneous RxTx can be changed to optional   ***Proposal 2: It is proposed to adopt following principle for FR1+FR2 band combinations***   * + - Mandatory support simultaneous RxTx capability for FR1+FR2 band combinations with condition that FR1 is below 7.125GHz, and FR2 is above 24GHz.   ***Proposal 3: It is proposed to postpone the discussion for FR2+FR2 band combinations until deployment requests and also completion of FR2 CA requirements definition.*** |
| [**R4-2114515**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114515.zip) | Huawei, HiSilicon | ***Proposal 1: For FR1+FR1 FDD-TDD band combinations, simultaneous Rx/Tx capability is mandatorily supported if the combination has no MSD issue or the MSD less than a certain value (to be discussed in RAN4). For the combination with MSD exceeding the threshold, whether the capability can be mandatorily supported should be checked under the WI.***  ***Proposal 2: For FR1+FR2 TDD-TDD band combinations, the simultaneous Rx/Tx capability shall be mandatory if FR1 TDD band does not exceed the frequency range of 7125MHz.***  ***Proposal 3: For FR2+FR2 TDD-TDD band combinations, the simultaneous Rx/Tx capability is studied case by case.*** |
| [**R4-2114516**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114516.zip) | Huawei, HiSilicon | **TP for TR 38.839: Principles for simultaneous RxTx capability** |

## Open issues summary

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

### Issue 1-1: Rules to decide simultaneous Rx/Tx capability for a band combination

***Issue 1-1-1: Simultaneous Rx/Tx capability for FR1+FR1 FDD-TDD band combination***

* ***Option 1:***

*Mandatory support by default* *unless the specific problem is identified when specifying the specific combinations in the basket WID. To make sure the potential problem will not be missed check, case-by-case study can be applied if the frequency separation between the FDD band and the TDD band of the combination is smaller than a threshold. Otherwise, the mandatory simultaneous Rx/Tx capability is applied without additional discussion. MSD requirements shall be defined for the combinations which have REFSENS degradation caused by IMD or harmonics (combination of OP1 and OP2 in last meeting)*

* ***Option 2:***

*Using MSD as a basic guideline for defining simultaneous RxTx capability, while order of IMD and harmonics may serve as certain criteria (OP3 in last meeting)*

* ***Option 3:***

*At least the following condition #1 which was already agreed in the previous RAN4 meeting should be continually applied.*

*- Condition #1: For TDD-FDD combinations, the capability shall be mandatory if low-band (below 1GHz) is aggregated with high (i.e. 2.69GHz and above) and mid-band (1GHz to 2.69GHz) TDD cells.*

*- For the band combinations that are not under the condition #1, RAN4 can further agree on other criteria (ex: frequency separation…) to determine whether simultaneous Rx/Tx capability can be mandatory supported without any discussion.*

*(Note that if no further consensus can be reached, case-by-case discussion is applied for the band combinations that are not under the condition #1)*

* ***Option 4:***
* *Simultaneous RxTx is the default capability in FDD-TDD FR1 band combinations*
* *MSD will be defined for band combinations which potentially have problems like harmonics/IMD, etc. as usual*
* *For band combinations whose MSD is larger than a threshold (value FFS), further discuss whether simultaneous RxTx can be changed to optional*
* ***Option 5****:*
* *Mandatory support if the combination has no MSD issue or the MSD less than a certain value (to be discussed in RAN4).*
* *For the combination with MSD exceeding the threshold, whether the capability can be mandatorily supported should be checked under the WI.*

***Moderator’s recommendation:***

* Recommended WF
  + TBA based on 1st round discussion

***Issue 1-1-2: Simultaneous Rx/Tx capability for FR1+FR2 TDD-TDD band combination***

* ***Option 1****: Mandatory support for all of the FR1 (<7.125 GHz)+FR2 TDD-TDD CA band combination (R4-2112913 ZTE)*
* ***Option 2****: Mandatory support in the case of current FR1 and FR2 frequency range (R4-2113304 Xiaomi)*
* ***Option 3****: Mandatory support if FR1 is below 7.125GHz, and FR2 is above 24GHz (R4-2113896 OPPO)*
* ***Option 4****: Mandatory support if FR1 TDD band does not exceed the frequency range of 7125MHz (R4-2114515 Huawei)*

***Moderator’s recommendation:***

* Recommended WF
  + All options proposed in this meeting are similar. It is suggested to check option 3 in 1st round discussion.

***Issue 1-1-3: Simultaneous Rx/Tx capability for FR2+FR2 TDD-TDD band combination***

* ***Option 1****: study case by case (R4-2112913 ZTE, R4-2113304 Xiaomi, R4-2114515 Huawei)*
* ***Option 2****: postpone the discussion for FR2+FR2 band combinations until deployment requests and also completion of FR2 CA requirements definition (R4-2113896 OPPO)*

***Moderator’s recommendation:***

* Recommended WF
  + TBA based on 1st round discussion

### Issue 1-2: simultaneous Rx/Tx capability and sync/async condition

***Issue 1-2-1: evaluate the benefits of enabling NW schedule UE without simultaneous RxTx capability working in simultaneous RxTx status, and study the possibility of reporting sync/async condition to NW to facilitate scheduling incapable UEs*** *(R4-2113895, OPPO)*

* ***Option 1: Yes***
* ***Option 2: No***

***Moderator’s recommendation:***

* Recommended WF
  + TBA based on 1st round discussion

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Issues** | **Company Comments** |
| 1-1: Rules to decide simultaneous Rx/Tx capability for a band combination | ***Issue 1-1-1: Simultaneous Rx/Tx capability for FR1+FR1 FDD-TDD band combination***   * ***Option 1:*** *Mandatory support by default* *unless the specific problem is identified when specifying the specific combinations in the basket WID. To make sure the potential problem will not be missed check, case-by-case study can be applied if the frequency separation between the FDD band and the TDD band of the combination is smaller than a threshold. Otherwise, the mandatory simultaneous Rx/Tx capability is applied without additional discussion. MSD requirements shall be defined for the combinations which have REFSENS degradation caused by IMD or harmonics (combination of OP1 and OP2 in last meeting )* * ***Option 2:*** *Using MSD as a basic guideline for defining simultaneous RxTx capability, while order of IMD and harmonics may serve as certain criteria (OP3 in last meeting)* * ***Option 3:*** *At least the following condition #1 which was already agreed in the previous RAN4 meeting should be continually applied.*   *- Condition #1: For TDD-FDD combinations, the capability shall be mandatory if low-band (below 1GHz) is aggregated with high (i.e. 2.69GHz and above) and mid-band (1GHz to 2.69GHz) TDD cells.*  *- For the band combinations that are not under the condition #1, RAN4 can further agree on other criteria (ex: frequency separation…) to determine whether simultaneous Rx/Tx capability can be mandatory supported without any discussion.*  *(Note that if no further consensus can be reached, case-by-case discussion is applied for the band combinations that are not under the condition #1)*   * ***Option 4:*** * *Simultaneous RxTx is the default capability in FDD-TDD FR1 band combinations* * *MSD will be defined for band combinations which potentially have problems like harmonics/IMD, etc. as usual* * *For band combinations whose MSD is larger than a threshold (value FFS), further discuss whether simultaneous RxTx can be changed to optional*   *•* ***Option 5****: For FR1+FR1 FDD-TDD band combinations, simultaneous Rx/Tx capability is mandatorily supported if the combination has no MSD issue or the MSD less than a certain value (to be discussed in RAN4). For the combination with MSD exceeding the threshold, whether the capability can be mandatorily supported should be checked under the WI.*  Verizon: We support Option 3 and suggest the high band range is extended above 4.2GHz.  SoftBank: Support Option 3. For the band combinations that are not under the condition #1, support Option 4 or Option 5.  Xiaomi: Option 2. As mention in R4-2113304, even option 1 is adopted, in order to check the potential problem band combination, the criteria in option 2 still needs to be determined and studied.  ZTE： Option 1, also we can live with Option 4 or 5. (Seems they are more or less similar, maybe can consider together)  For almost all the FDD-TDD band combination, it should check the co-existance study first, then define MSD values if necessary (for some cases, MSD may not be defined due to MSD is negligible or no appropriated test point). However, In addition, there are few exceptions for some combs where frequency range are very close or even immediately close to each other, in this case, more study may be needed.  LGE: Prefer Option 4. It is more generic to support Simultaneous Rx/Tx capability for FR1+FR1 FDD-TDD band combination  Huawei: Condition #1 is the previous agreement in Rel-15. We think it is still valid. As general procedure to check the capability, option 4 and option 5 are almost identical. The wording could be further improved based on these two options.  OPPO: Option 4, which is a combined middle ground.  CHTTL:  To ZTE: The condition #1 is focus on FR1+FR1 FDD-TDD only, and it is the previous agreement in Rel-15. Also thanks Hw for the clarification, we also think it is still valid.  So we think option 3 should be the baseline, as it is based on the previous agreement. The idea of option 3 is to list some conditions that simultaneoes RxTx can be mandatory support without without any discussion. So, option 1 can also be added as condition #2 “if frequency separation between the FDD band and the TDD band of the combination is larger than a threshold X, and option 4/5 can be consider as another add-on condition, ex: condition #3 “if the combination has no MSD issue or the MSD less than a certain value”, and for the band combination which is not under the listed conditions, some case-by-case study can be further apply whether it can be manditory or not.  Qualcomm: We prefer Option 4 or Option 5, they are quite similar. Having also mid-band in Option 3 makes it a bit problematic. Baseline should be what kind of MSD is expected, this depends on separation and whether there are harmonics/IMD>  MediaTek: Option 3,4,5 are not controversial. If all MSD mechanisms (harmonic, harmonic mixing, cross band isolation, ACPR, IMD…etc) has been characterized, the combo shall be fine to support simultaneous RX/TX if the result is feasible.  ZTE: Thanks CHTTL for the clarification. Yes, you are right, the previous agreement is for FR1+FR2, and condition #1 is for FR1+FR1, we mixed up, sorry for the mistake. So we withdraw our comments on option 3.  With the clarification by CHTTL, we are also fine with Option 3. So maybe we can consider option #1/3/4/5 together, as proposed by CHTTL.  NTT DOCOMO, INC: We support option 3 and would like to add the following condition:  - Condition #x: For TDD-FDD combinations, the capability shall be mandatory if FDD mid-band(1GHz to 2.69GHz) is aggregated with TDD ultra-high-band (i.e. 3.3GHz and above) .  Vivo: As commented by some companies, option 3/4/5 do not contradicting with others. We think the Option 4/5 have better shape to be serve as next stage basis.  Skyworks: Same view as Qualcomm and Vivo: options 4 and 5. |
| ***Issue 1-1-2: Simultaneous Rx/Tx capability for FR1+FR2 TDD-TDD band combination***   * ***Option 1****: Mandatory support for all of the FR1 (<7.125 GHz)+FR2 TDD-TDD CA band combination (**R4-2112913 ZTE)* * ***Option 2****: Mandatory support in the case of current FR1 and FR2 frequency range (R4-2113304 Xiaomi)* * ***Option 3****: Mandatory support if FR1 is below 7.125GHz, and FR2 is above 24GHz (R4-2113896 OPPO)* * ***Option 4****: Mandatory support if FR1 TDD band does not exceed the frequency range of 7125MHz (R4-2114515 Huawei)*   ***Recommendation:*** *check option 3 in 1st round discussion.*  Verizon: we support options above. RAN4 should define the criteria requirements for further.  SoftBank: Support recommended WF and option 3.  Xiaomi: we think all options share the similar view. Option 3 is acceptable for us  ZTE: All the options are very close. Ok with Option 3.  LGE: Prefer option 3 for FR1+FR2 TDD-TDD combos  Huawei: All options have similar condition. OK with option 3.  OPPO: Option 3.  CHTTL: ok with option 3.  Qualcomm: Neither option is ok. We can agree to have mandatory for combos with FR1 bands up to 5GHz and FR2 bands. FR1 bands above 5GHz are still under discussion and there are no combinations with FR1 above 5GHz and FR2 implemented so it is difficult to already say that there are no problems.  MediaTek: Option 3.  Vivo: Option 3 is generally ok, and also understand Qualcomm’s concern that discussing FR1 above 5GHz may be a bit pre-mature. Maybe we can make some adjustment to the current available band. |
| ***Issue 1-1-3: Simultaneous Rx/Tx capability for FR2+FR2 TDD-TDD band combination***   * *Option 1:* *study case by case (R4-2112913 ZTE, R4-2113304 Xiaomi, )* * *Option 2: postpone the discussion for FR2+FR2 band combinations until deployment requests and also completion of FR2 CA requirements definition (R4-2113896 OPPO)*   Verizon: Option 1  Xiaomi: either option is OK.  ZTE: Option 1.  LGE: We prefer option 1. It is not good approach to defer the simultaneous Rx/Tx capability for FR2+FR2 TDD-TDD combos  Huawei: Option 1. The capability itself can be used for FR2 based on the signaling design.  OPPO: Option 2 or Option 1 both ok, and our preference is Option 2 since up to now there is no FR2 simultaneous RxTx discussion or analysis and the simultaneous RxTx capabiltiy has much dependent on the architecture assumptions like CBM(single chain/multi chain)/IBM assumptions which is still under discussion in FR2 enh WI. It is better to wait for the conclusion there and then discuss further whether the simultaneous RxTx can be supported.  Rohde & Schwarz: Supporting simultaneous Rx/Tx in FR2+FR2 has major implications on the test system. Test systems for FR2 have been developed under the assumption of all CCs using the same UL-DL configuration. For FR2 UE RF testing, all testing is done with single angle of arrival and over the same test antenna, even the same polarization. It is not feasible to combine multiple CCs with different UL-DL configurations on the test antenna. So testing should be restricted to keeping the same UL-DL configuration on all CC.  Qualcomm: Option 1. there are several issues with FR2+FR2 that need careful consideration.  MediaTek: Option 2. This can be postponed till deployment request appears.  NTT DOCOMO, INC: Option 1 and this is also discussed in thread [104] and [129].  Vivo: Both option 1 and option 2 are ok.  In addition, the testing problem mentioned by R&S and the unclear deployment need is likely to postpone possible discussion, and the outcome of these two options maybe similar. |
| 1-2: simultaneous Rx/Tx capability and sync/async condition | ***Issue 1-2-1: evaluate the benefits of enabling NW schedule UE without simultaneous RxTx capability working in simultaneous RxTx status, and study the possibility of reporting sync/async condition to NW to facilitate scheduling incapable UEs***   * *Option 1: Yes* * *Option 2: No*   Verizon: Yes!  Huawei: Option 2. The issue has been discussed extensively in last RAN4 meeting, see the agreed WF R4-2108007. Simultaneous Rx/Tx is determined by UE implementation capability, which is not relevant to the sync/async conditions.  OPPO: Option 1. The proposal is for incapable UEs which currently reports not support simultaneous RxTx since it assumes the worst case in the field. However, in real NW it might be still ok for this incapable UE to work under simultaneous RxTx case. There might be some benefit of enabling this case.  CHTTL: Would like to clarify whether this is focus on TDD-TDD only?  Qualcomm: Option 2. What would be the point of this evaluation? seems a very complicated way to waste a lot of RAN4 time that we don’t have.  Vivo: Option 2. |
| Others |  |

### CRs/TPs comments collection

*Major close-to-finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2114516**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114516.zip)  TP for TR 38.839: Principles for simultaneous RxTx capability | Company A |
| Company B |
|  |

## 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 ahe ssignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Topic#1** | ***Issue 1-1-1: Simultaneous Rx/Tx capability for FR1+FR1 FDD-TDD band combination***  *Tentative agreements:*  *Candidate options:*  *Option 1: ZTE*  *Option 2: Xiaomi*  *Option 3: Verizon, Softbank, CHTTL, MediaTek, NTT DOCOMO,*  *Option 4/5:ZTE, LGE, HW, OPPO, [CHTTL], Qualcomm, MediaTek, vivo, Skyworks*  *Option 3 is to determine the mandatory support of capability for a combination based on condition of frequency separation and further consider other criteria, e.g MSD. Otherwise, study case by case.*  *Option 4/5 are similar. Using MSD as criteria to determine whether a combination can support the capability mandatorily.*  *Recommendations for 2nd round:*  *Most companies support option 3 or 4/5. For these options, since all consider MSD can be used as criteria to further check the capability, it is recommend in 2nd round to check whether revised option based on 4/5 with consideration of op3 if possible could be acceptable.*  ***Issue 1-1-2: Simultaneous Rx/Tx capability for FR1+FR2 TDD-TDD band combination***  *Tentative agreements:*  *Candidate options:*  *Option 3: Mandatory support if FR1 is below 7.125GHz, and FR2 is above 24GHz (10 companies)*  *Other option: FR1 bands up to 5GHz and FR2 bands (1 company)*  *Recommendations for 2nd round:*  *To check in 2nd round whether option 3 or further revision based on option 3 could be acceptable.*  ***Issue 1-1-3: Simultaneous Rx/Tx capability for FR2+FR2 TDD-TDD band combination***  *Tentative agreements:*  *Candidate options:*  *Option 1: study case by case (9 companies)\*  *Option 2: postpone the discussion for FR2+FR2 band combinations until deployment requests and also completion of FR2 CA requirements definition (4 companies, 3 of them can also accept option 1)*  *Other: One TE vendor mentioned that Test systems for FR2 have been developed under the assumption of all CCs using the same UL-DL configuration.*  *Recommendations for 2nd round:*  *To check in 2nd round whether the majority favored option 1 is acceptable.* |
| **Topic#2** | ***Issue 1-2-1: evaluate the benefits of enabling NW schedule UE without simultaneous RxTx capability working in simultaneous RxTx status, and study the possibility of reporting sync/async condition to NW to facilitate scheduling incapable UEs***  *Tentative agreements:*  *Candidate options:*  *Option 1: yes, to further evaluate the benefits (2 companies).*  *Option 2: no (3 companies)*  *Other: one company ask for clarification.*  *Recommendations for 2nd round:*  *To further check in 2nd round whether the evaluation is necessary.* |
|  |  |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 | WF on Simultaneous Rx/Tx | Huawei, HiSilicon |
| #2 |  |  |

### 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)

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2114946 | Huawei, HISilicon | WF on Simultaneous Rx-Tx  ***Issue 1-1-1: Simultaneous Rx/Tx capability for FR1+FR1 FDD-TDD band combination***  *Most companies support option 3 or 4/5. For these options, since all consider MSD can be used as criteria to further check the capability, it is recommend in 2nd round to check whether revised option based on 4/5 with consideration of op3 if possible could be acceptable.*  LGE: we are fine for the principle based on option 4. To combining with option4 and option3, it can be further discussed with case-by case.  OPPO: Option 4. What is the revised option?  ***Issue 1-1-2: Simultaneous Rx/Tx capability for FR1+FR2 TDD-TDD band combination***  *To check in 2nd round whether option 3 or further revision based on option 3 could be acceptable.*  LGE: we are fine for the principle based on option 3.  OPPO: Option 3 is ok.  ***Issue 1-1-3: Simultaneous Rx/Tx capability for FR2+FR2 TDD-TDD band combination***  *To check in 2nd round whether the majority favored option 1 (study case by case) is acceptable.*  LGE: we are fine for the principle based on option 1.  *OPPO: OK*  ***Issue 1-2-1: evaluate the benefits of enabling NW schedule UE without simultaneous RxTx capability working in simultaneous RxTx status, and study the possibility of reporting sync/async condition to NW to facilitate scheduling incapable UEs***  *To further check in 2nd round whether the evaluation is necessary.*  LGE: No need study for the benefit of the specific case. |
|  |  |  |

## 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** |
|  |  |
|  |  |

# Topic #2: CR for simultaneous Rx/Tx

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2112960**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112960.zip) | CHTTL, SoftBank Corp., NTT DOCOMO, INC. | *draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1 NR-CA combinations* |
| [**R4-2112962**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112962.zip) | SoftBank Corp., NTT DOCOMO, INC., CHTTL | *draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1 EN-DC combinations* |
| [**R4-2112964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112964.zip) | CHTTL, SoftBank Corp., NTT DOCOMO, INC. | *draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1+FR2 NR CA and EN-DC combinations* |

## Open issues summary

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

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Issues** | **Company Comments** |
|  | Company A |
| Others |  |

### CRs/TPs comments collection

*Major close to finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2112960**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112960.zip) | Company A |
| Company B |
|  |
| [**R4-2112962**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112962.zip) | MediaTek: If DC\_1A-11A\_n41A is required simultaneous RX/TX, all fallback combos such as DC\_11A\_n41A shall also be required also. Please proponent further check |
| Company B |
|  |
| [**R4-2112964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112964.zip) | Company A |
| Company B |
|  |
|  |

## 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** |
| **Topic#3** | **Issue 3-1:**  *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)

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
|  |  |  |

## 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** |
| R4-2114947 | Revised draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1 EN-DC combinations (from R4-2112962)  SoftBank: Thanks MTK for the helpful comment. We checked the related band combinations and the revised contribution is available at the following link.  https://www.3gpp.org/ftp/tsg\_ran/WG4\_Radio/TSGR4\_100-e/Inbox/Drafts/%5B100-e%5D%5B125%5D%20Simultaneous\_RxTx/Round%202/Revisions/Revision%20of%20R4-2112962-draft%20CR%20for%20sim%20TxRx%20R17%20FR1%20EN-DC\_SB\_DCM\_CHTTL.docx |

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |
| --- | --- | --- |
| **Title** | **Source** | **Comments** |
| WF on Simultaneous Rx/Tx | Huawei, HiSilicon |  |
|  |  |  |
|  |  |  |

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| [**R4-2112833**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112833.zip) | Further suggestion on general principle for simultaneous Rx/Tx band combinations | CHTTL | Noted |  |
| [**R4-2112913**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112913.zip) | Further discussion on Simultaneous RxTx | ZTE Corporation | Noted |  |
| [**R4-2112960**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112960.zip) | draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1 NR-CA combinations | CHTTL, SoftBank Corp., NTT DOCOMO, INC. | Agreeable |  |
| [**R4-2112962**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112962.zip) | draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1 EN-DC combinations | SoftBank Corp., NTT DOCOMO, INC., CHTTL | Revised | *check the comments from MTK* |
| R4-2112963 | draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1+FR2 NR CA and EN-DC combinations | CHTTL, SoftBank Corp., NTT DOCOMO, INC. |  | *not available* |
| [**R4-2112964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112964.zip) | draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1+FR2 NR CA and EN-DC combinations | CHTTL, SoftBank Corp., NTT DOCOMO, INC. | Agreeable |  |
| [**R4-2113304**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113304.zip) | Discussion on principle for simultaneous Rx Tx band combinations for CA, SUL, MR-DC and NR-DC | Xiaomi | Noted |  |
| [**R4-2113895**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113895.zip) | R17 Simultaneous RxTx and NW condition | OPPO | Noted |  |
| [**R4-2113896**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113896.zip) | R17 simultaneous RxTx | OPPO | Noted |  |
| [**R4-2114515**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114515.zip) | On principles for deciding simultaneous RxTx capability | Huawei, HiSilicon | Noted |  |
| [**R4-2114516**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114516.zip) | TP for TR 38.839: Principles for simultaneous RxTx capability | Huawei, HiSilicon | Agreeable |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics incl. existing and new tdocs.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. For new LS documents, please include information on To/Cc WGs in the comments column
4. Do not include hyper-links in the documents

## 2nd round

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-210xxxx | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-210xxxx | LS on … | ZZZ | Agreeable, Revised, Noted |  |
| R4-2114946 | WF on Simultaneous Rx/Tx | Huawei, HiSilicon |  |  |
| R4-2114947 | draft CR for updating the note of mandatory simultaneous Rx/Tx capability for Rel.17 FR1 EN-DC combinations | CHTTL, SoftBank Corp., NTT DOCOMO, INC. |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents