**3GPP TSG-RAN WG4 Meeting # 102-e R4-220xxxx**

**Electronic Meeting, February 21 – March 3, 2022**

**Agenda item: 9.26**

**Source:** Moderator (Ericsson)

**Title:** Email discussion summary for [102-e][113] NR\_bands\_R17\_BWs

**Document for:** Information

# Introduction

The basket WI was agreed in RAN#88e meeting to manage all requests related to adding new channel BW in existing NR bands.

For this meeting, this thread will focus on the following items:

* Endorsement of the updated WI including the new requests submitted for this meeting:
	+ Adding 25 MHz in band n28.
	+ Adding 25 MHz in band n83.
	+ Adding 5 MHz in band n41.
* Start or continue discussion on:
	+ Adding 100MHz in bands n46 and n96
	+ Adding 25, 35 and 45 MHz in band n41.
* Misc.

# Topic #1: Rapporteur inputs

This topic is aiming endorsing the updated WI with new requests submitted for this meeting.

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2205068 | Ericsson | WID revision including new requests made for this meeting |
| R4-2205069 | Ericsson | Big CR to TS 38.104This CR will merge all draft CRs endorsed in the 1st / 2nd round. |
| R4-2205070 | Ericsson | Big CR to TS 38.101-1This CR will merge all draft CRs endorsed in the 1st / 2nd round. |

## Open issues summary

### Sub-topic 1-1

Sub-topic description: A new request has been submitted for this meeting.

**Issue 1-1: New request adding 25 MHz in band n28.**

* Proposals
	+ Comments are welcome.
* Recommended WF
	+ Approve the new request and endorse the revised WID.

### Sub-topic 1-2

Sub-topic description: A new request has been submitted for this meeting.

Moderator: Note that the request has been updated on the reflector and this new channel BW shall be added to both BS and UE. The WID will be revised to reflect this update.

**Issue 1-2: New request adding 25 MHz in band n83.**

* Proposals
	+ Comments are welcome.
* Recommended WF
	+ Approve the new request and endorse the revised WID.

### Sub-topic 1-3

Sub-topic description: A new request has been submitted for this meeting.

Moderator: Note that the request is only for 5 MHz as the request for 25, 35 and 45 MHz was already agreed in previous meeting. The WID will be revised to reflect this update.

**Issue 1-3: New request adding 5 MHz in band n41.**

* Proposals
	+ Comments are welcome.
* Recommended WF
	+ Approve the new request and endorse the revised WID.

## Companies views’ collection for 1st round

### Open issues

Issue 1-1:

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| **Company** | **Comments** |
| XXX |  |

Issue 1-2:

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| **Company** | **Comments** |
| XXX |  |

Issue 1-3:

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| **Company** | **Comments** |
| SoftBank | Just for clarification:With the current sync-raster placement of n41(1200N+150[kHz], 38.101-1, Table 5.4.3.1-1), there are frequency ranges 5MHz CBW cannot be placed due to the lack of sync-raster. For a band with SCS spaced chanel raster, 900N (900kHz interval instead of 1200kHz) sync-raster seems to be needed for 5MHz CBW without restriction of placement. Will we revisit the sync-raster scheme with this Basket WID? |
| Huawei | For clarification，Is the 5 MHz CBW is optional support or mandate support?  |
| ZTE | Like band n79 introduce smaller channel bandwidth, the sync raster issue should be specified in the basket WID, rather than ‘No major issues expected as larger BWs are already supported for n41. Straightforward  work required for DL and UL requirements......’ |

### CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| NA |  |
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## 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.*

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|  | **Status summary**  |
| **Issue 1-1** | *Tentative agreements: No comment received, the request is accepted* *Candidate options:**Recommendations for 2nd round: NA* |
| **Issue 1-2** | *Tentative agreements: No comment received, the request will be updated in the WID considering both BS and UE. The updated request will be then accepted.**Candidate options:**Recommendations for 2nd round: NA* |
| **Issue 1-3** | *Tentative agreements: The request will be updated in the WI:** *To consider only 5 MHz channel BW.*
* *To change the comment, highlighting channel raster for that band should be re-considered.*

*The updated request would be accepted.**Candidate options:**Recommendations for 2nd round: Please check the updates in the revised basket WID.* |

### CRs/TPs

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

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

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| **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)

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| **CR/TP number** | **Comments collection** |
| Revision of R4-2205068 | *WID revision including new requests made for this meeting* |
| T-Mobile USA: We provided a revision of the draft revised WID in the inbox that removes references to 25, 35 and 45 MHz from the row with 5 MHz for n41. Also removed the square brackets from the supporting companies.  |
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## Summary for 2nd round

See documents final recommendation in 4.2

# Topic #2: NR-U bands n46 and n96 - 100 MHz channel BW

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2203537 | Charter  | **Proposal 1: RAN4 should consider 100 MHz channel bandwidth configuration in NR-U will not overlap two 80 MHz Wi-Fi channel bonding, only four 100 MHz channel rasters (5200, 5300, 5520 and 5865 MHz) for NR-U in 5 GHz (n46).****Proposal 2:** **RAN4 should not consider implementing NR-U 100 MHz channel bandwidth configurations in n46 (5 GHz) band since there has not been any proposals that will avoid unfair co-existence scenarios.** |
| R4-2203667 | Apple | Proposal 1:For the 30kHz SCS, adopt intra-carrier guard band pattern 50-6-50-6-49-6-50-6-50. **Proposal 2: For the 60kHz SCS, adopt intra-carrier guard band pattern 23-5-23-5-23-5-23-5-23.** |
| R4-2204471 | Qualcomm | **Proposal 1:*** **The channel raster for NR-U 100 MHz channel bandwidth in band n46 includes at least the following channels: 5200, 5300, 5520 and 5865 MHz.**
* **Additional channels for NR-U 100 MHz channel bandwidth in band n46 may be added in future releases for deployment scenarios in which coexistence issues with Wifi can be avoided and/or the absence of Wifi can be guaranteed.**
 |
| R4-2205822 | Intel | **Observation 1:** Limiting 100MHz channelization to four channels only results in utilization of 61% of the open spectrum.**Proposal #1: Differentiate channel raster for environments with presence of other technologies and environments where the absence of other technologies is guaranteed** * Add specification text that would state that certain raster locations are only for use in environments where the absence of other technologies is guaranteed (e.g., by level of regulations, private premises policies). It would be the responsibility of the (public or non-public) network owner to ensure that this requirement is respected
* **Proposal #1A:** For environments “where the absence of other technologies is guaranteed” use a flexible channel raster {5200, 5220, 5240, 5260, 5280, 5300, 5520, 5540, 5560, 5580, 5600, 5620, 5640, 5660, 5680, 5785, 5805, 5825, 5845, 5865}
* **Proposal #1B:** For environments “with presence of other technologies” use six-channel solution with {5200, 5300, 5520, 5680, 5785, 5865} raster locations
 |

## Open issues summary

### Sub-topic 2-1: Band n46

Sub-topic description: 100MHz channel BW support in band n46 and possible channel raster. No agreement was possible in last RAN4#101-e and RAN4#101-bis-e meetings.

**Issue 2-1-1: 100MHz channel BW for band n46 with presence of other technology, e.g. WiFi**

* Proposals: Following alternatives have been proposed, please indicate your view:
	+ Option1: RAN4 should consider 100 MHz channel bandwidth configuration in NR-U will not overlap two 80 MHz Wi-Fi channel bonding, only four 100 MHz channel raster (5200, 5300, 5520 and 5865 MHz) for NR-U in 5 GHz (n46). (Charter, Qualcomm)
	+ Option2: RAN4 should not consider implementing NR-U 100 MHz channel bandwidth configurations in n46 (5 GHz) band. (Charter)
	+ Option 3: For environments “with presence of other technologies” use six-channel solution with {5200, 5300, 5520, 5680, 5785, 5865} raster locations (Intel)
* Recommended WF
	+ It seems at least 5200, 5300, 5520 and 5685 MHz would be agreeable by everyone.

Further discuss if 5680 and 5785 might also be acceptable.

**Issue 2-1-2: 100MHz channel BW for band n46 where the absence of other technologies is guaranteed**

* Proposals: Following alternatives have been proposed, please indicate your view:
	+ Option1: For environments “where the absence of other technologies is guaranteed” use a flexible channel raster {5200, 5220, 5240, 5260, 5280, 5300, 5520, 5540, 5560, 5580, 5600, 5620, 5640, 5660, 5680, 5785, 5805, 5825, 5845, 5865} (Intel, Qualcomm)

Add specification text that would state that certain raster locations are only for use in environments where the absence of other technologies is guaranteed (e.g., by level of regulations, private premises policies). It would be the responsibility of the (public or non-public) network owner to ensure that this requirement is respected

* + Option2: RAN4 should consider 100 MHz channel bandwidth configuration in NR-U will not overlap two 80 MHz Wi-Fi channel bonding, only four 100 MHz channel raster (5200, 5300, 5520 and 5865 MHz) for NR-U in 5 GHz (n46). (Charter)
	+ Option3: RAN4 should not consider implementing NR-U 100 MHz channel bandwidth configurations in n46 (5 GHz) band. (Charter)
	+ Option4: The channel raster includes the following channels: 5200, 5300, 5520 and 5865 MHz. Add a note to the specification saying that additional channels may be added in future releases for deployment scenarios in which coexistence issues with other technologies (e.g. Wifi) can be avoided and/or the absence of other technologies can be guaranteed. (Qualcomm)
* Recommended WF
	+ Check and conclude if adding the clarification as proposed by Intel would be acceptable so we could consider option 1 for such environment. If not, option 2 would be the fallback option.

### Sub-topic 2-2: Band n96

**Issue 2-2-1: Intra-carrier guard band**

* Proposals: The intra-carrier guard band pattern should be:
	+ Option 1 (Apple)

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| --- | --- |
| **SCS** | **Pattern** |
| 30 kHz | 50-6-50-6-49-6-50-6-50 |
| 60 kHz | 23-5-23-5-23-5-23-5-23 |

* + Other (please, indicate your proposed pattern).
* Recommended WF
	+ Agree on option 1

## Companies views’ collection for 1st round

### Open issues

**Sub-topic 2-1: Band n46**

Issue 2-1-1: 100MHz channel BW for band n46 - with presence of other technology, e.g. WiFi

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| **Company** | **Comments** |
| Charter Communications Inc | * + We support Option1: RAN4 should consider 100 MHz channel bandwidth configuration in NR-U will not overlap two 80 MHz Wi-Fi channel bonding, only four 100 MHz channel raster (5200, 5300, 5520 and 5865 MHz) for NR-U in 5 GHz (n46). (Charter, Qualcomm)
	+ As a secondary proposal, we support Option2: RAN4 should not consider implementing NR-U 100 MHz channel bandwidth configurations in n46 (5 GHz) band. (Charter)
 |
| Qualcomm | We support the recommended WF. |
| CableLabs | We support Option 1. Option 2 is also agreeable. The parameter “*absenceOfAnyOtherTechnology-r16*” only works at the regulation level. It cannot guarantee absence of other technology in the field. |
| Huawei | We support option 3, and ok with the recommended WF.  |
| Comcast | We support option 1 and are ok with option 2. |
| Skyworks | Beyond 100MHz channelization for n46, we would like to remind that we need to agree on the tripled-punctured SEM so that 100MHz can operate in band n96. |
| Intel | We support option 3 |
| Broadcom | We support Option 1 and we are also OK with Option 2. |

Issue 2-1-2: 100MHz channel BW for band n46 – where the absence of other technologies is guaranteed

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| **Company** | **Comments** |
| Charter Communications Inc | * + We support Option2: RAN4 should consider 100 MHz channel bandwidth configuration in NR-U will not overlap two 80 MHz Wi-Fi channel bonding, only four 100 MHz channel raster (5200, 5300, 5520 and 5865 MHz) for NR-U in 5 GHz (n46). (Charter)
	+ We also support Option3: RAN4 should not consider implementing NR-U 100 MHz channel bandwidth configurations in n46 (5 GHz) band. (Charter)
	+ We also have stated in previous meetings that there isn’t a feasible way to guarantee absence of other technologies. Furthermore, we believe a specification text or a note is not normative and if left to the responsibility of the private network there is a significant risk of poor implementation will cause interference problems.
 |
| Qualcomm | We would support option 1, but we believe it may not be agreeable to other companies.As a compromise, we propose option 5, which includes the same channels as option 2. |
| CableLabs | We support Option 2. Option 3 is also agreeable. The parameter “*absenceOfAnyOtherTechnology-r16*” only works at the regulation level for countries where you could guarantee no other technologies. However, for markets that NR-U and other technologies may coexist, including North America and Europe, this parameter would not be set to true. The absence of other technology cannot be guaranteed in the field. |
| Huawei | We support option 1 |
| Comcast | We support option 2 and are ok with option 3. |
| Intel | We support option 1 |
| Broadcom | We support Option 2 and also ok with Option 3. |

**Sub-topic 2-2: Band n96**

Issue 2-2-1: Intra-carrier guard band

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| **Company** | **Comments** |
| Charter Communications Inc | We support option 1, Apple’s proposal |
| Skyworks | Support moderator recommended WF |
| Broadcom | We support Option 1, proposed by Apple. |

CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| NA |  |
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## Summary for 1st round

### Open issues

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|  | **Status summary**  |
| **Issue 2-1-1** | *Tentative agreements: Option 1 seems agreeable (to be confirmed by Intel)*RAN4 should consider 100 MHz channel bandwidth configuration in NR-U will not overlap two 80 MHz Wi-Fi channel bonding, only four 100 MHz channel raster (5200, 5300, 5520 and 5865 MHz) for NR-U in 5 GHz (n46)*Candidate options:**Recommendations for 2nd round: To be captured in the WF* |
| **Issue 2-1-2** | *Tentative agreements: Different views, option 4 is very close to option 2 and might be an accetapble compromise.**Candidate options:**Recommendations for 2nd round: To be further discussed and captured in the WF*Charter Communications Inc. We had posted a comment during first round,“We also have stated in previous meetings that there isn’t a feasible way to guarantee absence of other technologies.  Furthermore, we believe a specification text or a note is not normative and if left to the responsibility of the private network there is a significant risk of poor implementation will cause interference problems.” ,and received no feedback.We cannot compromise in option 4 unless there is a clear answer on how are we going to guarantee absence of other technologies and whether a note is sufficient enough as it is  not normative in order to avoid poor field implementation causing interference.Our recommendation is to approve option 2 |
| **Issue 2-2-1** | *Tentative agreements:* The intra-carrier guard band pattern should be:

|  |  |
| --- | --- |
| **SCS** | **Pattern** |
| 30 kHz | 50-6-50-6-49-6-50-6-50 |
| 60 kHz | 23-5-23-5-23-5-23-5-23 |

*Candidate options:* *Recommendations for 2nd round: To be captured in the WF* |

### 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)

Continue discussion via the Way Forward.

## Summary for 2nd round

See documents final recommendation in 4.2

# Topic #3: Misc

This topic is addressing other submitted tdocs not related to previous requests.

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2204511 | China Telecom | ***Observation 1***: *If new channel bandwidth(s) is introduced in later release and indicated in SIB1 during initial access process, the earlier release UEs, which do not know the presence of the newly introduced bandwidth in the specification, may report an error and cannot access to the network. This issue has been observed in the field testing.****Observation 2:*** *From RAN1/2 specifications perspective, there should be no problem if the carrier bandwidth indicated in SIB1 message is larger than the UE’s supported channel bandwidth as long as the UE’s supported channel bandwidth is wider than or equal to the bandwidth of the initial BWP.****Proposal 1***: *Add the following NOTE to Table B.4.1-1 of 38.307 to clarify the UE behavior* *to access to new channel bandwidth(s) introduced in later release during initial access:* *NOTE 2: For new channel bandwidth(s) specified in Rel-N and release independent from Rel-15, the Rel-15 to Rel-(N-1) UE can access to the network when the new channel bandwidth(s) is indicated in SIB1 for initial access.* |
| R4-2204548 | Qualcomm | CR n48 NS\_27 30MHz BW error rel 17 Cat-F |
| R4-2204568 | CMCC | Draft CR for 38.104-Addition of 25 MHz for n28 |
| R4-2204569 | CMCC | Draft CR for 38.101-1- Addition of 25 MHz for n28 and n83 |
| R4-2204731 | Samsung | Not submitted |
| R4-2204732 | Samsung | Not submitted |
| R4-2205316 | Rogers Communications Canada, AT&T | **Proposal 1. It is proposed that RAN4 updates Table 5.3.5-1 of 3GPP TS 38.101-1 by changing RF channel bandwidth 70 MHz from optional to mandatory for bands n77 and n78****Proposal 2, It is proposed that RAN4 updates Table 5.3.5-1 of 3GPP TS 38.101-1 by changing RF channel bandwidth 90 MHz from optional to mandatory for bands n48 and n77** |

## Open issues summary

### Sub-topic 3-1: New channel BW – Release independant issue

Sub-topic description: If new channel bandwidth(s) is introduced in later release and indicated in SIB1 during initial access process, the earlier release UEs, which do not know the presence of the newly introduced bandwidth in the specification, may report an error and cannot access to the network. This issue has been observed in the field testing.

**Issue 3-1-1: New channel bandwidth - release independent issue**

* Proposals: Add the following note in Table B.4.1-1 of 38.307 to clarify the UE behavior to access to new channel bandwidth(s) introduced in later release during initial access:

*NOTE 2: For new channel bandwidth(s) specified in Rel-N and release independent from Rel-15, the Rel-15 to Rel-(N-1) UE can access to the network when the new channel bandwidth(s) is indicated in SIB1 for initial access*

* + Agree (China Telecom)
	+ Disagree
* Recommended WF
	+ Agree.

### Sub-topic 3-2: Optional channel bandwidth

Sub-topic description: When 70 MHz/90MHz support was introduced in bands n77, n78 and n48, it was done specifying those channel BW will be optional. This is still the case.

**Issue 3-2-1: 70 MHz channel BW for bands n77 and n78**

* Proposals: Mandate support for 70 MHz channel bandwidth in n77 and n78 (update Table 5.3.5-1 of 3GPP TS 38.101-1)
	+ Agree (Rogers, AT&T)
	+ Disagree
* Recommended WF
	+ Agree.

**Issue 3-2-2: 90 MHz channel BW for bands n48 and n77**

* Proposals: Mandate support for 70 MHz channel bandwidth in n77 and n78 (update Table 5.3.5-1 of 3GPP TS 38.101-1)
	+ Agree (Rogers, AT&T)
	+ Disagree
* Recommended WF
	+ Agree.

## Companies views’ collection for 1st round

### Open issues

Issue 3-1-1: New channel bandwidth - release independent issue

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| **Company** | **Comments** |
| T-Mobile USA | Disagree. We don’t agree with the wording in the proposal, and we don’t think this change is needed. The proposed wording is not accurate, because it says the UE can access the network when a new channel bandwidth is indicated in SIB1. This is not accurate because the UE is only allowed to access the network if the UE supports a carrier bandwidth that is greater than or equal to the channel bandwidth of the initial BWP and less or equal to the initial channel BW in SIB1. But more importantly, we think the proposal describes behavior, and we don’t think that behavior should be specified in 38.307, only release independence. We don’t think the situation for new channel bandwidths is any different than the situation for legacy bandwidth that the UE does not support. The situation is already clear in 38.331, which anticipated the introduction of new channel bandwidths:2> if the UE supports an uplink channel bandwidth with a maximum transmission bandwidth configuration (see TS 38.101-1 [15] and TS 38.101-2 [39]) which- is smaller than or equal to the *carrierBandwidth* (indicated in *uplinkConfigCommon* for the SCS of the initial uplink BWP), and which- is wider than or equal to the bandwidth of the initial uplink BWP, and2> if the UE supports a downlink channel bandwidth with a maximum transmission bandwidth configuration (see TS 38.101-1 [15] and TS 38.101-2 [39]) which- is smaller than or equal to the *carrierBandwidth* (indicated in *downlinkConfigCommon* for the SCS of the initial downlink BWP), and which- is wider than or equal to the bandwidth of the initial downlink BWP, andAlso, this situation is already covered in 38.101-1 5.3.1: **From a UE perspective, the UE is configured with one or more BWP / carriers, each with its own UE channel bandwidth.** **The UE does not need to be aware of the BS channel bandwidth or how the BS allocates bandwidth to different UEs.**We think that the equipment that was not behaving property is not compliant with 38.331 and 38.101-1 and should be fixed. We don’t see a need to update 38.307. We are interested to hear what others think.  |
| SoftBank | While I have a sympathy to CT’s intention to improve the situation, I tend to agree with T-mobile USA’s view in terms of how to capture.  |
| China Telecom | This issue is observed when the following two conditions are met:1. The new channel bandwidth is indicated in SIB1 for initial access.
2. And the new channel bandwidth is larger than the maximum channel bandwidth defined in previous release.

The difference from the situation for legacy bandwidth UEs do not support is that the presence of new channel bandwidth is unknown to legacy UE since the it is beyond the scope of the bandwidth defined in previous release.So, we prefer adding a note to clarify the UE’s behavior in this case. |
| MTK | Disagree.We share similar view with TMO that the current 38.331 already addresses the issue on how UE determine whether it can camp on a cell according to the channel BW info in SIB1. We do not see a very strong intention to add the NOTE in the proposal. In our understanding, the network can always use legacy channel BW in SIB1 and provide dedicated RRC signaling to modify the UE-specific channel BW later. We hope this can address the concern of China Telecom. |
| China Telecom | @MTK: It is true that the network can use legacy channel BW in SIB1. However, there are scenarios where the network uses the new channel bandwidth in SIB1 for the initial access if new bigger channel is available. We should not restrict the network’s operation and it is harmless to clarify UEs behavior when new bigger channel bandwidth is indicated in SIB1 during initial access procedure. |

Issue 3-2-1: 70 MHz channel BW for bands n77 and n78

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| **Company** | **Comments** |
| AT&T | As co-sourcing company, we support the proposal. We would like to see a way forward assigned (preferably to Rogers if they are willing to source but we can also take it) to capture the agreement after the first round and to capture the approach to take to revise the specifications in order for this to be treated at the March RAN Plenary meeting. |

Issue 3-2-2: 90 MHz channel BW for bands n48 and n77

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| **Company** | **Comments** |
| AT&T | Same comments as for Issue 3-2-1. |

CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| R4-2204548 | *CR n48 NS\_27 30MHz BW error rel 17 Cat-F* |
| Skyworks: We support this CR, thank you for bringing it. |
|  |
| R4-2204568 | *Draft CR for 38.104-Addition of 25 MHz for n28**Moderator: As the requests are not yet been approved by RAN, RAN4 is not supposed to work on this draft CR, it will be postponed then. Companies are nevertheless encouraged to provide any early comment.* |
| Skyworks: MSD needs to be studied. Impact on NS\_18 needs to be checked |
|  |
| R4-2204569 | *Draft CR for 38.101-1- Addition of 25 MHz for n28 and n83**Moderator: As the requests are not yet been approved by RAN, RAN4 is not supposed to work on this draft CR, it will be postponed then. Companies are nevertheless encouraged to provide any early comment.* |
| Skyworks: Impact on NS\_18 needs to be checked |
|  |

## 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.*

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| --- | --- |
|  | **Status summary**  |
| **Issue 3-1-1** | *Tentative agreements: The companies who have commented disagreed with the proposed changes.**Candidate options:**Recommendations for 2nd round: Continue the discussion in the 2nd round to align views if the issue found in field trial is due to a bad UE implementation or if anything would need to be fixed in RAN4. A WF could be initiated if needed.* |
| **Issue 3-2-1****Issue 3-2-2** | *Tentative agreements: No concern was raised during the 1st round, the proposals are agreeable.**Candidate options:**Recommendations for 2nd round: As proposed by AT&T, a WF should be drafted to capture this.* |

### 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”* |
| R4-2204548 | *To be agreed.* |
| R4-2204568 | *As indicated in the summary, the request has not yet been accepted by RAN, the draft CR should be noted.* |
| R4-2204569 | *As indicated in the summary, the request has not yet been accepted by RAN, the draft CR should be noted.* |
| R4-2204731 | *To be discussed in the 2nd round – waiting for RAN1 LS reply* |
| R4-2204732 | *To be discussed in the 2nd round – waiting for RAN1 LS reply* |

## Discussion on 2nd round (if applicable)

### Sub-topic 3-1: New channel BW – Release independant issue

**Issue 3-1-1: New channel bandwidth - release independent issue**

* Proposals: Add the following note in Table B.4.1-1 of 38.307 to clarify the UE behaviour to access to new channel bandwidth(s) introduced in later release during initial access:

*NOTE 2: For new channel bandwidth(s) specified in Rel-N and release independent from Rel-15, the Rel-15 to Rel-(N-1) UE can access to the network when the new channel bandwidth(s) is indicated in SIB1 for initial access*

* + Agree (China Telecom)
	+ Disagree (T-Mobile USA, SoftBank, MTK)
* Recommended WF
	+ Come back next meeting.

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| --- | --- |
| **Company** | **Comments** |
| China Telecom | As discussed on Round 1, although current 38.331 already considers the new channel to be introduced, there are cases that legacy UEs cannot interpret the carrier bandwidth indicated in SIB1 when new larger channel is used during initial access procedure. So, a simple solution is adding a note in Table B.4.1-1 of 38.307 to clarify the UE behaviour. |
| MTK | This proposal is actually non-backward compatible. The problem is that not all shipped UEs can be modified to accommodate this new change to the camping-on process in Rel-15. As we mentioned in the 1st round, we believe that network can always use a legacy BW in SIB1 and revise the UE-specific CBW via dedicated RRC signaling. We prefer to keep zero impact to legacy UE behaviors to avoid NBC problem and would like the proponent to take this into consideration. |

### Sub-topic 3-3: WF on 70 and 90 MHz channel BW support for bands n48, n77 and n78.

Focus on commenting and finalizing this WF.

### Sub-topic 3-4: n79

A LS reply is expected from RAN1, answering the LS RAN4 sent in last meeting.

Based on this reply, following 2 draft CRs will be discussed in the 2nd round.

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2204731 | *Draft CR to TS 38.101-1: Addition of notes for band n79* |
| Qualcomm: An agreement has been reached in RAN1 to use alternative (1a) of re-using Table 13-6 for CORESET#0 SCS of 30 kHz (and Table 13-5 for CORESET#0 SCS of 15 kHz), because it has less impacts on UE implementation and RAN1 specs.But, the CR is removing the minimum channel BWs. Can we update the CR to reflect latest RAN1 agreement and refine note 11, or do we need to wait for the official LS reply next meeting? |
| Ericsson: As Qualcomm mentioned, it would be better to explicitely add the note for the band itself. The LS mentions the tables’ title will be changed with “except for the frequency bands given in [5, TS38.101-1]”Shouldn’t we then add the note in the bands’s table (5.2-1 in 38.101-1) and not to the channel BW table as proposed in the draft CR? |
| Samsung: The original intention was that such kind of limitation applies to <40MHz only. However, we agree that it would be clearer if the note moves to Table 5.2-1 with following text. “This band is only applicable to Table 13-5 or Table 13-6 in [13, TS 38.213] regardless of the minimum channel bandwidth.” |
| R4-2204732 | *CR Draft CR to TS 38.104: Addition of notes for band n79* |
| Qualcomm: We are fine with updating the note in the bands table,  |
|  |

## Summary for 2nd round

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic 3-1** | There are strong concerns of NBC is the proposed change is introduced. Other solution could be proposed in next meeting. |
| **Sub-topic 3-3** | See documents final recommendation in 4.2 |
| **Sub-topic 3-4** | See documents final recommendation in 4.2 |

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |
| --- | --- | --- |
| **Title** | **Source** | **Comments** |
| WF on adding 100 MHz channel BW in NR-U bands n46 and n96. | Qualcomm |  |
| WF on 70 and 90 MHz channel BW support for bands n48, n77 and n78. | Rogers |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation**  | **Comments** |
| *Basket WI* |
| R4-2205068 | Revised Basket WID on adding channel bandwidth support to existing NR bands | Ericsson | To be revised |  |
| R4-2205069 | Big CR to TS 38.104: Adding channel BW support in existing NR bands | Ericsson | For email approval |  |
| R4-2205070 | Big CR to TS 38.101-1: Adding channel BW support in existing NR bands | Ericsson | For email approval |  |
| *NR-U* |
| R4-2203537 | Further discussion on co-existence proposals between NR-U 100 MHz channel raster and Wi-Fi channel bonding in n46 (5 GHz) | Charter Communications, Inc | To be noted |  |
| R4-2203667 | On intra-carrier guard bands for the 100MHz NR-U channel | Apple | To be noted |  |
| R4-2204471 | NR-U 100 MHz channelization in band n46 | Qualcomm | To be noted |  |
| R4-2205822 | Views on NR-U 100MHz in n46 | Intel | To be noted |  |
| *Misc.* |
| R4-2204511 | Clarification on UE behavior to new channel bandwidth(s) introduced in later release during initial access | China Telecom | To be noted |  |
| R4-2204548 | CR n48 NS\_27 30MHz BW error rel 17 Cat-F | Qualcomm | to be endorsed | *This is actually a draft CR, not a CR..* |
| R4-2204568 | Draft CR for 38.104-Addition of 25 MHz for n28 | CMCC | To be noted |  |
| R4-2204569 | Draft CR for 38.101-1- Addition of 25 MHz for n28 and n83 | CMCC | To be noted |  |
| R4-2204731 | Draft CR to TS 38.101-1: Addition of notes for band n79 | Samsung | To return to |  |
| R4-2204732 | Draft CR to TS 38.104: Addition of notes for band n79 | Samsung | To return to |  |
| R4-2205316 | Discussion on UE support of RF channel bandwidth for bands n48\_n77\_n78 | Rogers Communications Canada, AT&T | To be noted |  |

## 2nd round

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-2206447 | WF on adding 100 MHz channel BW in NR-U bands n46 and n96. | Qualcomm | To be approved |  |
| R4-2206448 | WF on 70 and 90 MHz channel BW support for bands n48, n77 and n78. | Rogers | To be approved |  |
| R4-2206449 | Revised Basket WID on adding channel bandwidth support to existing NR bands | Ericsson | To be endorsed | Revision of R4-2205068 |
| R4-2205069 | Big CR to TS 38.104: Adding channel BW support in existing NR bands | Ericsson | withdrawn | *There was no draft CR to TS 38.104 endorsed in this meeting.* |
| R4-2205070 | Big CR to TS 38.101-1: Adding channel BW support in existing NR bands | Ericsson | For email approval |  |
| R4-2204731 | Draft CR to TS 38.101-1: Addition of notes for band n79 | Samsung | To be endorsed |  |
| R4-2204732 | Draft CR to TS 38.104: Addition of notes for band n79 | Samsung | withdrawn |  |
| R4-2204548 | CR n48 NS\_27 30MHz BW error rel 17 Cat-F | Qualcomm | Status should be changed to “to be endorsed” | *This is actually a draft CR, not a CR..* |

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

# Annex

Contact information

|  |  |  |
| --- | --- | --- |
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Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)