**3GPP TSG-RAN WG4 Meeting #109 R4-2318107**

**Chicago, US, 13-17 Nov 2023**

**Title:** Topic summary for [109][101] Upto\_R16\_UERF\_maintenance

**Source:** Moderator (OPPO)

**Agenda item:** 4.8

**Document for:** Information

# Introduction

This is the summary for Rel-15/16 maintenance under agenda 4.1 which includes 133 papers in total (CAT F+A) and 47 papers with CAT-F and discussion papers.

**List of topics below:**

* 5MHz CBW with 30kHz SCS (2)
* UE coexistence simplify CRs (6)
* MOP table format for 38.101-3 (4)
* CRs for 38.101-1 (19)
* CRs for 38.101-2 (6)
* CRs for 38.101-3 (6)
* CRs for 38.307 (1)

**New allocated Tdocs**

**Discussions of issues and conclusions in the first round**

# 5MHz CBW with 30kHz SCS (2)

## Contributions summary

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2320639 | Nokia | FRCs for 5 MHz channel bandwidth in 30 KHz SCS   1. None of the bands defined, uses 30 KHz SCS for 5 MHz channel bandwidth. 2. Agree to delete the 5 MHz channel bandwidth column from the 30 KHz SCS in FRC tables. 3. Agree to the companion CRs [2—5]. 4. Encourage other companies to debate if Table 5.3.2-1 should be corrected too. |
| R4-2320632(R15)  CAT-A:  R4-2320633  R4-2320634  R4-2320635 | Nokia | [NR\_newRAT] CR to 38.101-1 on FRC deletion for 5MHz 30 KHz |

## Open issues summary

### Sub-topic 1-1

**Issue 1-1-1: Whether to delete 5 MHz CBW with 30 KHz SCS from FRC tables**

Option 1: Yes

Option 2: No

Recommended WF:

Qualcomm: in principle we are OK. We can update from Rel-18.

Nokia: why is it there.

R&S: there is no a lot of band combinations.

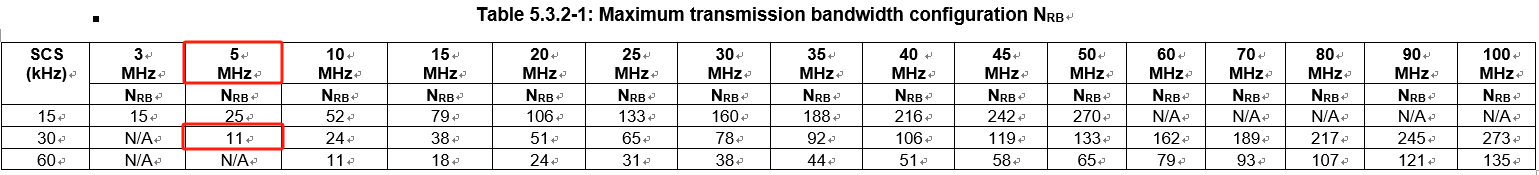
Huawei: we need be careful to have change on 5.3.2-1.

Nokia: why can we not remove 11 from 5.3.2-1.

CHTTL: for FRC, we are fine. For core requirement, we need be careful.

Agreement: delete 5 MHz CBW with 30 KHz SCS from FRC tables from Rel-15 specification.

**Issue 1-1-2: Whether to delete 5 MHz CBW with 30 KHz SCS from table 5.3.2-1 of 38.101-1**



Option 1: Yes

Option 2: No

Recommended WF:

### CRs

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| --- | --- | --- | --- |
| **T-doc number** | **Company** | **Comments** | **Recommendation** |
| R4-2320632(R15)  CAT-A:  R4-2320633  R4-2320634  R4-2320635 | Nokia | [NR\_newRAT] CR to 38.101-1 on FRC deletion for 5MHz 30 KHz |  |

# UE coexistence simplify CRs (6)

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| --- | --- | --- | --- |
| **T-doc** | **Company** | **Title/Comments** | **Recommendation** |
| R4-2318520(R16)  CAT-A:  R4-2318521  R4-2318522 | Nokia | CR for 38.101-1 UE to UE coex R16 (38101-1)  *Moderator note: it clarifies the definition of intersection requirements, and the testability according to WF R4-2317633.* |  |
| R4-2318523(R16)  CAT-A:  R4-2318681  R4-2318525 | Nokia | CR for 38.101-3 UE to UE coex R16 (38101-3) |  |
| R4-2318517(R16)  CAT-A:  R4-2318518  R4-2318519 | Nokia | CR for 36.101 UE to UE coex R16 (36101) |  |
| R4-2318451(R16)  CAT-A:  R4-2318452  R4-2318453 | Meta Ireland, Nokia | CR on TS38.101-1 for simplification of NR V2X UE coexistence in Rel-16 (38101-1) |  |
| R4-2318454(R16)  CAT-A:  R4-2318455  R4-2318456 | Meta Ireland, Nokia | CR on TS38.101-3 for simplification of NR V2X UE coexistence in Rel-16 (38101-3) |  |
| R4-2318448(R16)  CAT-A:  R4-2318449  R4-2318450 | Meta Ireland, Nokia | CR on TS36.101 for simplification of LTE V2X UE co-existence in Rel-16 (36101) |  |

*Moderator note: WF R4-2317633 was agreed in RAN4#109 with below key information, CRs seems aligned with the WF:*

|  |
| --- |
| **Conclusion**  This WF has a proposal for a CR for 38.101-1 NR CA section 6.5A.3.2.3 Spurious emissions for UE co-existence for Inter-band CA. If this proposal is acceptable similar changes are being proposed for LTE UL interband CA in 36.101 and EN-DC UL DC in 38.101-3. CRs would be provided for next meeting for all thee specifications. |

# MOP table format for 38.101-3 (4)

## Contributions summary

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2320606 | CHTTL | Discussion on the HPUE inter-band uplink EN-DC support in the MOP table  **Proposal 1: Align the structure of the MOP table for uplink inter-band EN-DC in TS 38.101-3 with the NR-CA table in TS 38.101-1 that there will be one row per UL configuration, and approve the related CRs in R4-2320607, R4-2320608, R4-2320609.**  Note that the PC2 support of DC\_1A\_n84A\_ULSUP-TDM\_n77A, DC\_1A\_n84A\_ULSUP-TDM\_n78A, DC\_3C\_n77A, DC\_3C\_n79A, DC\_7C\_n78A, DC\_41C\_n77A will not be kept in the new row.  Note that the PC2 support for DC\_3C\_n41A, DC\_3C\_n78A, DC\_39C\_n41A, DC\_41C\_n79A will be kept although it seems that those are not discussed or requested in the past. |
| R4-2320607(R16)  R4-2320608(R17)  R4-2320609(R18) | CHTTL | [DC\_R16\_1BLTE\_1BNR\_2DL2UL] CR for corrections and re-structures of the MOP table for EN-DC |

## Open issues summary

### Sub-topic 3-1

**Issue 3-1-1: Align 38.101-3 MOP table format as 38.101-1, i.e. one row per UL configuration**

*Moderator note: The purpose of changing MOP table format is to avoid HPUEs are applicable to high order BCs together with low order BC.*

Option 1: Yes

Option 2: No

Recommended WF:

Samsung: the proposal is reasonable.

Agreement: Align 38.101-3 MOP table format as 38.101-1, i.e. one row per UL configuration.

**Issue 3-1-2: Which power classe should be applied for high order BC**

Option 1: it is proposed to keep PC2 of below green highlighted, and only apply PC3 for the yellow highlighted, and remove the red band combination from spec.

* maybe it’s ok to keep at least those introduced in Rel.16 (those highlighted in green in Table 1), as there are existed in the spec for quite a long while.
* But for the newly added PC2 support for the inter-band EN-DC with intra-band components in Rel.17 and Rel.18, maybe it’s better not to keep them to avoid more confusion in the baskets.

Table 1: UL EN-DC configurations with PC2 support in TS 38.101-3 V18.3.0

| EN-DC configuration | Power class 2  (dBm) | Tolerance  (dB) | Power class 3  (dBm) | Tolerance  (dB) | Introduced release (PC2) |
| --- | --- | --- | --- | --- | --- |
| DC\_1A\_n77A  DC\_1A\_n84A\_ULSUP-TDM\_n77A | 266 | +2/-3 | 23 | +2/-3 | Rel.18 |
| DC\_1A\_n78A  DC\_1A\_n84A\_ULSUP-TDM\_n78A | 266 | +2/-3 | 23 | +2/-3 | Rel.17 |
| DC\_3A\_n41A,  DC\_3C\_n41A,  DC\_3C\_n41A, | 266 | +2/-3 | 23 | +2/-3 | Rel.16 |
| DC\_3A\_n77A  DC\_3C\_n77A | 266 | +2/-3 | 23 | +2/-3 | Rel.18 |
| DC\_3A\_n78A  DC\_3C\_n78A | 266 | +2/-3 | 23 | +2/-3 | Rel.16 |
| DC\_3A\_n79A  DC\_3C\_n79A | 266 | +2/-3 | 23 | +2/-3 | Rel.18 |
| DC\_7A\_n78A  DC\_7C\_n78A | 266 | +2/-3 | 23 | +2/-3 | Rel.17 |
| DC\_39A\_n41A  DC\_39C\_n41A | 265 | +2/-3 | 23 | +2/-3 | Rel.16 |
| DC\_39A\_n79A | 265 | +2/-3 | 23 | +2/-3 | Rel.16 |
| DC\_41A\_n77A  DC\_41C\_n77A | 266,8 | +2/-3 | 23 | +2/-3 | Rel.18 |
| DC\_41A\_n79A  DC\_41C\_n79A | 266,8 | +2/-3 | 23 | +2/-3 | Rel.16 |
| DC\_66A\_n78A  DC\_66A-66A\_n78A | 266 | +2/-3 | 23 | +2/-3 | Rel.18 |

*Moderator note: The CRs are based on above table, collecting comments on the table then check CRs.*

CHTTL: try to check the discussions in past. There are some combinations accidently support HPUE. We try to remove PC2 support from Rel-17 and Rel-18. Those band combinations are highlighted by yellow are accidently added. For red one, we should remove it.

Huawei: If reorganizing table, it is OK. But we should not remove band combinations.

Qualcomm: what it means accidently being added?

CHTTL: further analysis is needed.

Qualcomm: we need check whether the requirements are missing.

Agreement:

* Keep PC2 and PC3 for DC\_1A\_n84A\_ULSUP-TDM\_n77A and DC\_1A\_n84A\_ULSUP-TDM\_n78A
* Further check whether the requirements are missing to support PC2 for the other band combinations highlighted by yellow in the future meeting.
* Remove DC\_66A-66A\_n78A

### CRs

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| **T-doc number** | **Company** | **Comments** | **Recommendation** |
| R4-2320607(R16) | CHTTL | [DC\_R16\_1BLTE\_1BNR\_2DL2UL] CR for corrections and re-structures of the MOP table for EN-DC |  |
| R4-2320608(R17) | CHTTL | [DC\_R16\_1BLTE\_1BNR\_2DL2UL] CR for corrections and re-structures of the MOP table for EN-DC |  |
| R4-2320609(R18) | CHTTL | [DC\_R16\_1BLTE\_1BNR\_2DL2UL] CR for corrections and re-structures of the MOP table for EN-DC |  |

# CRs for 38.101-1 (19)

## CRs

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| **T-doc** | **Company** | **Title/Comments** | **Recommendation** |
| R4-2318237(R15)  CAT-A:  R4-2318238  R4-2318239  R4-2318240 | Qualcomm | Fc terminology update (38101-1) |  |
| R4-2318395(R15) | Qualcomm | UL MIMO Spurious emissions per UE (38101-1)  *Moderator note: only changes R15.* |  |
| R4-2320902(R16)  CAT-A:  R4-2318246  R4-2318247 | Qualcomm | CR for Intra-band UL CA MPR clarification |  |
| R4-2318746(R16)  CAT-A:  R4-2318747  R4-2318748 | Apple | CR to TS38.101-1 Rel-16 CAT-F: On corrections for NR-U A-MPR requirements  *Moderator note: in cover page it should be 38.101-1 instead of 38.104.* |  |
| R4-2318754(R15)  CAT-A:  R4-2318755  R4-2318756  R4-2318757 | Apple | [NR\_newRAT-Core] CR for TS 38.101-1 Rel-15: Introducing missing MSD for harmonic mixing  *Moderator note: introduce 5th order harmonic mixing for CA\_n28A-n78A with PC3, and analysis is in R4-2318753.* |  |
| R4-2318888(R16)  CAT-A:  R4-2318889  R4-2318890 | Xiaomi | CR for Rel-16 38.101-1 to correct the general limit for in-band emissions shared spectrum channel access. |  |
| R4-2319016(R15)  CAT-A:  R4-2319017  R4-2319018  R4-2319019 | NTT DOCOMO | [NR\_newRAT] CR for clarification on applicability of Rx antenna number for Rx requirements for TS 38.101-1 |  |
| R4-2319166(R16)  CAT-A:  R4-2319167 | Nokia | Addition of 30 kHz SCS for Sync Raster for Band n53  *Moderator note: 30 kHz SCS to band n53 was initially introduced in Rel-18. Here it introduces 30khz also to Rel-16. Is there no NBC issue?* |  |
| R4-2319403(R16)  CAT-A:  R4-2319404  R4-2319418 | SoftBank | [NR\_n41\_BW-Core] Support of PC1.5 for n41 30MHz in Japan (R16)  *Moderator note: it confirms the values in [] from last meeting.* |  |
| R4-2319451(R16)  R4-2319452(R17)  CAT-A:  R4-2319453 | Anritsu | [NR\_n30-Core] CR to correct the measurement BW for Additional SEM for NS\_21  *Moderator note: to align with Canadian regulations in RP-221047 and R4-2119840?* |  |
| R4-2319454(R15)  CAT-A:  R4-2319455  R4-2319456  R4-2319457 | Anritsu | [NR\_newRAT-Core] CR to remove the word capable in power class 3 capable UE |  |
| R4-2319458(R16)  CAT-A:  R4-2319459  R4-2319460 | Anritsu | [NR\_RF\_FR1-Core] CR concerning the RMS average used in EVM measurement with transient period  *Moderator note: R4-2319458r1 is provided in the inbox, companies can check that version.* |  |
| R4-2319597(R16)  CAT-A:  R4-2319598  R4-2319599 | Ericsson | [NR\_n38\_BW2] Clarify A-MPR values for NS\_44 - Rel16 |  |
| R4-2319605(R16)  CAT-A:  R4-2319606  R4-2319607 | ZTE | [NR\_CADC\_R16\_2BDL\_xBUL] CR for TS 38.101-1 to correct inter-band NR DC configuration table (R16) |  |
| R4-2319869(R15)  CAT-A:  R4-2319870  R4-2319871  R4-2319872 | Huawei | [NR\_newRAT-Core] CR for 38.101-1 to clarify the applicable bands for additional UTRA ACLR requirements  *Moderator note: R4-2319870 should be CAT-F.* |  |
| R4-2320096(R16)  R4-2320097(R17)  CAT-A:  R4-2320098 | ZTE | [NR\_RF\_FR1\_enh-Core] Correct the P-MPRc terms in the Pcmax equation for intra-band contiguous CA |  |
| R4-2320628(R15)  CAT-A:  R4-2320629  R4-2320630  R4-2320631 | Nokia | [NR\_newRAT] CR to 38.101-1 on FRC correction |  |
| R4-2320884(R15)  CAT-A:  R4-2320885  R4-2320886  R4-2320887 | Ericsson | Correction of ?T\_RxSRS for SRS resource set consisting of two SRS ports |  |
| R4-2320974(R16)  CAT-A:  R4-2320976  R4-2320977 | Skyworks Solutions, Inc., Nokia | CR to TS 38.101-1 Rel-16 Corrections to UE co-existence requirements |  |

# CRs for 38.101-2 (6)

## CRs

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| **T-doc** | **Company** | **Title/Comments** | **Recommendation** |
| R4-2318241(R15)  CAT-A:  R4-2318242  R4-2318243  R4-2318244 | Qualcomm | Fc terminology update (38101-2) |  |
| R4-2318880(R15) | Xiaomi | CR for Rel-15 38.101-2 to correct some errors in the clause of the spectrum emission mask for CA. |  |
| R4-2318881(R16)  CAT-A:  R4-2318882  R4-2318883 | Xiaomi | CR for Rel-16 38.101-2 to correct some errors in the clause of the spectrum emission mask for CA. |  |
| R4-2318884(R15)  CAT-A:  R4-2318885  R4-2318886  R4-2318887 | Xiaomi | CR for Rel-15 38.101-2 to introduce the missed sub-clause 6.5A.2.2 as void |  |
| R4-2318990(R15)  CAT-A:  R4-2318991  R4-2318992  R4-2318993 | vivo | CR to 38.101-2 on adding missing definition of EIS spherical coverage link angle(Rel-15) |  |
| R4-2319424(R16)  R4-2319425(R17)  CAT-A:  R4-2319426 | Ericsson | [NR\_RF\_FR2\_req\_enh] Removal of interlaced channel bandwidths for CA BW class fallback groups 1-4  *Moderator note: limit FR2 CA BW class to only non-interlaced bandwidths* |  |

# CRs for 38.101-3 (6)

## CRs

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| **T-doc** | **Company** | **Title/Comments** | **Recommendation** |
| R4-2318470(R15) | Huawei, HiSilicon | [NR\_newRAT-Core] Correction to 6.5B.3.3.2 (Rel-15)  *Moderator note: The protected bands are removed in Rel-16 and forward TS 38.101-3, therefore no cat-A CRs are needed.* |  |
| R4-2318825(R15)  CAT-A:  R4-2318826  R4-2318827  R4-2318828 | Qualcomm | [NR\_newRAT-Core] Clarifications for FR2 testing with NR-DC and NR-CA  *Moderator note:* *R4-2318829 has been withdrawn.* |  |
| R4-2319412 | Samsung | Rel16 Cat F CR for 38.101-3 Correct the clause indication for non-collocated deployment |  |
| R4-2319413 | Samsung | Rel17 Cat F CR for 38.101-3 Correct the clause indication and the typo for non-collocated deployment |  |
| R4-2319762(R15)  CAT-A:  R4-2319763  R4-2319764  R4-2319765 | Samsung, CHTTL | Rel15 Cat F CR for 38.101-3 Add a general note to each configuration tables to alleviate the issue of missing mandatory simultaneous RxTx note (38101-3)  *Moderator note: does it overlap with the general description in clause 5.5B.1?* |  |
| R4-2319877(R15)  CAT-A:  R4-2319878  R4-2319879  R4-2319880 | Huawei | [NR\_newRAT-Core] CR for 38.101-3 to improve the wordings of the note 15 on simulataneous Rx/Tx capability for Band 42 and n77 (38101-3) |  |

# CRs for 38.307 (1)

## CRs

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| **T-doc** | **Company** | **Title/Comments** | **Recommendation** |
| R4-2320090(R16)  CAT-A:  R4-2320091 | ZTE | [NR\_newRAT-Core] Common UE RF requirements for 4Rx |  |