**3GPP TSG-RAN WG4 Meeting # 96-e R4-2011872**

**Electronic Meeting, 17-28 Aug., 2020**

**Agenda item:** 10.22, 10.23

**Source:** Moderator (CMCC)

**Title:** Email discussion summary for [96e] [134] NR\_SUL\_bands

**Document for:** Information

# Introduction

New WID on introduction of 1880-1920MHz SUL band (RP-201363) and 2300-2400MHz SUL band (RP-201364) for NR were approved in RAN#88-e meeting.

This email discussion includes contributions in agenda 10.22 and 10.23, the targets of email discussion based on companies’ contributions submitted in this e-meeting are as below:

* 1st round:

Discuss RF characteristics for NR SUL bands and provide comments on the CRs.

* 2nd round:

Strive to approve CRs.

# Topic #1: Introduction of 1880-1920MHz SUL band for NR

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2009633**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009633.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1** |
| [**R4-2009634**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104** |
| [**R4-2009635**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009635.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 36.104** |
| [**R4-2009636**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009636.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141** |
| [**R4-2009637**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009637.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104** |
| [**R4-2009638**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009638.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105** |
| [**R4-2009639**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009639.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141** |
| [**R4-2009640**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009640.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1** |
| [**R4-2009641**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009641.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2** |
| [**R4-2009642**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009642.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1** |
| [**R4-2009643**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009643.zip) | CMCC | **CR for introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2** |
| [**R4-2010151**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010151.zip) | Huawei, HiSilicon | **Proposal 1: Introduce the new SUL band for 1880 – 1920MHz as band n96.**  **Proposal 2: Specify UE RF requirements for the new SUL band for 1880 – 1920MHz following band n39.**  **Proposal 3: Specify BS spurious emissions requirements for the new SUL band for 1880 – 1920MHz in all the BS specs such as TS 38.104, 38.141-1/-2, 36.104, 36.141, 37.104, 37.141, 37.105, 37.145-1/-2, whenever necessary.** |
| [**R4-2010152**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010152.zip) | Huawei, HiSilicon | **draftCR to 38101-1 on introducing new SUL band n96** |
| [**R4-2010153**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010153.zip) | Huawei, HiSilicon | **draftCR to 38104 on introducing new SUL band n96** |
| [**R4-2010154**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010154.zip) | Huawei, HiSilicon | **draftCR to 38141-1 on introducing new SUL band n96** |
| [**R4-2010155**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010155.zip) | Huawei, HiSilicon | **draftCR to 38141-2 on introducing new SUL band n96** |
| [**R4-2010156**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010156.zip) | Huawei, HiSilicon | **draftCR to 36104 on introducing new SUL band n96** |
| [**R4-2010157**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010157.zip) | Huawei, HiSilicon | **draftCR to 36141 on introducing new SUL band n96** |
| [**R4-2010158**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010158.zip) | Huawei, HiSilicon | **draftCR to 37104 on introducing new SUL band n96** |
| [**R4-2010159**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010159.zip) | Huawei, HiSilicon | **draftCR to 37141 on introducing new SUL band n96** |
| [**R4-2010160**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010160.zip) | Huawei, HiSilicon | **draftCR to 37105 on introducing new SUL band n96** |
| [**R4-2010161**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010161.zip) | Huawei, HiSilicon | **draftCR to 37145-1 on introducing new SUL band n96** |
| [**R4-2010162**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010162.zip) | Huawei, HiSilicon | **draftCR to 37145-2 on introducing new SUL band n96** |

## Open issues summary

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

### Sub-topic 1-1 UE RF Requirements

**Issue 1-1-1: Operating band number**

* Proposals
  + Introduce the new SUL band for 1880 – 1920MHz as band n96.
* Recommended WF
  + TBA. Collect companies’ view in 1st round

**Issue 1-1-2: UE channel bandwidth，Channel raster，MOP /A-MPR and Spurious emissions**

* Proposals
  + Specify UE RF requirements for the new SUL band for 1880 – 1920MHz following band n39.
* Recommended WF
  + TBA. Collect companies’ view in 1st round

### Sub-topic 1-2 BS RF Requirements

**Issue 1-2-1: BS spurious emissions requirements**

* Proposals
  + Specify BS spurious emissions requirements for the new SUL band for 1880 – 1920MHz in all the BS specs such as TS 38.104, 38.141-1/-2, 36.104, 36.141, 37.104, 37.141, 37.105, 37.145-1/-2.
* Recommended WF
  + TBA. Collect companies’ view in 1st round

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | We can go with all the rapporteurs’ CRs.  Since the formal version of R17 specs do not emerge until Dec. If all the CRs are agreed in this meeting, one suggestion is to announce closure of this WID in Sept. and implement the CRs in Dec. |
| Ericsson | We are fine with all CMCC’s CRs, just one comment on R4-2009633: n96 shoud be added to NS\_50 (clause 6.2.3) |
| Nokia | Issue 1-1-1: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead  Issue 1-1-2: while requirements can follow n39, some changes in CR are needed as highlighted below |
| ZTE | We are fine with all CR’s from CMCC. |
| CMCC | Thanks for your comments.  To Ericsson: We are fine with your comment on R4-2009633, SUL band 1880-1920MHz will be added to NS\_50. (clause 6.2.3) in the revision of R4-2009633.  To Nokia: Although we have not seen any CR on the band n96 of NR-U, in order not to cause ambiguity, the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
| Nokia: | To CMCC: there is a number of NR-U CRs submitted to this meeting where n96 is included. |
| Skyworks | We confirm that NRU CR to introduce US band is using n96 (which has even been dicussed in Plenary with that number). Using n98 here would avoid conflicts |

### 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** |
| [**R4-2009633**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009633.zip) | Huawei: We agree to all the CRs. |
| Ericsson: n96 shoud be added to NS\_50 (clause 6.2.3) |
| Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. For band definition, note shall be added this band is applicable in countries where only n98 is used, otherwise there will be co-existence issue with Band n39. Some additional spurious emissions requirements are specified as for n39 but A-MPR and NS-signalling area is missing. |
| ZTE: we are fine with all CRs. |
| CMCC:  To Ericsson:  We are fine with your comment on R4-2009633, SUL band 1880-1920MHz will be added to NS\_50. (clause 6.2.3) in the revision of R4-2009633.  To Nokia:   1. Although we have not seen any CR on the band n96 for NR-U, in order not to cause ambiguity, the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. 2. We don’t see the need for countries restrictions on the SUL 1880-1920MHz in spec. The issue had already been discussed in RAN#88e meeting, Since it is not just China but also European operator that are in demand for this SUL band, regional restriction note had been removed in the WID (RP-201363) when it is approved in RAN#88e meeting. In addition, for this SUL band 1880-1920MHz there is no co-existence issue with B39, as this is only applicable to full-deployed SUL band on 1880-1920MHz. Perhaps a clarification note for the SUL band 1880-1920MHz SUL full-deployed scenario could be considered. 3. SUL band 1880-1920MHz will be added to NS\_50. (clause 6.2.3) in the revision of R4-2009633. |
|  | Nokia:  To CMCC: there is a number of NR-U CRs submitted to this meeting where n96 is included. For note, what we were looking for is no specific list of countries but rather clarification this band can be used only when there is no co-existence with Band 39. |
| [**R4-2009634**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. For band definition, note shall be added this band is applicable in countries where only n98 is used, otherwise there will be co-existence issue with Band n39. |
| Company B |
| CMCC：  To Nokia   1. Although we have not seen any CR on the band n96 for NR-U, in order not to cause ambiguity, the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. 2. We don’t see the need for countries restrictions on the SUL 1880-1920MHz in spec. The issue had already been discussed in RAN#88e meeting, Since it is not just China but also European operator that are in demand for this SUL band, regional restriction note had been removed in the WID (RP-201363) when it is approved in RAN#88e meeting. In addition, for this SUL band 1880-1920MHz there is no co-existence issue with B39, as this is only applicable to full-deployed SUL band on 1880-1920MHz. Perhaps a clarification note for the SUL band 1880-1920MHz SUL full-deployed scenario could be considered. |
|  | Nokia:  To CMCC: there is a number of NR-U CRs submitted to this meeting where n96 is included. For note, what we were looking for is no specific list of countries but rather clarification this band can be used only when there is no co-existence with Band 39. |
| [**R4-200963**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)**5** | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |
| [**R4-200963**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)**6** | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |
| [**R4-2009637**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |
| [**R4-2009638**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |
| [**R4-2009639**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |
| [**R4-2009640**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |
| [**R4-2009641**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |
| [**R4-2009642**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |
| [**R4-2009643**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Nokia: n96 is discussed for some time under NR-U agenda, we propose to use n98 instead. |
| CMCC: the band number n98 will replace n96 for SUL band 1880-1920MHz in the revision of 11 CRs. |
|  |

## 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#1-1** | *Tentative agreements:*  **Issue 1-1-1: Operating band number**   * Tentative agreement   + Introduce the new SUL band 1880 – 1920MHz as band n98.   **Issue 1-1-2: UE channel bandwidth，Channel raster，MOP /A-MPR and Spurious emissions**   * Tentative agreement   + SUL band 1880-1920MHz (n98) will be added to NS\_50 in the revision of R4-2009633.   + Clarification note could be introduced to indicate that there is no co-existence issue with Band 39. |
| **Sub-topic#1-2** | **Issue 1-2-1: BS spurious emissions requirements**   * Tentative agreement   + Clarification note could be introduced to indicate that there is no co-existence issue with Band 39.   *Recommendations for 2nd round:*  ***[Moderator]: Based on 1st round of comments collection. the tentative agreements will be captured in the revision of CRs on SUL band 1880 – 1920MHz, and strive to approve CRs.*** |

*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** |
| [**R4-2009633**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009633.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009634**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009635**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009635.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009636**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009636.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009637**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009637.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009638**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009638.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009639**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009639.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009640**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009640.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009641**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009641.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009642**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009642.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |
| [**R4-2009643**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009643.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised* |

## Discussion on 2nd round (if applicable)

|  |  |
| --- | --- |
| **CR** | **Comments collection** |
| *R4-2011803*  *Rev of [R4-2009633](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009633.zip)* | Company A: |
| Company B: |
| *R4-2011804*  *Rev of [R4-2009634](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |
| *R4-2011805*  *Rev of [R4-200963](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)5* | Company A: |
| Company B: |
| *R4-2011806*  *Rev of [R4-200963](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)6* | Company A: |
| Company B: |
| *R4-2011807*  *Rev of [R4-2009637](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |
| *R4-2011808*  *Rev of [R4-2009638](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |
| *R4-2011809*  *Rev of [R4-2009639](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |
| *R4-2011810*  *Rev of [R4-2009640](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |
| *R4-2011811*  *Rev of [R4-2009641](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |
| *R4-2011812*  *Rev of [R4-2009642](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |
| *R4-2011813*  *Rev of [R4-2009643](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |

## 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: Introduction of 2300-2400MHz SUL band for NR

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2009644**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009644.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1** |
| [**R4-2009645**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009645.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104** |
| [**R4-2009646**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009646.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 36.104** |
| [**R4-2009647**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009647.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 36.141** |
| [**R4-2009648**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009648.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.104** |
| [**R4-2009649**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009649.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.105** |
| [**R4-2009650**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009650.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.141** |
| [**R4-2009651**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009651.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-1** |
| [**R4-2009652**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009652.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-2** |
| [**R4-2009653**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009653.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-1** |
| [**R4-2009654**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009654.zip) | CMCC | **CR for Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2** |
| [**R4-2010163**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010163.zip) | Huawei, HiSilicon | **Proposal 1: Introduce the new SUL band for 2300 – 2400MHz as band n97.**  **Proposal 2: Specify UE RF requirements for the new SUL band for 2300 – 2400MHz following band n40.**  **Proposal 3: Specify BS spurious emissions requirements for the new SUL band for 2300 – 2400MHz in all the BS specs such as TS 38.104, 38.141-1/-2, 36.104, 36.141, 37.104, 37.141, 37.105, 37.145-1/-2, whenever necessary.** |
| [**R4-2010164**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010164.zip) | Huawei, HiSilicon | **draftCR to 38101-1 on introducing new SUL band n97** |
| [**R4-2010165**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010165.zip) | Huawei, HiSilicon | **draftCR to 38104 on introducing new SUL band n97** |
| [**R4-2010166**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010166.zip) | Huawei, HiSilicon | **draftCR to 38141-1 on introducing new SUL band n97** |
| [**R4-2010167**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010167.zip) | Huawei, HiSilicon | **draftCR to 38141-2 on introducing new SUL band n97** |
| [**R4-2010168**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010168.zip) | Huawei, HiSilicon | **draftCR to 36104 on introducing new SUL band n97** |
| [**R4-2010169**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010169.zip) | Huawei, HiSilicon | **draftCR to 36141 on introducing new SUL band n97** |
| [**R4-2010170**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010170.zip) | Huawei, HiSilicon | **draftCR to 37104 on introducing new SUL band n97** |
| [**R4-2010171**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010171.zip) | Huawei, HiSilicon | **draftCR to 37141 on introducing new SUL band n97** |
| [**R4-2010172**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010172.zip) | Huawei, HiSilicon | **draftCR to 37105 on introducing new SUL band n97** |
| [**R4-2010173**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010173.zip) | Huawei, HiSilicon | **draftCR to 37145-1 on introducing new SUL band n97** |
| [**R4-2010174**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2010174.zip) | Huawei, HiSilicon | **draftCR to 37145-2 on introducing new SUL band n97** |

## Open issues summary

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

### Sub-topic 2-1 UE RF Requirements

**Issue 2-1-1: Operating band number**

* Proposals
  + Introduce the new SUL band for 2300 – 2400MHz as band n97.
* Recommended WF
  + TBA. Collect companies’ view in 1st round

**Issue 2-1-2: UE channel bandwidth，Channel raster，MOP /A-MPR and Spurious emissions**

* Proposals
  + Option1: Specify UE RF requirements for the new SUL band for 2300 – 2400MHz following band n40.
  + Option2: Specify UE channel bandwidth, Channel raster and MOP /A-MPR requirements for the new SUL band for 2300 – 2400MHz following band n40, and add Band 41 to the protected bands of n97 as below table.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| n97 | E-UTRA Band 1, 3, 5, 7, 8, 20, 22, 26, 27, 28, 31, 32, 33, 34, 38, 39, 41, 42, 43, 44, 45, 50, 51, 52, 65, 67, 68, 69, 72, 74, 75, 76,  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |

* Recommended WF
  + TBA. Collect companies’ view in 1st round

### Sub-topic 2-2 BS RF Requirements

**Issue 2-2-1: BS spurious emissions requirements**

* Proposals
  + Specify BS spurious emissions requirements for the new SUL band for 2300 – 2400MHz in all the BS specs such as TS 38.104, 38.141-1/-2, 36.104, 36.141, 37.104, 37.141, 37.105, 37.145-1/-2, whenever necessary.
* Recommended WF
  + TBA. Collect companies’ view in 1st round

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | We agree with CMCC that protection to n41 should be added for band n97.  We can go with all the rapporteurs’ CRs. Since the formal version of R17 specs do not emerge until Dec. If all the CRs are agreed in this meeting, one suggestion is to announce closure of this WID in Sept. and implement the CRs in Dec. |
| Nokia | Not clear why protection to n41 would be added for n97 but is missing for n40. It is not clear how WI could be closed in September if CRs will be implemented only after December RAN. |
| ZTE | If agreeing to add protection to n41 for n97, then the same change should be applied to n40. |
| CMCC | To Nokia and ZTE,  Because the current specification only considers n40 and n41 to be synchronous scenarios, there is no added protection on n40 for n41, but the SUL 2300-2400MHz cannot be synchronized with n41(All the slots can be used as UL in this SUL band). so additional protection on n41 is needed.  We can accept that the n40 is also modified to be the same as the n97 to add the protection to n41. Please let me know if this modification is acceptable. |
| Nokia | To CMCC, we are fine with this proposal. |

### 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** |
| [**R4-2009644**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009644.zip) | Huawei: we agree to all the CRs. |
| Nokia: For band definition, note shall be added this band is applicable in countries where only n97 is used, otherwise there will be co-existence issue with Band n40. Clarification needed on applying note 9 in Table 5.3.5-1. |
| ZTE: It might be a bit simpler if n97 and n40 share the same row, as the other SUL e.g., n20/n82 does |
| CMCC:  To Nokia  We keep the same view on n97 as n98 band, We don’t see the need for countries restrictions on the SUL 2300-2400MHz in spec. It is not just China but also Japan and other countries that are in demand for this SUL band. For SUL band 2300-2400MHz there is no co-existence issue, as noted in WID (RP-201364) . Note 2: Only synchronous scenario that operators deploying only SUL operation in 2300-2400 MHz is considered, and there is no co-existence issue between operators.  To ZTE:  We can accept that the n40 is also modified to be the same as the n97 to add the protection to n41. Then we can combine the two bands in the same row. |
| KDDI: We cannot see any technical reasons to restrict applicable countries for this new band. It may impact the eco-system of this band. |
| Nokia:  To CMCC and KDDI: What we were looking for is no specific list of countries but rather clarification this band can be used only when there is no co-existence with Band 40. |
| [**R4-2009645**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009645.zip) | Nokia: For band definition, note shall be added this band is applicable in countries where only n97 is used, otherwise there will be co-existence issue with Band n40. |
| CMCC: We keep the same view on n97 as n98 band, We don’t see the need for countries restrictions on the SUL 2300-2400MHz in spec. It is not just China but also Japan and Arab countries that are in demand for this SUL band. For SUL band 2300-2400MHz there is no co-existence issue, as noted in WID (RP-201364) . Note 2: Only synchronous scenario that operators deploying only SUL operation in 2300-2400 MHz is considered, and there is no co-existence issue between operators. |
| To CMCC: What we were looking for is no specific list of countries but rather clarification this band can be used only when there is no co-existence with Band 40. |
|  |
| [**R4-2009646**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009646.zip) | Company A |
| Company B |
|  |
| [**R4-2009647**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009646.zip) | Company A |
| Company B |
|  |
| [**R4-2009648**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009646.zip) | Company A |
| Company B |
|  |
| [**R4-2009649**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009646.zip) | Company A |
| Company B |
|  |
| [**R4-2009650**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009646.zip) | Company A |
| Company B |
|  |
| [**R4-2009651**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009646.zip) | Company A |
| Company B |
|  |
| [**R4-2009652**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Company A |
| Company B |
|  |
| [**R4-2009653**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip) | Company A |
| Company B |
|  |
| [**R4-2009654**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.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** |
| **Sub-topic#2-1** | *Tentative agreements:*  **Issue 2-1-1: Operating band number**   * Tentative agreement   + Introduce the new SUL band 2300 – 2400MHz as band n97.   **Issue 1-1-2: UE channel bandwidth，Channel raster，MOP /A-MPR and Spurious emissions**   * Tentative agreement   + Clarification note could be introduced to indicate that there is no co-existence issue with Band 40.   + Add Band 41 to the protected bands of n97 and n40. |
| **Sub-topic#2-2** | **Issue 1-2-1: BS spurious emissions requirements**   * Tentative agreement   + Clarification note could be introduced to indicate that there is no co-existence issue with Band 40.   *Recommendations for 2nd round:*  ***[Moderator]: Based on 1st round of comments collection. the tentative agreements will be captured in the revision of CRs on SUL band 2300 – 2400MHz, and strive to approve CRs.*** |

*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** |
| [**R4-2009644**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009644.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised.* |
| [**R4-2009645**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009645.zip) | *Based on 1st round of comments collection, moderator recommend that this ’CR need to be revised.* |
| [**R4-2009646**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009646.zip) | *No comment was received, recommend to be agreed.* |
| [**R4-2009647**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009647.zip) | *No comment was received, recommend to be agreed.* |
| [**R4-2009648**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009648.zip) | *No comment was received, recommend to be agreed.* |
| [**R4-2009649**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009649.zip) | *No comment was received, recommend to be agreed.* |
| [**R4-2009650**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009650.zip) | *No comment was received, recommend to be agreed.* |
| [**R4-2009651**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009651.zip) | *No comment was received, recommend to be agreed.* |
| [**R4-2009652**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009652.zip) | *No comment was received, recommend to be agreed.* |
| [**R4-2009653**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009653.zip) | *No comment was received, recommend to be agreed.* |
| [**R4-2009654**](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009654.zip) | *No comment was received, recommend to be agreed.* |

## Discussion on 2nd round (if applicable)

|  |  |
| --- | --- |
| **CR** | **Comments collection** |
| *R4-2011814*  *Rev of [R4-2009644](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009633.zip)* | Company A: |
| Company B: |
| *R4-2011815*  *Rev of [R4-2009645](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_96_e/Docs/R4-2009634.zip)* | Company A: |
| Company B: |

## 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”* |