**3GPP TSG-RAN WG4 Meeting # 95-e R4-2008965**

Electronic Meeting, 25 May – 5 June, 2020

**Agenda item:** 10.2

**Source:** Moderator (Huawei)

**Title:** Email discussion summary for [95e][137] NR\_n13

**Document for:** Information

# Introduction

The scope of this email discussion is to discuss the contributions submitted at agenda 10.2 to specify a new NR FDD operating band n13.

The target of 1st round is to discuss the potential agreements on requirements for new NR band n13.

# Topic #1: UE RF

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2008209 | Qualcomm Incorporated | The contribution presents simulations and measurements for NR band n13.  **Proposal 1**: Use AMPR as shown in Section 2.3 of the contribution. |
| R4-2007311 | Huawei, HiSilicon | The contribution provides the draft CR to TS 38.101-1 on introduction of NR band n13. The RF requirements for n13 are added in relevant clauses. The A-MPR is still TBD since the discussion on A-MPR is ongoing.  Moderator: It is a late submission and submitted for comments. |

## Open issues summary

### Sub-topic 1-1: A-MPR for NS\_07

**Issue 1-1:**

* Proposals
  + Use the A-MPR proposed in R4-2008209
* Table 3: A-MPR regions for NS\_07

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Channel Bandwidth, MHz | Carrier Frequency, MHz | Regions | | A-MPR | Meas. A-MPR DFT/CP |
| RBstart\*12\*SCS  MHz | LCRB\*12\*SCS  MHz |
| 5 MHz | 782 ≤ Fc ≤ 784.5 |  |  |  |  |
|  |  |  |  |
| >0 | ≥ 1.8 | A3 |  |
| ≤ 0.9 | ≤ 0.36 | A4 |  |
|  |  |  |  |
|  |  |  |  |
| 5 MHz | 779.5 ≤ Fc < 782 |  |  |  |  |
| ≤ 0.9 | ≥ 0 | A1 |  |
| > 0.9, ≤ 1.26 | ≥1.26 | A2 |  |
| > 1.26, ≤ 3.42 | ≥ 1.8 | A3 |  |
| >3.42 | ≤ 0.36 | A4 |  |
|  |  |  |  |
| 10 MHz | Fc = 782 |  |  |  |  |
| ≤ 2.34 | ≥ 0 | A1 |  |
| >2.34, ≤ 3.24 | ≥ 1.44 | A2 |  |
| > 3.24, ≤ 6.48 | ≥ 3.24 | A3 |  |
| > 6.48 | ≤ 0.36 | A4 |  |
|  |  |  |  |

* Table 4: A-MPR for modulation and waveform type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Modulation/Waveform | A1 | A2 | A3 | A4 |
| Outer/Inner | Outer/Inner | Outer/Inner | Outer/Inner |
| DFT-s-OFDM PI/2 BPSK | [12] | [9] | [5.5] | [4] |
| DFT-s-OFDM QPSK | [12] | [9] | [5.5] | [4] |
| DFT-s-OFDM 16 QAM | [12] | [9] | [5.5] | [4] |
| DFT-s-OFDM 64 QAM | [12] | [9] | [5.5] | [4] |
| DFT-s-OFDM 256 QAM | [12] | [9] | [5.5] | [4] |
| CP-OFDM QPSK | [13] | [10] | [6.5] | [4] |
| CP-OFDM 16 QAM | [13] | [10] | [6.5] | [4] |
| CP-OFDM 64 QAM | [13] | [10] | [6.5] | [4] |
| CP-OFDM 256 QAM | [13] | [10] | [6.5] | [4] |

* Recommended WF
  + Further discussion and wait for more simulations and measurements

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Sub topic 1-1: Adding some measurements for the record. Highlighted.   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Channel Bandwidth, MHz | | Carrier Frequency, MHz | | Regions | | | | A-MPR | | Meas. A-MPR DFT/CP | | | RBstart\*12\*SCS  MHz | | LCRB\*12\*SCS  MHz | | | 5 MHz | 782 ≤ Fc ≤ 784.5 | |  | |  | |  | |  | | |  | |  | |  | |  | | | >0 | | ≥ 1.8 | | A3 | |  | | | ≤ 0.9 | | ≤ 0.36 | | A4 | |  | | |  | |  | |  | |  | | |  | |  | |  | |  | | | 5 MHz | | 779.5 ≤ Fc < 782 | |  | |  | |  | |  | | | ≤ 0.9 | | ≥ 0 | | A1 | | 12/12 | | | > 0.9, ≤ 1.26 | | ≥1.26 | | A2 | | 8/9 | | | > 1.26, ≤ 3.42 | | ≥ 1.8 | | A3 | | 4.5/6 | | | >3.42 | | ≤ 0.36 | | A4 | | analysis | | |  | |  | |  | |  | | | 10 MHz | | Fc = 782 | |  | |  | |  | |  | | | ≤ 2.34 | | ≥ 0 | | A1 | | 12/12 | | | >2.34, ≤ 3.24 | | ≥ 1.44 | | A2 | | 8/9 | | | > 3.24, ≤ 6.48 | | ≥ 3.24 | | A3 | | 4.5/6 | | | > 6.48 | | ≤ 0.36 | | A4 | | analysis | | |  | |  | |  | |  | | |
| Company B | Sub topic 1-1: |
|  |  |
|  |  |
|  |  |

### 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** |
| R4-2007311 | 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#1:**  A-MPR for NS\_07 | Qualcomm made an update on measurement values that follows the simulation results.  Moderator suggestion: wait for more simulations and measurements in next meeting.  R4-2008209 is to be Noted |

### 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** |
| R4-2007311 | It is a late submission and submitted for comments  To be Noted |
|  |  |

## Discussion on 2nd round (if applicable)

None

# Topic #2: BS RF requirements

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2007312 | Huawei, HiSilicon | The contribution provides the draft CR to TS 38.104 on introduction of NR band n13. The requirements for n13 are added in relevant clauses. |
|  |  |  |

## Companies views’ collection for 1st round

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **number** | **Comments collection** |
| R4-2007312 | Nokia: In Table 6.6.5.2.3-6, “13” shall be changed to “n13” |
| Huawei: agree with Nokia comment, it can be updated in the revision. |
|  |

## Summary for 1st round

### 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** |
| R4-2007312 | To be revised |
|  |  |

## Discussion on 2nd round (if applicable)

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **number** | **Comments collection** |
| R4-2008923  （revision of R4-2007312） |  |
|  |
|  |

## 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** |
|  |  |