**3GPP TSG-RAN WG4 Meeting # 94-e-Bis R4-2005119**

**Electronic Meeting, 20 – 30 Apr., 2020**

**Agenda item:** 10.2

**Source:** Moderator (Huawei)

**Title:** Email discussion summary for [94e Bis][33] 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 requirements

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2004464 | Qualcomm Incorporated | **Proposal 1**: For AMPR, use the additional spurious requirements as shown in Table 1 and Table 2.  **Proposal 2**: For AMPR requirements, assume no filter rejection in the 769-775MHz frequency region.  **Proposal 3**: Use REFSENS and UL configuration as shown in Table 3 and Table 4. |
| R4-2004484 | Huawei, HiSilicon, Bell Mobility, Telus | **Proposal 1**: No A-MPR is needed for NS\_06  **Proposal 2**: A-MPR should be defined for the additional requirements as shown in Table 2 for NS\_07, with following simulation assumptions:   * + CIM3: 60 dBc.   + IQ image: 28 dB.   + LO leakage: 28 dBc.   + PA calibration point: 10 MHz, 15 kHz, QPSK, DFT-S-OFDM, 50 RB with 1 dB MPR |

Table 1: Additional SEM requirements NS\_07

|  |  |  |  |
| --- | --- | --- | --- |
| ΔfOOB  (MHz) | 5  MHz | 10  MHz | Measurement  bandwidth |
| ± 0 – 0.1 | -15 | -18 | 30 kHz |
| ± 0.1 – 1 | -13 | -13 | 100 kHz |
| ± 1 – 6 | -13 | -13 | 1 MHz |
| ± 6 – 10 | -25 |
| ± 10 – 15 |  | -25 |

Table 2: Additional requirements NS\_07

|  |  |  |
| --- | --- | --- |
| Frequency band  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 5 MHz, 10 MHz |
| 769 ≤ f ≤ 775 | -57 | 6.25 kHz |
| NOTE 1: The emissions measurement shall be sufficiently power averaged to ensure a standard deviation < 0.5 dB. | | |

Table 3: Two antenna port reference sensitivity QPSK REFSENS

| Operating band / SCS / Channel bandwidth / Duplex-mode | | | |
| --- | --- | --- | --- |
| Operating Band | SCS kHz | 5  MHz (dBm) | 10  MHz (dBm) |
| n13 | 15 | -97 | -93.8 |
| 30 |  | -94.1 |

Table 4: Uplink configuration for reference sensitivity

| Operating band / SCS / Channel bandwidth / Duplex mode | | | |
| --- | --- | --- | --- |
| Operating Band | SCS kHz | 5  MHz | 10  MHz |
| n13 | 15 | 201 | 201 |
| 30 |  | 101 |
| NOTE 1: UL resource blocks shall be located as close as possible to the downlink operating band but confined within the transmission bandwidth configuration for the channel bandwidth | | | |

## Open issues summary

### Sub-topic 1-1

Additional spurious requirements

**Issue 1-1:**

* Proposals
  + Option 1: Use the additional spurious requirements as shown in Table 1 and Table 2
  + Option 2: Use the additional spurious requirements as shown in Table 2
* Recommended WF
  + FFS

### Sub-topic 1-2

A-MPR simulation assumption

Issue 1-2: Whether to simulate the case for 5 MHz CBW?

* Proposals
  + Option 1: yes
  + Option 2: no, refer to 36.101
* Recommended WF
  + Option 1

### Sub-topic 1-3

UE REFSENS

* Proposals
  + Option 1: Proposal 3 in R4-2004464
  + Option 2:
* Recommended WF
  + Option 1

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Sub topic 1-1: No A-MPR is needed for NS\_06 for LTE and n14, hence both options should have the same results.  Sub topic 1-2: ok to simulate the case for both 5 MHz and 10 MHz CBW. One question for clarification is that why in 36.101 only the A-MPR for 10 MHz is defined.  Sub topic 1-3: agree with proposal 3 in R4-2004464 |
| Qualcomm | No 1.4, 3M bandwidths in Table 2-1. AMPR needs to be double checked for NS\_06 requirement for any issue due to NR guard band since LTE guardband for 10MHz is higher than NR gaurdband. Need to also consider 5MHz as well since LTE AMPR was only for 10MHz most likely due to operator 10MHz deployment. Nevertheless, preliminary analysis shows AMPR will be required for 5MHz channel BWs. |
| Huawei | It is ok to simulate also for NS\_06 requirement and ok to simulate the case for both 5 MHz and 10 MHz CBW. Hence we can agree the 3 proposals in R4-2004464. |
| Nokia | 5 MHz needs to be simulated, we support R4-2004464. |
| Verizon | Agree with both Qualcomm and Nokia, and the work needs to double check for NS\_06 and 5MHz requirements. We also support R4-2004464. |

## 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** | Based on 1st round comments, it is agreeable that NS\_06 requirements and 5MHz also need to be simulated.  Tentative agreements:  To agree the 3 proposals in R4-2004464 |

### 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** |
| R4-2004464 | agreeable |
| R4-2004484 | Noted |

## Discussion on 2nd round (if applicable)

None

# Topic #2: General part

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2004482 | Huawei, HiSilicon, Bell Mobility, Telus | This contribution provides a work plan for the WI. |
| R4-2004483 | Huawei, HiSilicon, Bell Mobility, Telus | This contribution provides a proposal on system parameters:   * operating band * channel bandwidth * Channel raster * Synchronization raster |

## Companies views’ collection for 1st round

### TPs comments collection

|  |  |
| --- | --- |
| **number** | **Comments collection** |
| R4-2004482 |  |
| Nokia: Clarification in document is needed what is meant by “Draft CRs for BS and UE specifications”. We assume it is related to draft CRs to 38.101-1 and 38.104 only as for other bands in the past.  Huawei: It is ok to us. It can be captured in the revision. |
|  |
| R4-2004483 | Company A |
| Company B |
|  |

## Summary for 1st round

### 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** |
| R4-2004482 | To be revised:  The revision is to capture the clarification on “Draft CRs for BS and UE specifications” |
| R4-2004483 | agreeable |

## Discussion on 2nd round (if applicable)

### TPs comments collection

|  |  |
| --- | --- |
| **number** | **Comments collection** |
| R4-2005175  （Revision of R4-2004482） |  |
|  |
|  |

## 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”* |