**3GPP TSG-RAN WG4 Meeting #94-e R4-20xxxxx**

**Electronic Meeting, Feb.24th – Mar.6th 2020**

**Agenda item:** 9.24

**Source:** Moderator(Ericsson)

**Title:** Email discussion summary for RAN4#94e\_#36\_NR\_n3\_BW

**Document for:** Information

# Introduction

The scope of this email discussion is to specify REFSENS and A-MPR requirements when introducing 40 MHz channel BWs in band n3.

The focus of the discussion should be on getting possible agreement on REFSENS values (1st round) and finalizing the CRs (2nd round).

# Topic #1: 40 MHz CBW

Main technical topic overview: Addition of 40 MHz channel BW in band n3.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2000088 | Qualcomm | **Proposal 1:** Use the UL configuration proposed in Table 2   | **Operating band / SCS / Channel bandwidth / Duplex mode** | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Operating Band** | **SCS kHz** | **5**  **MHz** | **10**  **MHz** | **15**  **MHz** | **20**  **MHz** | **25 MHz** | **30 MHz** | **40**  **MHz** |  | **Duplex Mode** | | n3 | 15 | 25 | 50 | 50 | 50 | 50 | 50 | 50 |  | FDD | | 30 |  | 24 | 24 | 24 | 24 | 24 | 24 |  | | 60 |  | 10 | 10 | 10 | 10 | 10 | 10 |  |   **Proposal 2**: Use REFSENS values shown in Table 4.   | **Operating Band** | **SCS kHz** | **5**  **MHz (dBm)** | **10**  **MHz (dBm)** | **15**  **MHz (dBm)** | **20**  **MHz (dBm)** | **25**  **MHz (dBm)** | **30 MHz (dBm)** | **40**  **MHz (dBm)** | **Duplex Mode** | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | n3 | 15 | -97 | -93.8 | -92.0 | -90.8 | -89.7 | -88.9 | -81.6 | FDD | |  | 30 |  | -94.1 | -92.1 | -91.0 | -89.8 | -89.0 | -81.7 | FDD | |  | 60 |  | -94.5 | -92.4 | -91.2 | -90.0 | -89.1 | -81.8 |  | |
| R4-2001205 | Ericsson | **Proposal 1: Approve the REFSENS values and RB allocation for 40MHz CBW as proposed in this contribution (Table 2 and Table 3).**   | Operating Band | SCS kHz | 5  MHz (dBm) | 10  MHz (dBm) | 15  MHz (dBm) | 20  MHz (dBm) | 25  MHz (dBm) | 30 MHz (dBm) | 40  MHz (dBm) | Duplex Mode | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | n3 | 15 | -97.0 | -93.8 | -92.0 | -90.8 | -89.7 | -88.9 | **-87.6** | FDD | | 30 |  | -94.1 | -92.1 | -91.0 | -89.8 | -89.0 | **-87.7** | | 60 |  | -94.5 | -92.4 | -91.2 | -90.0 | -89.1 | **-87.8** |  | Operating Band | SCS kHz | 5  MHz | 10  MHz | 15  MHz | 20  MHz | 25 MHz | 30 MHz | 40  MHz | Duplex Mode | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | n3 | 15 | 25 | 501 | 501 | 501 | 501 | 501 | **501** | FDD | | 30 |  | 24 | 241 | 241 | 241 | 241 | **241** | | 60 |  | 101 | 101 | 101 | 101 | 101 | **101** |   **Proposal 2: No A-MPR requirement is needed for band n3 when introducing 40 MHz channel bandwidth.** |

## Open issues summary

It seems agreeable no A-MPR is needed when adding 40MHz for band n3.

REFSENS values should be further discussed, but the corresponding RB allocation seems already agreable.

### Sub-topic 1-1

*Sub-topic description:* A-MPR

**Issue 1-1: A-MPR when adding 40MHz in band n3**

* Proposals
  + Option 1: No need for A-MPR
* Recommended WF

### Sub-topic 1-2

*Sub-topic description:* REFSENS

**Issue 1-1: REFSENS values and RB allocation for REFSENS**

* Proposals
  + Option 1:
    - Refsens values: -81.6 / -81.7 / -81.8
    - RB allocation: 50 / 24 / 10
  + Option 2:
    - Refsens values: -87.6 / -87.7 / -87.8
    - RB allocation: 50 / 24 / 10
* Recommended WF

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Sub topic 1-1: Agree that no AMPR is required  Sub topic 1-2: R4-2001205 does not factor the intermodulation of TX signal and CIM3 that falls at the 5th order distortion frequency at the duplex offset n3. This is significant and is comparable to 40MHz n25 REFSENS.  ….  Others: |
| Ericsson | For REFSENS (sub-topic 1-2) , our proposal is based on BW scaling only. We agree there might be additional intermodulation impact due to the higher channel BW. But we would like to further check the proposed 6dB impact for next meeting. |
| Skyworks | We expect Rx desense for 40MHz CBW operation in n3. We are ready to bring measurement data at the next meeting to estimate the MSD. |

### 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** |
| R4-2001206  CR#0251  TS 38.101-1 | Company A |
| Company B |
|  |
| R4-2001207  CR#147  TS 38.104 | 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** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

*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** |
| 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)

## 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”* |