**3GPP TSG-RAN WG4 Meeting #112 R4-2413883**

**Maastricht, Netherlands, 19th – 23rd August 2024**

**Agenda item:** 8.4.4

**Source:** Intel

**Title:** WF for [112][214] NR\_FR1\_lessthan\_5MHz\_BW\_Ph2

**Document for:** Approval

# Issues list

***RRM workplan***

**Issue 1-1-1 Workplan for RRM core parts**

***CA***

**Issue 2-1-1: SCell activation and deactivation delay requirements:**

**Issue 2-1-2: Measurement requirements for deactivated SCC:**

**Issue 2-1-3: Whether intra-band CA is in the scope:**

**Issue 2-1-4: IDLE mode CA measurement reporting:**

***DC***

**Issue 2-2-1: PSCell addition and release, conditional PSCell addition delay requirements:**

**Issue 2-2-2: PSCell change, conditional PSCell change delay requirements:**

**Issue 2-2-3: Handover with PSCell, conditional handover including target MCG and SCG:**

**Issue 2-2-4: SCG activation and deactivation delay requirements:**

***Others***

**Issue 2-3-1: NW indication on PBCH BW in MO configuration:**

**Issue 2-3-2: CGI reading:**

**Issue 2-3-3: EMR requirements:**

**Issue 2-3-4: requirements applicability:**

# Topic #1: RRM work plan

**Issue 1-1-1 Workplan for RRM core parts**

* Agreement
  + The RRM work plan in the table is endorsed.

|  |  |
| --- | --- |
| Meeting | RRM |
| RAN4#112  Aug’24 | Discussions on   * Scope of RRM requirements for PSCell/SCell operating with 3MHz channel bandwidth   Agreements on   * Scope of RRM requirements |
| RAN4#112bis  Oct’24 | Discussions on   * RRM requirements for PSCell/SCell operating with 3MHz channel bandwidth * Possible draftCR contents   Agreements on   * RRM requirements for PSCell/SCell operating with 3MHz channel bandwidth * draftCR contents |
| RAN4#113  Nov’24 | Discussions on   * (continued) RRM requirements for PSCell/SCell operating with 3MHz channel bandwidth * CR contents   Agreements on   * RRM requirements for PSCell/SCell operating with 3MHz channel bandwidth * CR contents |

# Topic #2: RRM scope discussion

### Sub-topic 2-1 RRM scope for SCell configured with less than 5MHz bandwidth

**Issue 2-1-1: SCell activation and deactivation delay requirements:**

* Proposals
  + Option 1: Investigate if new SCell activation and deactivation delay requirements are needed to support less than 5MHz bandwidth in the target SCell in FR1.
  + Option 2: Specify new requirements for fine time tracking time which is included in the SCell activation delay requirements in FR1.
  + Option 3: RAN4 to decide the corresponding RRM requirement after RF session has concrete conclusions, e.g., whether or not we need multiple SCell activation, or whether or not more than 2 serving cells shall be considered in this inter-band CA with less than 5MHz.
* Agreement
  + Specify new SCell activation delay requirements to support less than 5MHz bandwidth in the target SCell in FR1.
* Agreement
  + Start from single SCell activation delay requirements.

**Issue 2-1-2: Measurement requirements for deactivated SCC:**

* Proposals
  + Option 1: RAN4 to discuss the impacts of less than 5MHz, in particular PBCH puncturing, to SSB index reading in deactivated SCC measurement.
  + Option 2: Specify time period requirements for time index detection for UE operating on a target cell with less than 5MHz SSB for deactivated SCell measurements in FR1.
* Agreement
  + Specify SSB index identification delay requirements for UE with deactivated SCell measurements on a target cell with less than 5MHz SSB BW in FR1, taking into consideration the impacts from PBCH puncturing.

**Issue 2-1-3: Whether intra-band CA is in the scope:**

* Proposals
  + Option 1: Consider intra-band CA (both contiguous and non-contiguous) within the scope of the RRM requirements in Rel-19.
  + Option 2: Wait until RF room has concrete conclusion on intra-band CA combinations.

**Issue 2-1-4: IDLE mode CA measurement reporting:**

* Proposals
  + Option 1: For 3MHz channel bandwidth, N2=[3+3] if the NR inter-frequency carrier for idle mode CA/DC measurement reporting is in FR1.

### Sub-topic 2-2 RRM scope for PSCell configured with less than 5MHz bandwidth in NR-DC

**Issue 2-2-1: PSCell addition and release, conditional PSCell addition delay requirements:**

* Proposals
  + Option 1: Specify new PSCell addition delay requirements for PSCell configured with less than 5MHz channel bandwidth.

Agreement:

* + Specify new PSCell addition delay requirements for PSCell configured with less than 5MHz channel bandwidth.

**Issue 2-2-2: PSCell change, conditional PSCell change delay requirements:**

* Proposals
  + Option 1: RAN4 to discuss the impacts of less than 5MHz, in particular PBCH puncturing, to PSCell change delay requirements.

**Issue 2-2-3: Handover with PSCell, conditional handover including target MCG and SCG:**

* Proposals
  + Option 1: SSB index acquisition of less than 5MHz cell can be extended in legacy requirement.

Agreement:

* + SSB index acquisition of less than 5MHz cell can be extended in legacy requirement.

**Issue 2-2-4: SCG activation delay requirements:**

* Proposals
  + Option 1: Need FFS, if target PSCell is using 3MHz, the SSB index acquisition of less than 5MHz cell may extend the PSCell change requirement.

Agreement:

* + FFS, if target PSCell is using 3MHz, the SSB index acquisition of less than 5MHz cell may extend the SCG activation requirement requirement.

### Sub-topic 2-3 Other RRM impacts

**Issue 2-3-1: NW indication on PBCH BW in MO configuration and/or HO command:**

* Proposals
  + Option 1: RAN4 to discuss whether NW indication on PBCH BW in MO configuration is needed considering a cell with less than 5MHz can be SCell.
  + Option 2: If SCell can use 12PRB SSB bandwidth in R19, it’s necessary to provide assistance information to UE regarding whether the PBCH is 12 or 20 PRBs in either MO or HO command.

**Issue 2-3-2: CGI reading:**

* Proposals
  + Option 1: RAN4 to discuss and decide whether CGI reading is considered for less than 5MHz.

Agreement:

* + not consider the CGI reading related requirement in Rel-19.

**Issue 2-3-3: EMR requirements:**

* Proposals
  + Option 1: RAN4 to Study the Cell detection requirements in EMR measurements for less than 5MHz.
  + Option 2: RAN4 to study impact of reduced PBCH BW of 12PRBs for 3MHz channel bandwidth on EMR measurement with SSB index reading.

Further discuss:

* Option 2: RAN4 to study impact of reduced PBCH BW of 12PRBs for 3MHz channel bandwidth on EMR measurement with SSB index reading.
* Option 3: not define IDLE mode EMR requirement

**Issue 2-3-4: requirements applicability:**

* Proposals
  + Option 1: the features/scenarios not considered in R18 less than 5MHz RRM shall not be discussed in R19 CA/DC with less than 5MHz band, e.g., CSI-RS based L1/L3/RLM/BFD/CBD measurement.

Agreement:

* + the features/scenarios not considered in R18 less than 5MHz RRM shall not be discussed in R19 CA/DC with less than 5MHz band, e.g., CSI-RS based L1/L3/RLM/BFD/CBD measurement.