**3GPP TSG-RAN WG4 Meeting #97-e R4-201xxxx**

**Electronic Meeting, Nov. 2nd – Nov. 13th 2020**

**Agenda item:** 7.13.1

**Source:** Moderator (ZTE)

**Title:** Email discussion summary for [97e] [219] NR\_RRM\_Enh\_RRM\_2

**Document for:** Information

# Introduction

The scope of this email discussion summary covers following agenda items.

7.13.1 RRM core requirements maintenance (38.133)

* 7.13.1.1 SRS carrier switching requirements
* 7.13.1.2 CGI reading requirements with autonomous gap
* 7.13.1.6 Other requirements maintenance (relevant papers)

7.13.2 RRM perf. requirements (38.133)

* 7.13.2.2 Test cases
* 7.13.2.2.1 SRS carrier switching requirements
* 7.13.2.2.3 CGI reading requirements with autonomous gap
* 7.13.2.2.6 Mandatory MG patterns

# Topic #1: SRS carrier switching requirements

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **RRM Core requirements maintenance** | | |
| [R4-2014646](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014646.zip) | Qualcomm, Inc. | CR: SRS carrier switching condition |
| [R4-2015577](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015577.zip) | ZTE | CR to 38.133 correction to SRS carrier based switching requirements |
| [R4-2016421](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016421.zip) | Ericsson | CR: Missing requirements for LTE SRS carrier-based switching |
| [R4-2016422](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016422.zip) | Ericsson | CR Correction in NR SRS carrier-based switching requirements |
| **RRM test cases** | | |
| [R4-2014227](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014227.zip) | Apple | E-UTRAN – NR FR2 interruptions at NR SRS carrier based switching (A.5.5.2.X) |
| [R4-2014789](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014789.zip) | OPPO | CR to TS 38.133: TC for E-UTRAN – NR interruptions at E-UTRA SRS carrier based switching(A.5.5.2.x) |
| [R4-2015495](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015495.zip) | Huawei, HiSilicon | TC for E-UTRAN – NR interruptions at E-UTRA SRS carrier based switching |
| [R4-2015581](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015581.zip) | ZTE | Proposal 1: For SRS carrier based switching, following test cases are specified.   |  |  |  | | --- | --- | --- | | Test No. | Test | Comment | | TC1 | E-UTRAN – NR interruptions at NR SRS carrier based switching | PSCell in FR1  SCell in FR1 | | TC2 | E-UTRAN – NR interruptions at NR SRS carrier based switching | PSCell in FR2  SCell in FR2 | | TC3 | SA interruptions at NR SRS carrier based switching | PCell in FR1  SCell in FR1 | | TC4 | SA interruptions at NR SRS carrier based switching | PCell in FR2  SCell in FR2 | | TC5 | E-UTRAN – NR interruptions at E-UTRA SRS carrier based switching | PSCell in FR1  E-UTRA SCell | | TC6 | E-UTRAN – NR interruptions at E-UTRA SRS carrier based switching | PSCell in FR2  E-UTRA SCell | |
| [R4-2015584](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015584.zip) | ZTE | Draft CR on test case for SA interruptions at NR SRS carrier based switching |
| [R4-2016052](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016052.zip) | Nokia, Nokia Shanghai Bell | 38133 CR for Test case of E-UTRAN NR FR1 interruptions at NR SRS carrier switching |
| [R4-2016420](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016420.zip) | Ericsson | **Proposal 1**: Do not define delay test cases for SRS carrier-based switching for NR deployments, similar to LTE.  **Proposal 2**: In TS 38.133, RAN4 to define the interruption tests cases for SRS carrier-based switching for the following scenarios:  **Table 1**: Test cases for requirements in 38.133   |  |  | | --- | --- | | **Test Case Type** | **Details** | | NR SRS carrier-based switching impacting NR cells in NR-SA | To/from NR cells in FR1:   * test the impact on FR1 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR2 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | | To/from NR cells in FR2:   * test the impact on FR2 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR1 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | | NR SRS carrier-based switching impacting NR cells in NR-DC | To/from NR cells in FR1   * test the impact on FR1 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR2 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | |  | To/from NR cells in FR2   * test the impact on FR2 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR1 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | | NR SRS carrier-based switching impacting NR cells in SCG in EN-DC | To/from NR cells in FR1   * test the impact on FR1 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR2 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | |  | To/from NR cells in FR2:   * test the impact on FR2 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR1 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | | NR SRS carrier-based switching impacting NR cells in MCG in NE-DC | To/from NR cells in FR1   * test the impact on FR1 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR2 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | |  | To/from NR cells in FR2:   * test the impact on FR2 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR1 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | | E-UTRA SRS carrier-based switching impacting NR cells in SCG in EN-DC | To/from E-UTRA cells:   * test the impact on FR1 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR2 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps | | E-UTRA SRS carrier-based switching impacting NR cells in MCG in NE-DC | To/from E-UTRA cells:   * test the impact on FR1 NR cells, for both UE capable and not capable of per-FR gaps; * FFS: test the impact on FR2 NR cells, for UE configured with per-UE gaps or not-capable of per-FR gaps |   **Proposal 3**: In TS 36.133, RAN4 to define the interruption tests cases for SRS carrier-based switching for the following scenarios:  **Table 2**: Test cases for requirements in 36.133   |  |  | | --- | --- | | **Test Case Type** | **Details** | | NR SRS carrier-based switching impacting E-UTRA cells in SCG in EN-DC | To/from NR cells in FR1 | | To/from NR cells in FR2 (for UE configured with per-UE gaps or not capable of per-FR gaps) | | NR SRS carrier-based switching impacting E-UTRA cells in MCG in NE-DC | To/from NR cells in FR1 | | To/from NR cells in FR2 (for UE configured with per-UE gaps or not capable of per-FR gaps) |   **Proposal 4**: For the interruption requirements with LTE SRS carrier-based switching impacting LTE carriers in EN-DC and NE-DC, RAN4 needs to choose among the two options:   * **Option 1**: no test cases for these scenarios in Rel-16 (preferred). * **Option 2**: reuse the Rel-14 LTE test cases. |
| [R4-2016423](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016423.zip) | Ericsson | On TC2 configuration (SA interruptions at NR SRS carrier-based switching) |

## Open issues summary

### RRM core requirements maintenance

Issue 1-1-1: Whether to introduce requirements in TS 36.133 for interruption on LTE victim cell for LTE SRS carrier based switching under EN-DC and NE-DC

* Proposals
  + Option 1: Yes (Ericsson R4-206421)
* Recommended WF:
  + Option 1

Issue 1-1-2: Whether to add condition on collision of NR SRS carrier based switching and UE BWP switching

* Proposals
  + Option 1: Yes (Qualcomm R4-2014646)
* Recommended WF:
  + FFS

### RRM test cases

Issue 1-2-1: Scenarios for NR SRS carrier based switching tests

* Proposals
  + Option 1 (ZTE)
    - Tests are specified for SA and EN-DC
  + Option 2 (Ericsson)
    - Tests are specified for SA, NR-DC, NE-DC and EN-DC
* Recommended WF:
  + FFS

Issue 1-2-2: Scenarios for E-UTRA SRS carrier based switching tests

* Proposals
  + Option 1 (ZTE)
    - Tests are specified for EN-DC
  + Option 2 (Ericsson)
    - Tests are specified for NE-DC and EN-DC
* Recommended WF:
  + FFS

Issue 1-2-3: Test setup for SA NR SRS carrier based switching

* Proposals
  + Option 1 (ZTE)
    - TC1: PCell in FR1, SCell in FR1
    - TC2: PCell in FR2, SCell in FR2
  + Option 2 (Ericsson)
    - TC1: PCell in FR1, SCell in FR1
      * FFS whether to test the impact on FR2 NR cells, e.g. by adding an SCell in FR2
    - TC2: PCell in FR2, SCell in FR2
      * FFS whether to test the impact on FR1 NR cells, e.g. by adding an SCell in FR1
    - TCX: PCell in FR1, SCell in FR2
* Recommended WF:
  + FFS

Issue 1-2-4: Test setup for EN-DC NR SRS carrier based switching

* Proposals
  + Option 1 (ZTE)
    - TC1: PSCell in FR1, SCell in FR1
    - TC2: PSCell in FR2, SCell in FR2
  + Option 2 (Ericsson)
    - TC1: PSCell in FR1, SCell in FR1
      * FFS whether to test the impact on FR2 NR cells, e.g. by adding an SCell in FR2
    - TC2: PSCell in FR2, SCell in FR2
      * FFS whether to test the impact on FR1 NR cells, e.g. by adding an SCell in FR1
    - TCX: PSCell in FR1, SCell in FR2
* Recommended WF:
  + FFS

Issue 1-2-5: Test setup for EN-DC E-UTRA SRS carrier based switching

* Proposals
  + Option 1 (ZTE)
    - TC1: PSCell in FR1, E-UTRA SCell
    - TC2: PSCell in FR2, E-UTRA SCell
  + Option 2 (Ericsson)
    - TC1: PSCell in FR1, E-UTRA SCell
      * FFS whether to test the impact on FR2 NR cells, e.g. by adding an SCell in FR2
    - TC2: PSCell in FR2, E-UTRA SCell
      * FFS whether to test the impact on FR1 NR cells, e.g. by adding an SCell in FR1
* Recommended WF:
  + FFS

Issue 1-2-6: UE type for test

* Proposals
  + Option 1 (Ericsson)
    - Tests are specified for UE capable of per-UE gap and capable of per-FR gap
* Recommended WF:
  + FFS

Issue 1-2-7: Whether to introduce following test cases in TS 36.133

* Proposals
  + Option 1 (Ericsson)
    - In TS 36.133, RAN4 to define the interruption tests cases for SRS carrier-based switching for the following scenarios
      * NR SRS carrier-based switching impacting E-UTRA cells in SCG in EN-DC
      * NR SRS carrier-based switching impacting E-UTRA cells in MCG in NE-DC
* Recommended WF:
  + FFS

Issue 1-2-8: Whether to define delay test cases for SRS carrier based switching

* Proposals
  + Option 1 (Ericsson)
    - Do not define delay test cases for SRS carrier-based switching for NR deployments, similar to LTE.
* Recommended WF:
  + Option 1

Issue 1-2-9: Whether to define test cases for the interruption requirements with E-UTRA SRS carrier-based switching impacting E-UTRA carriers in EN-DC and NE-DC

* Proposals
  + Option 1 (Ericsson preferred)
    - No test cases for these scenarios in Rel-16
  + Option 2 (Ericsson)
    - Reuse the Rel-14 LTE test cases.
* Recommended WF:
  + Option 1

## Companies views’ collection for 1st round

### Open issues for RRM core requirements maintenance

Issue 1-1-1: Whether to introduce requirements in TS 36.133 for interruption on LTE victim cell for LTE SRS carrier based switching under EN-DC and NE-DC

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | No strong view.  If agree to introduce, a simple description is needed, like, the requirements in clause xxxx shall apply. |
| Ericsson | Agree with recommended WF |
|  |  |
|  |  |

Issue 1-1-2: Whether to add condition on collision of NR SRS carrier based switching and UE BWP switching

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | We understand the motivation. However multiple procedures can result in RF retuning, for example, SCell activation/deactivation, do we need to list all cases? |
| Ericsson | unclear, the BWP switching is not a time point but an interval during which the UE is expected to switch. Ok to have this FFS |
|  |  |
|  |  |

### Open issues for RRM test cases

Issue 1-2-1: Scenarios for NR SRS carrier based switching tests

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option 1.  In current spec, no test cases are specified for NE-DC and NR-DC. We suggest to follow the legacy principle. |
| Ericsson | In addition to the initial list discussed already on the RAN4 reflector, we see a need for NR-DC and NE-DC tests (option 2). |
|  |  |
|  |  |

Issue 1-2-2: Scenarios for E-UTRA SRS carrier based switching tests

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option1.  In current spec, no test cases are specified for NE-DC. We suggest to follow the legacy principle. |
| Ericsson | In addition to the initial list discussed already on the RAN4 reflector. In addition to the initial list discussed already on the RAN4 reflector, we see a need for NE-DC tests (option 2). |
|  |  |
|  |  |

Issue 1-2-3: Test setup for SA NR SRS carrier based switching

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option1.  To simplify the test, the interruption on FR2 carrier due to FR1 SRS carrier switching is suggested not to be test. |
| Ericsson | For UE not capable of per FR gap or configured with per UE gap, it would seem beneficial to test the interruption impact of SRS carrier switching to SCells on FR2 with an FR1 PCell but we seek feedback from other companies. Not necessary to test the other way around because there are no band combinations with PCell on FR2 and SCells on FR1.  Our original proposal was not correctly captured, so we corrected.  Furthermore, our more specific proposals for SA test cases [R4-2016423]:   * ***Proposal 1 [R4-2016423]****: RAN4 develops 4 test cases (or 3 if the FR2/FR1 case in the last row below is deprioritized) for NR SRS switching in SA NR, each covering multiple applicable test configurations with different SCS combinations for <aggressor SCS, victim SCS> and duplex modes:*  |  |  |  | | --- | --- | --- | | **NR Cell 1 (PCell)** | **NR Cell 2 (SCell)** | **Comments** | | FR1   * FDD 15 kHz 10 MHz * TDD 15 kHz 10 MHz * TDD 30 kHz 40 MHz | FR1   * FDD 15 kHz 10 MHz * TDD 15 kHz 10 MHz * TDD 30 kHz 40 MHz | Verify scenario 1a  (SRS switching to/from NR cells in FR1, to verify the impact on FR1 NR cells) | | FR2   * TDD 120 kHz 100 MHz | FR2   * TDD 120 kHz 100 MHz | Verify scenario 2a (SRS switching to/from NR cells in FR2, to verify the impact on FR2 NR cells) | | FR1   * FDD 15 kHz 10 MHz * TDD 15 kHz 10 MHz * TDD 30 kHz 40 MHz | FR2   * TDD 120 kHz 100 MHz | Verify scenario 2b (SRS switching to/from NR cells in FR2, to verify the impact on FR1 NR cells) | | FR2   * TDD 120 kHz 100 MHz | FR1   * FDD 15 kHz 10 MHz * TDD 15 kHz 10 MHz * TDD 30 kHz 40 MHz | Verify scenario 1b (SRS switching to/from NR cells in FR1, to verify the impact on FR2 NR cells) |  * ***Proposal 2 [R4-2016423]****: The test cases for NR SRS switching in SA NR are developed in a generic way to allow testing UEs with different NR SRS carrier-based switching time capability (indicated by higher layer parameter SRS-SwitchingTimeNR), i.e., SRS-SwitchingTimeNR is used as a test parameter.* * ***Proposal 3 [R4-2016423]****: The test cases for NR SRS switching in SA NR are developed under the following further assumptions:*    + *DRX: OFF*   + *SSB configuration: 1 SSB per SSB burst, 20 ms SSB periodicity.*   *SRS configuration: full bandwidth* |
|  |  |
|  |  |

Issue 1-2-4: Test setup for EN-DC NR SRS carrier based switching

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option 1 to simplify the test. |
| Ericsson | For UE not capable of per FR gap or configured with per UE gap, it would seem beneficial to test the interruption impact of NR SRS carrier switching to SCells on FR2 with an LTE PCell + FR1 PSCell. Seek feedback from other companies  Our original proposal was not correctly captured, so we corrected. |
|  |  |
|  |  |

Issue 1-2-5: Test setup for EN-DC E-UTRA SRS carrier based switching

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option 1 to simplify the test. |
| Ericsson | For UE not capable of per FR gap or configured with per UE gap, it would seem beneficial to test the interruption impact of LTE SRS carrier switching to SCells on FR2 with an LTE PCell + FR1 PSCell. Seek feedback from other companies  Our original proposal was not correctly captured, so we corrected. |
|  |  |
|  |  |

Issue 1-2-6: UE type for test

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | The legacy interruption related test cases don’t mention whether UE capable of per-UE gap and capable of per-FR gap. Prefer to follow the existing way. |
| Ericsson | Support option 1 since we need to be able to test UEs with different capabilities |
|  |  |
|  |  |

Issue 1-2-7: Whether to introduce following test cases in TS 36.133

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | -For NR SRS carrier-based switching impacting E-UTRA cells in SCG in EN-DC, the interruption on LTE carrier can be verified together in NR SRS carrier-based switching test in A.4 in TS 38.133;  - For NR SRS carrier-based switching impacting E-UTRA cells in MCG in NE-DC, as we mentioned above, there is no test case for NE-DC. |
| Ericsson | Support option 1 |
|  |  |
|  |  |

Issue 1-2-8: Whether to define delay test cases for SRS carrier based switching

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Agree with option 1 |
| Ericsson | Follow approach of LTE SA SRS carrier switching, OK not to test delay |
|  |  |
|  |  |

Issue 1-2-9: Whether to define test cases for the interruption requirements with E-UTRA SRS carrier-based switching impacting E-UTRA carriers in EN-DC and NE-DC

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option 1. |
| Ericsson | Preference not to define further tests, since the switching and interruption impact to the E-UTRA carriers is the same as in the rel14 LTE tests, the difference being the UE has an NR SpCell in addition. |
|  |  |
|  |  |

### CRs/TPs comments collection

#### RRM core requirements maintenance

**CR to TS 38.133**

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2014646](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Qualcomm | Huawei: depending on the outcome of issue 1-1-2. |
| Ericsson : unclear, the BWP switching is not a time point but an interval during which the UE is expected to switch. |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015577](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2016422](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
|  |
|  |
|  |

**CR to TS 36.133**

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2016421](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson | Huawei: depending on outcome of Issue 1-1-1. |
|  |
|  |
|  |

#### RRM test cases

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2014227](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Apple | Ericsson : first we need to discuss and agree on the test case list and the common set of configuration parameters (including SRS configuration) |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2014789](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  OPPO | Ericsson : first we need to discuss and agree on the test case list and the common set of configuration parameters (including SRS configuration) |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015495](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Huawei | Ericsson : first we need to discuss and agree on the test case list and the common set of configuration parameters (including SRS configuration) |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015584](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE | Ericsson : first we need to discuss and agree on the test case list and the common set of configuration parameters (including SRS configuration) |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2016052](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Nokia | Ericsson : first we need to discuss and agree on the test case list and the common set of configuration parameters (including SRS configuration) |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2016423](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
|  |
|  |
|  |

## Summary for 1st round

### Open issues

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic #1-1**  **RRM core requirements maintenance** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |
| **Sub-topic #1-1**  **RRM test cases** | *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

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| [R4-2014646](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2015577](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2016421](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2016422](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2014227](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014227.zip) |  |
| [R4-2014789](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014789.zip) |  |
| [R4-2015495](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015495.zip) |  |
| [R4-2015584](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015584.zip) |  |
| [R4-2016052](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016052.zip) |  |
| [R4-2016423](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016423.zip) |  |

## Discussion on 2nd round

## Summary on 2nd round

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
|  |  |
|  |  |

# Topic #2: CGI reading requirements with autonomous gap

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **RRM core requirements maintenance** | | |
| [R4-2015575](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015575.zip) | ZTE | CR to 38.133 correction to CGI reading requirements |
| [R4-2015576](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015576.zip) | ZTE | CR to 36.133 correction to NR CGI reading interruption requirements |
| [R4-2015774](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015774.zip) | Huawei, HiSilicon | CR on CGI reading requirements 38.133 |
| [R4-2015775](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015775.zip) | Huawei, HiSilicon | CR on CGI reading requirements 36.133 |
| [R4-2016379](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016379.zip) | Nokia, Nokia Shanghai Bell | Maintenance CR on NR CGI reading in 36133 |
| **RRM test cases** | | |
| [R4-2014642](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014642.zip) | Qualcomm, Inc. | Proposal 1: Test requirement should be defined by counting number of total missing ACK/NACKs during the CGI reading procedure. Number of missing ACK/NACK is the number of interrupted slots plus K1.  Proposal 2: Introduce the following tests:   * NR SA   + FR1 serving cell, FR1 target CGI reading cell   + FR1 serving cell, LTE target CGI reading cell   + FR2 serving cell, FR2 target CGI reading cell * EN-DC   + FR1 PSCell cell, FR1 target CGI reading cell   + FR2 PSCell cell, FR2 target CGI reading cell |
| [R4-2014776](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014776.zip) | MediaTek inc. | CR on CGI reading test case |
| [R4-2015171](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015171.zip) | Ericsson | Proposal 1 : Introduce CGI reading test cases for  InterRAT CGI reading   * Test 1a : NR CGI reading in LTE SA, FR1 target cell * Test 1b : NR CGI reading in LTE SA, FR2 target cell * Test 2a : LTE CGI reading in NR SA, FR1 serving cell * Test 2b : LTE CGI reading in NR SA, FR2 serving cell   NR CGI reading   * Test 3a : NR intra-frequency CGI reading in NR SA, FR1 serving and target cell * Test 3b : NR intra-frequency CGI reading in NR SA, FR2 serving and target cell * Test 4a : NR inter-frequency CGI reading in NR SA, FR1 serving and target cell * Test 4b : NR inter-frequency CGI reading in NR SA, FR2 serving and target cell * Test 5 : NR intrafrequency CGI reading in EN-DC   Proposal 2 : Do not introduce new CGI reading tests for:   * NR inter-frequency CGI reading in NR SA, FR2 serving and FR1 target cell * NR inter-frequency CGI reading in NR SA, FR1 serving and FR2 target cell * LTE CGI reading in EN-DC   Proposal 3 : 20ms NR SMTC periodicity is used in CGI tests  Proposal 4 : 160ms SI-RNTI scheduling is used in CGI tests  Proposal 5 : Requirements for both CGI reading delay, and interruptions to serving cell during CGI reading should be verified by the same tests. |
| [R4-2015172](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015172.zip) | Ericsson | CR to introduce interfrequency FR2 CGI reading test for SA NR (TC2) |
| [R4-2015580](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015580.zip) | ZTE | ***Proposal 1: For CGI reading of an NR or E-UTRE neighbor cell, following test cases should be specified.***   |  |  |  | | --- | --- | --- | | Test No. | Test | Comment | | TC1 | SA intra-frequency CGI identification of NR neighbor cell in FR1 | PCell in FR1 | | TC2 | SA inter-frequency CGI identification of NR neighbor cell in FR2 | PCell in FR2 | | TC3 | EN-DC intra-frequency CGI identification of NR neighbor cell in FR1 |  | | TC4 | EN-DC inter-frequency CGI identification of NR neighbor cell in FR2 |  | | TC5 | SA CGI identification of E-UTRA neighbor cell | PCell in FR1 | |
| [R4-2015583](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015583.zip) | ZTE | Draft CR on test case for SA intra-frequency CGI identification of NR neighbor cell in FR1 |
| [R4-2015776](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015776.zip) | Huawei, HiSilicon | draftCR on TC for EN-DC inter-frequency CGI identification of NR neighbor cell in FR2 |
| [R4-2016380](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016380.zip) | Nokia, Nokia Shanghai Bell | TC on EN-DC intra-F CGI reading of FR1 NR cell |

## Open issues summary

### RRM test cases

All the test cases proposed by companies are taken into account as candidate test cases. Company may share views whether down-selection is needed.

Issue 2-1-1: Test cases for CGI reading in LTE SA

* Proposals
  + Option 1
    - Test 1a : NR CGI reading in LTE SA, FR1 target cell
    - Test 1b : NR CGI reading in LTE SA, FR2 target cell
* Recommended WF:
  + FFS

Issue 2-1-2: Test cases for CGI reading in NR SA

* Proposals
  + Option 1
    - Test 2a : LTE CGI reading in NR SA, FR1 PCell
    - Test 2b : LTE CGI reading in NR SA, FR2 PCell
    - Test 3a : NR intra-frequency CGI reading in NR SA, FR1 PCell and FR1 target cell
    - Test 3b : NR intra-frequency CGI reading in NR SA, FR2 PCell and FR2 target cell
    - Test 4a : NR inter-frequency CGI reading in NR SA, FR1 PCell and FR1 target cell
    - Test 4b : NR inter-frequency CGI reading in NR SA, FR2 PCell and FR2 target cell
* Recommended WF:
  + FFS.

Issue 2-1-3: Test cases for CGI reading in EN-DC

* Proposals
  + Option 1
    - Test 5a : NR intra-frequency CGI reading in EN-DC, FR1 PSCell and FR1 target cell
    - Test 5b : NR intra-frequency CGI reading in EN-DC, FR2 PSCell and FR2 target cell
    - Test 6a : NR inter-frequency CGI reading in EN-DC, FR1 PSCell and FR1 target cell
    - Test 6b : NR inter-frequency CGI reading in EN-DC, FR2 PSCell and FR2 target cell
* Recommended WF:
  + FFS

Issue 2-1-4: Test design

* Proposals
  + - Option 1: Requirements for both CGI reading delay, and interruptions to serving cell during CGI reading should be verified by the same tests
* Recommended WF:
  + Option 1 is agreeable.

Issue 2-1-5: How to test interruption during CGI reading

* Proposals
  + Option 1: Test requirement should be defined by counting number of total missing ACK/NACKs during the CGI reading procedure. Number of missing ACK/NACK is the number of interrupted slots plus K1.
* Recommended WF:
  + FFS

Issue 2-1-6: Test configuration

* Proposals
  + Option 1:
    - 20ms NR SMTC periodicity is used
    - 160ms SI-RNTI scheduling is used
* Recommended WF:
  + FFS

## Companies views’ collection for 1st round

### Open issues

Issue 2-1-1: Test cases for CGI reading in LTE SA

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | In our view, Test 1a/1b serves very similar test purpose as Test 6a/6b, and we only need one of them. Whether UE is configured with an NR PSCell or not would not impact the CGI reading performance. We prefer to keep Test 6a/6b as there are already draft CRs, so Test 1a/1b can be skipped. |
| Ericsson | Both target FR are necessary since a UE may only support FR1 bands, or may only support FR2 bands. In case the UE supports both, the CGI reading implementation is quite different (RX beam sweep vs no beam sweep) |
|  |  |
|  |  |
|  |  |
|  |  |

Issue 2-1-2: Test cases for CGI reading in NR SA

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | We only need one of Test 2a and 2b but not both, as whether the serving cell is in FR1 or FR2 should not impact the CGI reading performance. For simplicity we prefer to keep Test 2a and it is noted there is already draft CR for it.  We do not see a need to test intra and inter-frequency target cell exhaustively. CGI reading is based on auto gap, and the core requirements are not differentiating intra and inter-frequency, either. It is therefore reasonable to randomly test intra and inter-frequency for FR1 and FR2, and we can keep Test 3a and 4b as the Rapporteur suggested on reflector before the meeting. |
| Ericsson | All proposed tests are needed; the interruption impact of LTE CGI reading on an NR serving cell needs to be verified and within NR we need to verify both NR-intra and NR-inter requirements for CGI reading |
|  |  |
|  |  |
|  |  |
|  |  |

Issue 2-1-3: Test cases for CGI reading in EN-DC

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Similar as for SA case, we do not see a need to test intra and inter-frequency target cell exhaustively. It is therefore reasonable to randomly test intra and inter-frequency for FR1 and FR2, and we can keep Test 5a and 6b as the Rapporteur suggested on reflector before the meeting. |
| Ericsson | Tests are needed, however if the UE also supports NR SA and passes tests in 2-1-2 the tests could be skipped according to applicability rule |
|  |  |
|  |  |
|  |  |
|  |  |

Issue 2-1-4: Test design

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support the Recommended WF |
| Ericsson | Agree with the recommended WF |
|  |  |
|  |  |
|  |  |
|  |  |

Issue 2-1-5: How to test interruption during CGI reading

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option 1. |
| Ericsson | Agree with the proposal; however we want to say that calculating the missed ACK-NACK for a particular test case configuration needs consideration of the HARQ feedback because missed ACK-NACK can occur both because the UE did not receive the downlink, or it received the DL but the UL happened in an interruption. Since we did not cover missed ACK/NACK explicitly in the core requirement it needs to be done in the tests. |
|  |  |
|  |  |
|  |  |
|  |  |

Issue 2-1-6: Test configuration

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | We are fine with 20ms SMTC periodicity. For SIB1 scheduling periodicity, we suggest to use the default value, i.e. 20ms. |
| Ericsson | Option 1 uses typical setting for SMTC and schedules SI-RNTI at minimum periodicity which we think is reasonable for CGI reading test. |
|  |  |
|  |  |
|  |  |
|  |  |

### CRs/TPs comments collection

#### RRM core requirements maintenance

**CR to TS 38.133**

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2005575](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE | Ericsson : In EN-DC could the PSCell configure LTE CGI reading? I looked in 38.331 and saw no limitation that ReportCGI-EUTRAN is configured only by an NR PCell. |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015774](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Huawei | Ericsson : Similar comment as 5575, could the PSCell configure LTE CGI reading? |
|  |
|  |
|  |
|  |
|  |

**CR to TS 36.133**

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015576](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE | Huawei: We have a conflict change in our CR R4-2015775 for clause 8.1.2.4.27.2. In our view, the bullet "Clause 7.32.2.y 15 and Clause 7.377.36.2.14 if the UE is configured with EN-DC or NE-DC operation mode" should be removed as the clause in for LTE SA. |
| Ericsson : OK to add one sample for AGC setting as agreed. |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015775](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Huawei | Ericsson : Similar comment to 38.133 CR in 15774, could the LTE PSCell request NR CGI reading? |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2016379](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Nokia | Huawei: We have a conflict change in our CR R4-2015775 for clause 8.1.2.4.27.2. The SIB1 decoding delay should be based on SIB1 Scheduling period but not SMTC period. |
| Ericsson: We think that an LTE PSCell could configure CGI reading in NE-DC as well, should be checked from RAN2. |
|  |
|  |
|  |
|  |

#### RRM test cases

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2014776](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  MediaTek |  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015172](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015583](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015776](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Huawei | Ericsson : We want to discuss the rough beam assumption in this testcase; RAN4 has never explicitly concluded that rough beam would be used in CGI reading and since this is a decoding test our initial thought is that the UE would actually use fine beams. Moreover, the scaling by N=8 independent of power class also points in the direction of implicitly assuming fine beam in the past (although we have never explicitly said it), since for cell measurement procedures in PC3 we did not scale by as much as N=8 to allow for a rough beam sweep. |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2016380](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Nokia |  |
|  |
|  |
|  |
|  |
|  |

## Summary for 1st round

### Open issues

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic #2-1**  **RRM test cases** | *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 |  |  |
| #2 |  |  |

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| [R4-2015575](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015575.zip) |  |
| [R4-2015576](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015576.zip) |  |
| [R4-2015774](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015774.zip) |  |
| [R4-2015775](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015775.zip) |  |
| [R4-2016379](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016379.zip) |  |
| [R4-2014776](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2015172](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2015583](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2015776](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2016380](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |

## Discussion on 2nd round

## Summary on 2nd round

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
|  |  |

# Topic #3: Mandatory gap pattern

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **RRM Core requirements maintenance** | | |
| [R4-2015578](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015578.zip) | ZTE | CR to 38.133 correction to mandatory gap pattern |
| [R4-2015579](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015579.zip) | ZTE | CR to 36.133 introduce requirements for mandatory gap pattern |
| **RRM test cases** | | |
| [R4-2014228](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014228.zip) | Apple | Observation 1: gap pattern #1 and #14 are also mandatory but they are never tested.  Proposal 1: consider introducing test cases only for some of the new mandatory gap patterns, e.g. #2 and #17.  Proposal 2: introduce test applicability to allow UE to skip some existing test cases configured with gap pattern #0 or #13:   * All release 16 and later on UE are required to be tested under new test cases, in which new mandatory measurement gap patterns are configured (#2, #3 and #11 for FR1, #17, #18 and #19 for FR2 if supported) * If the new introduced test case is to verify the same RRM requirement as some existing test case in which measurement gap pattern #0 or #13 is used, then UE is only required to pass the test in which new mandatory gap pattern is configured (#2, #3, #11, #17, #18 or #19) |
| [R4-2014643](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014643.zip) | Qualcomm, Inc. | Proposal 1: New tests with identical procedure and appropriate gap and SMTC configuration can be added in addition to release 15 test. Corresponding applicability rule should be introduced: if UE passes new release 16 test, the same test (with different gap pattern and SMTC) in release 15 can be skipped.  Proposal 2: Gap pattern 2 and 17 can be added to new release 16 tests. |
| [R4-2014644](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014644.zip) | Qualcomm, Inc. | Mandatory gap pattern test |
| [R4-2015174](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015174.zip) | Ericsson | Proposal 1 : Additional testing is performed using mandatory measurement gap patterns 2,3,11, 17,18, and 19 in NR SA mode with an NR target cell  Proposal 2 : The following test case list is proposed 1. SA event triggered reporting tests for FR1 and additional gap patterns without SSB time index detection when DRX is not used  * Using GP2, GP3 and GP11  2. SA event triggered reporting tests For FR2 and additional gap patterns without SSB time index detection when DRX is not used (PCell in FR2)  * Using GP17, GP18 and GP19 |
| [R4-2015175](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015175.zip) | Ericsson | Test cases for mandatory measurement gap |
| [R4-2015582](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015582.zip) | ZTE | Proposal 1: For additional mandatory gap patterns, following test cases are specified.   |  |  |  | | --- | --- | --- | | Test No. | Test | Comment | | TC1 | SA event triggered reporting tests with additional mandatory gap pattern | PCell in FR1  Neighbor cell in FR1 | | TC2 | SA event triggered reporting tests with additional mandatory gap pattern | PCell in FR2  Neighbor cell in FR2 | |
| [R4-2015585](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015585.zip) | ZTE | Draft CR on test case for SA event triggered reporting tests with additional mandatory gap pattern |

## Open issues summary

### RRM test cases

Issue 3-1-1: Test scope and applicability

* Proposals
  + Option 1
    - Introduce test cases only for some of the new mandatory gap patterns, i.e. #2 and #17.
    - Rel-16 UE needs to pass both release 15 and release 16 tests
  + Option 2
    - All release 16 and later on UE are required to be tested under new test cases, in which new mandatory measurement gap patterns are configured (#2, #3 and #11 for FR1, #17, #18 and #19 for FR2 if supported)
    - If the new introduced test case is to verify the same RRM requirement as some existing test case in which measurement gap pattern #0 or #13 is used, then UE is only required to pass the test in which new mandatory gap pattern is configured (#2, #3, #11, #17, #18 or #19)
  + Option 3
    - Gap pattern 2 and 17 can be added to new release 16 tests
    - If UE passes new release 16 test, the same test (with different gap pattern and SMTC) in release 15 can be skipped.
  + Option 4
    - Additional testing is performed using mandatory measurement gap patterns 2,3,11, 17,18, and 19 in NR SA mode with an NR target cell
* Recommended WF:
  + Further discussion

Issue 3-1-2: New tests design for additional mandatory gap pattern

* Proposals
  + Option 1: Using existing tests for inter frequency measurement without SSB index detection and with no DRX as baseline
* Recommended WF:
  + Option 1

Issue 3-1-3: Spec structure for new tests

* Proposals
  + Option 1: Adding test cases in new clauses
  + Option 2: Incorporate new test cases into existing one.
* Recommended WF:
  + Further discussion

## Companies views’ collection for 1st round

### Open issues

Issue 3-1-1: Test scope and applicability

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option3. Option 3 verified the mandatory gap patterns and reduce the test numbers. |
| CMCC | Prefer Option 1.  For the test cases introduced for Rel-16 mandatory measurement gap patterns, our preference is to test all the mandatory MG patterns (#2, #3 and #11 for FR1, #17, #18 and #19 for FR2), but we understand companies’ concern on the number of test cases, we can compromise to introduce test cases only for some of the new mandatory gap patterns, i.e. #2 and #17.  But for the applicability rule between Rel-15 and Rel-16, considering that longest MGL is selected in Rel-15 test cases, we are not sure whether it is a good way to skip Rel-15 test cases with long MGL if UE passes the Rel-16 test cases with short MGL. |
| Ericsson | There seems to be multiple issues covered a single topic. Firstly, since release 15 tests are already certification requirements it creates issues outside of RAN4 and even beyond RAN5 if we say that release 16 UEs do not have to pass these tests. It is totally confusing in GCF/PTCRB if suddenly a certification test for R15 no longer needs to be met in R16 because a different test is passed. It is easier to do applicability rules within a release (although even that may in future cause some confusions external to 3GPP); Moreover although the agreed GP are mandatory for NR measurements, they are still behind capability bits so we can’t say that any release 16 UE can safely skip the release 15 tests.  From a more editorial point of view, RAN5 has a quite different way of capturing different RRM tests for different releases than RAN4 does. They only maintain one release of their specification, and then write into that release which tests apply to only release 16 UEs and don’t apply to R15 (and in the future will add further releases to that). I guess it could be solved, but keep in mind that they have to describe all of this in a single spec, that covers everything from release 15 to the latest release, and there isn’t a RAN5 release 15 spec that you can go and look at if you want to test a release 15 UE.  So what we want to say here is that it is cleaner to add further coverage in R16 in a new test; removing an existing test is a quite unusual situation for the other groups that pick up our tests (and the groups that pick up their tests).  Finally there is the issue of which GP the UE needs to be tested with. We still see merit in verifying different MGRP, although this is not done in R15 gap based tests. |
|  |  |
|  |  |
|  |  |

Issue 3-1-2: New tests design for additional mandatory gap pattern

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support the recommended WF. |
| Ericsson | OK for the recommended WF |
|  |  |
|  |  |
|  |  |
|  |  |

Issue 3-1-3: Spec structure for new tests

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Prefer option 2. Option 2 avoids duplications. However if option 2 has impact on RAN5, option 1 can be considered. |
| Ericsson | Closely linked with issue 3-1-1; Again based on RAN5 maintaining only a single specification it is really not possible for them if an existing RAN4 test is expanded in scope (or modified in scope) for R16 with the same test case number. It would be cleaner to test new functionalities in new testcases, or that is what they have assumed so far. I guess they can always come up with new ways of describing what is tested, like test x..y.z-r15 and test x.y.z.r16 in the same word document (where eg x.y.z.r16 includes further subtests than x.y.z.r15) but before they have done it by adding new tests that then have a sentence saying they are only for Rel-x and later UEs. It fits more easily if we also add a new test in our R16 spec and don’t modify the existing ones. |
|  |  |
|  |  |

### CRs/TPs comments collection

#### RRM core requirements maintenance

**CR to TS 38.133**

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015578](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE | Huawei: using “supportedGapPattern-NRonly-NEDC” and  “measGapPatterns-NRonly-ENDC-r16” replace the corresponding sentence is ok. However for “*supportedGapPattern-NRonly*”, it is no need to add the applicable scenario “NR SA and NR-DC”.   |  | | --- | | ***supportedGapPattern-NRonly***  Indicates measurement gap pattern(s) optionally supported by the UE for NR SA and NR-DC when the frequencies to be measured within this measurement gap are all NR frequencies. The leading / leftmost bit (bit 0) corresponds to the gap pattern 2, the next bit corresponds to the gap pattern 3 and so on. The UE shall set the bits corresponding to the measurement gap pattern 2, 3 and 11 to 1.  ***supportedGapPattern-NRonly-NEDC***  Indicates whether the UE supports gap patterns 2, 3 and 11 in NE-DC when the frequencies to be measured within this measurement gap are all NR frequencies.  ***measGapPatterns-NRonly-ENDC-r16***  This field indicates whether the UE supports gap patterns 2, 3 and 11 in (NG)EN-DC when the frequencies to be measured within this measurement gap are all NR frequencies. | |
| Ericsson : Almost all of the changes are unnecessary in our view; eg changing the abbreviation MG to measurement gap, or adding NE-DC and NR-DC; that information is already conveyed in the table title. |
|  |
|  |
|  |
|  |

**CR to TS 36.133**

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015579](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) | Huawei: doubt the necessity of the change. *measGapPatterns-NRonly-r16* has clear description that the to-be-measured frequencies are all NR frequencies.   |  | | --- | | *measGapPatterns-NRonly-r16*  This field indicates whether the UE supports gap patterns 2, 3 and 11 in LTE standalone when the frequencies to be measured within this measurement gap are all NR frequencies. | |
|  |
|  |
|  |
|  |
|  |

#### RRM test cases

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2014644](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Qualcomm |  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015175](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [R4-2015585](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
|  |
|  |
|  |
|  |
|  |

## Summary for 1st round

### Open issues

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic #3-1**  **RRM test cases** | *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 |  |  |
| #2 |  |  |

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| [R4-2015578](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2015579](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2014644](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2015175](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
| [R4-2015585](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |

## Discussion on 2nd round

## Summary on 2nd round

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
|  |  |