**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

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| **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
* 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
* 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)
    - 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

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

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| **Company** | **Comments** |
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### Open issues for RRM test cases

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

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| **Company** | **Comments** |
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Issue 1-2-2: Scenarios for E-UTRA SRS carrier based switching tests

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| **Company** | **Comments** |
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Issue 1-2-3: Test setup for SA NR SRS carrier based switching

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

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

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| **Company** | **Comments** |
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Issue 1-2-6: UE type for test

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| **Company** | **Comments** |
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Issue 1-2-7: Whether to introduce following test cases in TS 36.133

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

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| **Company** | **Comments** |
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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

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| **Company** | **Comments** |
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### CRs/TPs comments collection

#### RRM core requirements maintenance

**CR to TS 38.133**

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| **CR/TP number** | **Comments collection** |
| [R4-2014646](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Qualcomm |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015577](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2016422](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
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**CR to TS 36.133**

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| **CR/TP number** | **Comments collection** |
| [R4-2016421](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
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#### RRM test cases

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| **CR/TP number** | **Comments collection** |
| [R4-2014227](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Apple |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2014789](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  OPPO |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015495](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Huawei |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015584](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2016052](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Nokia |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2016423](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
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## Summary for 1st round

### Open issues

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|  | **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*

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|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 |  |  |

### CRs/TPs

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| **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

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| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
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# Topic #2: CGI reading requirements with autonomous gap

## Companies’ contributions summary

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| **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

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| **Company** | **Comments** |
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Issue 2-1-2: Test cases for CGI reading in NR SA

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| **Company** | **Comments** |
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Issue 2-1-3: Test cases for CGI reading in EN-DC

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| **Company** | **Comments** |
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Issue 2-1-4: Test design

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| **Company** | **Comments** |
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Issue 2-1-5: How to test interruption during CGI reading

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| **Company** | **Comments** |
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Issue 2-1-6: Test configuration

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| **Company** | **Comments** |
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### CRs/TPs comments collection

#### RRM core requirements maintenance

**CR to TS 38.133**

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| **CR/TP number** | **Comments collection** |
| [R4-2005575](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015774](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Huawei |  |
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**CR to TS 36.133**

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| **CR/TP number** | **Comments collection** |
| [R4-2015576](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015775](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Huawei |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2016379](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Nokia |  |
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#### RRM test cases

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| **CR/TP number** | **Comments collection** |
| [R4-2014776](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  MediaTek |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015172](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015583](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015776](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Huawei |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2016380](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Nokia |  |
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## Summary for 1st round

### Open issues

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

*Recommendations on WF/LS assignment*

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|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
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### CRs/TPs

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| **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

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| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
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# Topic #3: Mandatory gap pattern

## Companies’ contributions summary

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| **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

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| **Company** | **Comments** |
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Issue 3-1-2: New tests design for additional mandatory gap pattern

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| **Company** | **Comments** |
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Issue 3-1-3: Spec structure for new tests

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| **Company** | **Comments** |
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### CRs/TPs comments collection

#### RRM core requirements maintenance

**CR to TS 38.133**

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| **CR/TP number** | **Comments collection** |
| [R4-2015578](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
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**CR to TS 36.133**

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| **CR/TP number** | **Comments collection** |
| [R4-2015579](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip) |  |
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#### RRM test cases

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| **CR/TP number** | **Comments collection** |
| [R4-2014644](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Qualcomm |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015175](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  Ericsson |  |
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| **CR/TP number** | **Comments collection** |
| [R4-2015585](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_eBis/Docs/R4-2003966.zip)  ZTE |  |
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## Summary for 1st round

### Open issues

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|  | **Status summary** |
| **Sub-topic #3-1**  **RRM test cases** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

*Recommendations on WF/LS assignment*

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|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
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| #2 |  |  |

### CRs/TPs

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| **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

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