**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.

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| Test No. | Test | Comment |
| TC1 | E-UTRAN – NR interruptions at NR SRS carrier based switching | PSCell in FR1SCell in FR1 |
| TC2 | E-UTRAN – NR interruptions at NR SRS carrier based switching | PSCell in FR2SCell in FR2 |
| TC3 | SA interruptions at NR SRS carrier based switching | PCell in FR1SCell in FR1 |
| TC4 | SA interruptions at NR SRS carrier based switching | PCell in FR2SCell in FR2 |
| TC5 | E-UTRAN – NR interruptions at E-UTRA SRS carrier based switching | PSCell in FR1E-UTRA SCell |
| TC6 | E-UTRAN – NR interruptions at E-UTRA SRS carrier based switching | PSCell in FR2E-UTRA SCell |

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| [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

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| **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
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| 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
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| 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
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| 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
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**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

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| **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.
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| [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 forInterRAT 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 testsProposal 4 : 160ms SI-RNTI scheduling is used in CGI testsProposal 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.***

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| 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 |

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| [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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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** |
| #1 |  |  |
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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 cellProposal 2 : The following test case list is proposed1. 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.

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| --- | --- | --- |
| Test No. | Test | Comment |
| TC1 | SA event triggered reporting tests with additional mandatory gap pattern | PCell in FR1Neighbor cell in FR1 |
| TC2 | SA event triggered reporting tests with additional mandatory gap pattern | PCell in FR2Neighbor 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** |
| #1 |  |  |
| #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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