**3GPP TSG-RAN Meeting # 90-e RP-20xxx**

**Electronic Meeting, December 7-11, 2020**

**Agenda item:** 9.1.5

**Source:** Moderator (Ericsson)

**Title:** [90E][50][RAN4\_EMC]

**Document for:** Information

# Introduction

The documents intent to capture companies’ comments on the following sub-topics related to RAN4 led non-spectrum Rel-17 WI on EMC:

* Topic #1: BS EMC objectives
* Topic #2: UE EMC objectives

The WID on EMC is available in **[RP-202792](https://www.3gpp.org/ftp/TSG_RAN/TSG_RAN/TSGR_90e/Docs/RP-202792.zip).**

The WID is based on email discussion with summary provided in [**RP-202508**](https://www.3gpp.org/ftp/TSG_RAN/TSG_RAN/TSGR_90e/Docs/RP-202508.zip)**.**

# Topic #1: BS EMC objectives

## Issues related to BS EMC for discussion

* Sub-topic 1-1: BS EMC performance WI objectives
* Sub-topic 1-2: Timeline
* Sub-topic 1-3: Any other issue

## Companies’ views

### Sub-topic 1-1: BS EMC performance WI objectives in RP-202792

**Study phase (till RAN#92e):**

1. Investigate the potential following alternatives to achieve EMC test simplification (if any possible) considering both Emission and Immunity testing scenarios, with the priority on MSR/AAS BS.
	1. Considering Test Configurations
	2. Considering Capability sets
	3. A combination of Test configurations and Capability sets.

NOTE 1: Potential testing optimizations for single RAT testing not to be excluded from the analysis.

NOTE 2: Modification impacting RF Test Configurations and Capability sets are excluded from this WI. RF test specifications are not to be impacted.

1. Evaluate the potential gains (in terms of test reduction) of the alternatives considered in bullet 7 to achieve the EMC test simplification.

**Implementation phase (based on study phase outcomes, till RAN#94e):**

1. Implement Emission testing simplifications in TS 37.113 and TS 37.114.
2. Implement Immunity testing simplifications in TS 37.113 and TS 37.114.
3. Apply adjustments of the existing RF capability sets and test configurations which are reused for EMC testing of MSR/AAS BS (according to the outcome of the study phase) considering both emission and immunity testing.

NOTE: Modification impacting RF Test Configurations and Capability sets are excluded from this WI. RF test specifications are not to be impacted.

1. Define the required adjustments (if any possible) to BS test configurations clause (i.e. clause 4.5 in TS 37.113, 4.4 in TS 37.114) considering both emission and immunity testing.

NOTE 1: The starting point for the specification of capability sets and test configurations will be the existing ones defined in TS 37.141.

NOTE 2: The purpose of this WID is not to change the existing limits for EMC testing.

NOTE 3: for bullets 9 – 12, potential testing optimizations for single RAT testing not to be excluded.

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| **Company** | **Comments** |
| Ericsson | The current version of the goals is the result of a fruitful discussion with the different interested companies (which have endorsed the WID proposal). In our view, this reflects a stable version of the proposal. |
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### Sub-topic 1-2: Timeline e.g. TU per meeting for BS EMC in RP-202792

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| **Company** | **Comments** |
| Ericsson | Proposal has been shared with the stakeholders and reflects the two proposed phases for the WID. It also considers the impact of handling the UE EMC part during release 17. |
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### Sub-topic 1-3: Any other issue e.g. additional objective(s)

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| **Company** | **Comments** |
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## Summary of discussion on BS EMC

# Topic #2: UE EMC

## Issues related to UE EMC

* Sub-topic 2-1: Core WI objectives
* Sub-topic 2-2: Performance WI objectives
* Sub-topic 2-3: Timeline e.g. TU per meeting
* Sub-topic 2-4: Any other issue

## Companies’ views

### Sub-topic 2-1: Core WI objectives in RP-202792

**Phase 1 (till RAN#92e):**

1. Study on the need and motivation for additional UE features as per priority outlined below (highest to lowest):
	1. NR UE: CA, DC
	2. NR UE: SUL, UL MIMO and V2X
	3. EUTRA UE: CA, DC(Based on the NR study outcome), other features as captured in TS 36.101 v16.5.0 subclause 4.3A

NOTE: Limit the scope within FR1 as currently the UE EMC specification only covers FR1 UE..

1. Investigate current 3GPP UE EMC radiated emission limit as whether current test frequency range is suitable, including the lower and upper test frequency range.
2. Investigate how to establish the communication link for NR and LTE UEs with different features:
	1. Possible deltaRIB to be considered.
	2. Possible MSD to be considered.

**Phase 2 (based on phase 1 outcomes, till RAN#93e):**

The objectives of this work item are to enhance the UE EMC with integrity of the requirements, as related to the ambiguity caused by lack of the requirements for different UE features.

To complete the UE EMC requirements as per Phase 1 outcome, following are as the scope:

1. Introduction of Potential modification of current EMC requirements for UE features as in bullet 1:
	1. All emission requirements and immunity requirements
	2. Define receiver exclusion band for UE supporting features as in bullet 1
2. Define communication link establishment (refer to sub clause 4.2 of TS 36.124 and TS 38.124) for NR and LTE UEs for features as in bullet 1.
3. Frequency range modification for the radiated emission limit, including the lower and upper test frequency range.

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| **Company** | **Comments** |
| Ericsson | The current version of the proposed goals reflects a stable version discussed extensively before this RAN plenary meeting. |
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### Sub-topic 2-2: Performance WI objectives in RP-202792

**Phase 1 (till RAN#92e):**

Analyse regulatory requirements to better understand the UE features performance under certain EMC tests and corresponding test configurations to ensure the tests are carried out correctly for general and additional requirements.

**Phases 2 (based on phase 1 outcomes till RAN#94e):**

Define proper test configurations for NR and LTE UEs. (Sub clause 8.1 and 9.1 of TS 36.124 and TS 38.124)

1. Investigate whether current test configuration defined in RAN5 specification TS 38.521-1/-2/-3 can be re-used in EMC tests. (Cross group co-operation within RAN4 and RAN5 might be needed when defining the test configuration)
2. Investigate whether regulations have already defined test configurations and if these regulations can be reused.

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| **Company** | **Comments** |
| Ericsson | The current version of the proposed goals reflects a stable version discussed extensively before this RAN plenary meeting. |
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### Sub-topic 2-3: Timeline e.g. TU per meeting for UE EMC in RP-202792

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| **Company** | **Comments** |
| Ericsson | In our view the current TU proposal (considering the split work between BS and UE EMC part) is feasible and reflects a balance to cover both topics. |
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### Sub-topic 1-3: Any other issue e.g. additional objective(s)

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| **Company** | **Comments** |
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## Summary of discussion on UE EMC