**3GPP TSG-RAN WG4 Meeting #** **97-e R4-200xxxx**

**Electronic Meeting, November 2nd – 13th, 2020**

**Agenda item:** 11.1

**Source:** Moderator (Ericsson)

**Title:** Email discussion summary for [97e][132] FS\_6425\_10500MHz \_NR

**Document for:** Information

# Introduction

ITU-R WP5D has sent LS to request parameters in a set of frequency ranges.

For frequency ranges below 6GHz, the LS reply has already be sent in last RAN4#95-e meeting and no contribution has been submitted in this meeting for this topic.

For 6.425-7.025GHz, 7.025-7.125 and 10.0-10.5 GHz, the request will be addressed via a new SI (RP-200513) to agree on associated parameters:

* Topic#1 is covering the last version of TR 38.921, plus some TPs to fix or clarify some issues in the last version.
* Topic#2 is covering the coexistence simulation results and the UE parameters challenged in last RAN4#96-e.
* Topic#3 is covering discussion on the BS and UE parameters which were not yet agreed.
* Topic#4 is covering discussion on additional information relevant for the sharing and compatibility studies.

The proposal is to:

* 1st round:
	+ Comment the proposed TPs to TR.
	+ Discuss and align on first the simulation results, and then corresponding UE/BS ACLR/ACS.
	+ Align on indoor scenario consideration.
	+ Discuss and possibly agree on the remaining parameters (BS and UE)
	+ Discuss on the relevance of the additional information and decide on their inclusion in the LS reply
* 2nd round:
	+ If not done, agree on the UE/BS ACLR/ACS limits and any other not yet agreed limits.

# Topic #1: TR 38.921 v 0.1.0

This topic is to collect any feedback on the latest TR version submitted for this meeting.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **TR** |
| R4-2015675 | Huawei | TR v 0.2.0 |
| **Draft LS Reply** |
| R4-2015681 | Huawei | Draft LS Reply |
| **TPs to TR – Maintenance (only)** |
| R4-2014475 | Nokia | Simulation Assumptions |
| R4-2014478 | Nokia | Antenna parameters update |
| R4-2014979 | Ericsson | Antenna parameters update |
| R4-2016132 | ZTE | Misc. topics |
| R4-206136 | ZTE | Uplink ACIR model |

## Open issues summary

### Sub-topic 1-1

Sub-topic description: A new revision of TR 38.921 is proposed to capture all agreements made

**Issue 1-1: TR 38.921 v0.2.0**

* Proposals
	+ Option 1: Approve TR 38.921 v0.2.0
	+ Option 2: Not approve TR 38.921 v0.2.0
* Recommended WF
	+ If no comment, approve v0.2.0 as submitted

### Sub-topic 1-2

Sub-topic description: A draft LS Reply to ITU-R is proposed

**Issue 1-2: Draft LS Reply to ITU-R**

* Proposals
	+ Option 1: Approve LS Reply
	+ Option 2: Not approve LS Reply
* Recommended WF
	+ This LS content should most likely discussed in the 2nd round, once parameters have been agreed.

### Sub-topic 1-3

Sub-topic description: Those TPs to TR 38.921 are proposing updates/fixes on previously agreed text captured in the TR.

Note that there are other TPs to TR 38.921, but they are proposing new text and are so managed in the other corresponding topics.

**Issue 1-3: TPs to TR 38.921**

* Recommended WF
	+ Provide any comment to the TPs to TR here after and/or mention if they are agreeable.

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 1-1: Sub topic 1-2:Others: |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| **TR** |
| TR 38.921V0.2.0 | Company A |
| Company B |
|  |
| **Draft LS Reply** |
| R4-2015681 | Huawei: we agree to return to the LS when the remaining parameters is agreed |
| Company B |
|  |
| **TP to TRs** |
| R4-2014475 | *Clarification of system level simulation assumptions* |
| Huawei: in R4-2011827, it stated that “Results with 0.4km ISD at 10GHz can also be provided”, we think it should be somehow captured in the simulation assumptions, since some companies provide the simulation results based on it. |
| Company B |
| R4-2014478 | *Clarification of BS array antenna element peak gain* |
| Huawei: ok to the TP |
| Company B |
| R4-2014979 | *Correction to antenna parameter table in clause 3 and sub-clause 8.1* |
| Huawei: ok to the TP |
| Company B |
| R4-2016132 | *Maintenance* |
| Huawei: ok to the TP |
| Company B |
| R4-2016136 | *uplink ACIR model* |
| Huawei: it is not needed since we take 1 UE in the UL simulation. |
| Company B |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *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

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #2: Simulations

This topic is focusing on the coexistence simulation results and the simulation assumptions challenged in last RAN4#96-e meeting.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **DL simulations** |
| R4-2014458 | CATT |  |
| R4-2014476 | Nokia |  |
| R4-2015978 | Huawei | **Observation 1: When downlink ACIR is set to 30.7dB at 7GHz, the urban macro scenario can be restricted to 5% DL throughput loss.****Observation 2: When downlink ACIR is set to 29.7dB at 10GHz, the urban macro scenario can be restricted to 5% DL throughput loss.****Proposal: It’s proposed to specify 36 dB ACLR for BS and 33dB ACS for UE on both 6.425-7.125GHz and 10.0-10.5GHz.** |
| R4-2015897 | Ericsson | **Observation 1: According to feasibility studies in the context of the 7-24GHz SI, BS ACLR should not exceed 38dB at 8GHz.****Observation 2: Antenna parameters for indoor were not discussed. Indoor scenario consideration would need further discussion.** |
| R4-2016134 | ZTE | ***Proposal 1: for 7GHz, the downlink throughput loss of the victim UE in the urban macro scenario can still be limited to 5% with downlink ACIR offsets of -1dB;******Proposal 2: for 10GHz, the downlink throughput loss of the victim UE in the urban macro scenario can still be limited to 5% with downlink ACIR offsets of -3dB.*** |
| R4-2016236 | Qualcomm | **Observation 1: The required ACIR for UE NF of 9dB and 13dB is marginal at 7GHz and 10GHz.** **Observation 2: When downlink ACIR is set to 30.9dB at 7GHz, DL throughput loss can be restricted to 5% with NF of 9dB&13dB.****Observation 3: When downlink ACIR is set to 30.5dB at 10GHz, DL throughput loss can be restricted to 5% with NF of 9dB&13dB.****Proposal 1: Consider the difficulty of implementing ACS in UE, RAN4 to split the DL ACIR based on the assumption of BS ACLR of 45dB.****Observation 4: Based on the DL co-existence simulation results, the UE ACS is ~31dB which is ONLY 2dB less than UE ACS requirements in FR1.****Proposal 2: RAN4 to mention the BS ACLR/UE ACS parameters in reply LS can apply for the assumptions of UE NF of 9dB and 13dB which can leave more flexibility for UE implementation.**  |
| **UL simulations** |
| R4-2014459 | CATT |  |
| R4-2014477 | Nokia |  |
| R4-2015679 | Huawei | **Observation 1: When uplink ACIR is set to 27.9dB at 7GHz, the urban macro scenario can be restricted to 5% UL throughput loss.****Observation 2: When uplink ACIR is set to 25.9dB at 10GHz, the urban macro scenario can be restricted to 5% UL throughput loss.****Proposal: It’s proposed to specify 28 dB ACLR for UE and 46 dB ACS for BS on both 6.425-7.125GHz and 10.0-10.5GHz.** |
| R4-2015898 | Ericsson | **Observation: Antenna parameters for indoor were not discussed. Indoor scenario consideration would need further discussion.** |
| R4-2016135 | ZTE | **Observation 1: for 7GHz, the uplink throughput loss of the victim BS in the urban macro scenario can still be limited to 5% with uplink ACIR offsets of -2dB,;****Observation 2: for 10GHz, the uplink throughput loss of the victim BS in the urban macro scenario can still be limited to 5% with uplink ACIR offsets of -5dB;** |
| R4-2016601(revised R4-2016237) | Qualcomm | **Observation 1: When uplink ACIR is set to 22dB at 7GHz with 23dBm UE max Tx power, UL throughput loss in the urban macro can be restricted to 5%.****Observation 2: When uplink ACIR is set to 22dB at 10GHz with 23dBm UE max Tx power, UL throughput loss in the urban macro can be restricted to 5%.****Observation 3: When uplink ACIR is set to 22dB at 7GHz with 20dBm UE max Tx power, UL throughput loss in the urban macro can be restricted to 5%.****Observation 4: When uplink ACIR is set to 21.5dB at 10GHz with 20dBm UE max Tx power, UL throughput loss in the urban macro can be restricted to 5%.****Proposal 1:** **Split the UL ACIR based on the assumption of BS ACS of 46dB. And the UE ACLR is 22dB for 7 and 10GHz with 23dBm Tx power.****Proposal 2:** **RAN4 to identify the UE parameters considering the UE max Tx power of 20dBm at 10GHz.** **Proposal 3: RAN4 to submit the UE parameters considering the UE max Tx power of 23dBm and 20dBm.**  |
| **Simulation assumptions** |
| R4-2015901 | Ericsson | **Observation 1: 20 and 23 dBm are realistic values for UE Tx maximum power at 7 and 10 GHz, as it has already been agreed.****Observation 2: UE noise figure of 9 dB is correct value for 7 and 10 GHz, as it has already been agreed.** |

## Open issues summary

### Sub-topic 2-1

Sub-topic description: Simulation assumptions. In last RAN4#96-e meeting, UE maximum output power was challenged, additional clarifications have been given for this meeting.

**Issue 2-1: UE maximum output power**

* From R4-2015901 and the proposals in R4-2016237, the 23 dBm UE output power assumption is confirmed for the simulations and following options are suggested:
	+ Option 1:
		- Consider 20 dBm and 23 dBm for 6.425-7.125GHz in the LS to ITU-R.
		- Consider 20 dBm only for 10.0-10.5 GHz in the LS to ITU-R.
	+ Option 2:
		- Consider 23 dBm for both 6.425-7.125 GHz and 10.0-10.5 GHz in the LS to ITU-R.
	+ Option 3 (possible alternative):
		- Consider 20 dBm and 23 dBm for both 6.425-7.125 GHz and 10.0-10.5 GHz in the LS to ITU-R.
* Recommended WF
	+ The 23 dBm UE output power assumption is confirmed for the simulations. Further discuss the different options. Note that option 3 was not suggested, but is an alternative proposed by the moderator.

### Sub-topic 2-2

Sub-topic description: Simulation assumptions. In last RAN4#96-e meeting, UE noise figure was challenged, additional clarifications have been given for this meeting.

**Issue 2-3: UE Noise figure for 6.425-7.125GHz and 10.0-10.5GHz**

* From R4-2015901 and the observations in R4-2016236, the 9dB noise figure assumption is confirmed for the simulations and following options are suggested:
	+ Option 1: Consider 9dB only in the LS to ITU-R.
	+ Option 2: Consider 9dB and 13dB in the LS to ITU-R.
* Recommended WF
	+ Considering 9 or 13 dB UE noise figure would have minor impact on simulations results as shown in R4-2016236. The 9dB UE NF is confirmed for the simulations. Further discussed the 2 options for the reply to ITU-R.

### Sub-topic 2-3

Sub-topic description: No antenna parameter was agreed for indoor scenario, some agreement should be reached on how to consider this scenario for the simulations’ outcomes and the parameters in the LS Reply to ITU-R.

**Issue 2-3: Indoor scenario**

* Should the indoor scenario be considered in the LS Reply to ITU-R:
	+ Option 1: Yes, antenna and BS/UE parameters should be defined for indoor.
	+ Option 2: No, indoor scenario should not be addressed.
* Recommended WF
	+ Choose one option giving some rationale for it. Note that RAN4 already replied with the BS antenna parameters to ITU-R without providing the indoor ones.

### Sub-topic 2-4

Sub-topic description: DL simulations results. Results here after summarize companies results. Values in [] are moderator’s understanding based on the provided results.

**Issue 2-4: DL simulations results**

* Based on simulation results, the average value is given table below. As the spread of results is still large, an average value is also given after removing highest and lower value (calculated on 4 results only then). From those inputs, following options are proposed to determine ACIR target value in DL:
	+ Option 1: Suggested target value below in blue.
	+ Option 2: Other values. Then propose another possible compromise.
* Recommended WF
	+ We should here focus on urban macro scenario only, lacking of enough results for the other scenarios. Comment the simulation results when appropriate and select one of the 2 options below. When selecting option 2, propose any other possible compromise.

|  |  |
| --- | --- |
|  | **ACIR (dB)** |
| **Company** | **6.425-7.125GHz** | **10.0-10.5GHz** |
| **Urban macro uncoord.** | **Indoor** | **Dense Urban** | **Urban Macro uncoord.** | **Indoor** | **Dense Urban** |
| CATT | [28] |  |  | [26] |  |  |
| Nokia | 32.7 | 31.7 | 23.7 | 30.7 | 32.2 | 20.7 |
| Huawei | 30.7 |  |  | 29.7 |  |  |
| Ericsson | 30 |  |  | 29 |  |  |
| ZTE | 31.7 |  |  | 29.7 |  |  |
| Qualcomm | 30.9 |  |  | 30.5 |  |  |
| Average  | 30.9 |  |  | 29.3 |  |  |
| Average after removing highest and lowest values  | 30.9 |  |  | 29.5 |  |  |
| **Suggested target value** | **30.9** |  |  | **29.5** |  |  |

### Sub-topic 2-5

Sub-topic description: UL simulations results. Results here after summarize companies results. Values in [] are moderator’s understanding based on the provided results.

**Issue 2-5: UL simulations results**

* Based on simulation results, the average value is given table below. As the spread of results is still large, an average value is also given after removing highest and lower value (calculated on 4 results only then). From those inputs, following options are proposed to determine ACIR target value in UL:
	+ Option 1: Suggested target value below in blue.
	+ Option 2: Other values. Then propose any other possible compromise.
* Recommended WF
	+ We should here focus on urban macro scenario only, lacking of enough results for the other scenarios. Comment the simulation results when appropriate and select one of the 2 options below. When selecting option 2, propose any other possible compromise.

|  |  |
| --- | --- |
|  | **ACIR (dB)** |
| **Company** | **6.425-7.125GHz** | **10.0-10.5GHz** |
| **Urban macro uncoord.** | **Indoor** | **Dense Urban** | **Urban Macro uncoord.** | **ISD** | **Indoor** | **Dense Urban** |
| CATT | [27] |  |  | [<23] | ? |  |  |
| Nokia | UE ACLR: 27BS ACS: 45ACIR=26.9 | UE ACLR:30BS ACS: 45 | UE ACLR: 21BS ACS: 45 | UE ACLR: 26BS ACS: 45ACIR=25.9 | ? | UE ACLR: 29.5BS ACS: 45 | Not conclusive |
| Huawei | 27.9 |  |  | 25.9 | ? |  |  |
| Ericsson | 27 |  |  | 23 | 400 |  |  |
| ZTE | 27.9 |  |  | 24.9 | ? |  |  |
| Qualcomm | 22 |  |  | 22 / 21.5(\*) | 400 |  |  |
| Average value | 26.8 |  |  | 24.3 |  |  |  |
| Average after removing highest and lowest values | 27.2 |  |  | 24.3 |  |  |  |
| **Suggested target value** | **27.2** |  |  | **24.3** |  |  |  |
| Note (\*): 22 with 23dBm and 21.5 with 20dBm  |

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 2-1: Sub topic 2-2:Sub topic 2-3:Sub topic 2-4:Sub topic 2-5:Others: |
| Huawei | Sub topic 2-1: option 2, we concluded that 23 dBm is feasible hence should be used for simulation.Sub topic 2-2: option 1, we concluded 9 dB NF is feasible hence should be used for simulation. Sub topic 2-3:option 2 is preferredSub topic 2-4: Average value is ok to us. We would like to point out that in LTE simulation 5% CDF could have higher throughput loss than 5 % (TR 36.942). Hence required ACIR can be lower.Sub topic 2-5: As 2-4, average value is ok to us. |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| NA |  |
|  |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

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

*Suggestion on WF/LS assignment*

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

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #3: Remaining UE and BS parameters

This topic is focusing on the remaining BS and UE aspects not already agreed in the scope of the SI on IMT parameters (RP-200042).

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **BS parameters** |
| R4-2014457 | CATT |  |
| R4-2014474 | Nokia |  |
| R4-2014738 | CMCC |  |
| R4-2015677 | Huawei | **TP to TR 38.921** |
| R4-2015678 | Huawei | **Proposal: It’s proposed to specify 36 dB ACLR for BS and 33dB ACS for UE on both 6.425-7.125GHz and 10.0-10.5GHz.** |
| R4-2015679 | Huawei | **Proposal: It’s proposed to specify 28 dB ACLR for UE and 46 dB ACS for BS on both 6.425-7.125GHz and 10.0-10.5GHz.** |
| R4-2015899 | Ericsson | **Proposal 1: We propose to specify a 37 dB BS ACLR for 6.425-7.125 GHz frequency range.****Proposal 2: We propose to specify a 40 dB BS ACS for 6.425-7.125 GHz frequency range.****Proposal 3: We propose to specify a 36 dB BS ACLR for 10.0-10.5 GHz frequency range.****Proposal 4: We propose to specify a 35 dB BS ACS for 10.0-10.5 GHz frequency range.** |
| R4-2016133 | ZTE | **TP to TR 38.921** |
| R4-2016236 | Qualcomm | **Proposal 1: Consider the difficulty of implementing ACS in UE, RAN4 to split the DL ACIR based on the assumption of BS ACLR of 45dB.****Observation 4: Based on the DL co-existence simulation results, the UE ACS is ~31dB which is ONLY 2dB less than UE ACS requirements in FR1.** |
| R4-2016237 | Qualcomm | **Proposal 1:** **Split the UL ACIR based on the assumption of BS ACS of 46dB. And the UE ACLR is 22dB for 7 and 10GHz with 23dBm Tx power.** |
| R4-2016369 | Ericsson |  |
| **UE parameters** |
| R4-2014456 | CATT |  |
| R4-2014473 | Nokia | **1) To keep the currently specified 33dB UE ACS below 6GHz for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz.****2) To keep the currently specified 30dB UE ACLR below 6GHz for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz.** |
| R4-2015676 | Huawei | **TP to TR 38.921** |
| R4-2015678 | Huawei | **Proposal: It’s proposed to specify 36 dB ACLR for BS and 33dB ACS for UE on both 6.425-7.125GHz and 10.0-10.5GHz.** |
| R4-2015679 | Huawei | **Proposal: It’s proposed to specify 28 dB ACLR for UE and 46 dB ACS for BS on both 6.425-7.125GHz and 10.0-10.5GHz.** |
| R4-2015900 | Ericsson | **Proposal 1: We propose to specify a 27 dB UE ACLR for 6.425-7.125 GHz frequency range.****Proposal 2: We propose to specify a 31 dB UE ACS for 6.425-7.125 GHz frequency range.****Proposal 3: We propose to specify a 25 dB UE ACLR for 10.0-10.5 GHz frequency range.****Proposal 4: We propose to specify a 30 dB UE ACS for 10.0-10.5 GHz frequency range.** |
| R4-2016236 | Qualcomm | **Proposal 1: Consider the difficulty of implementing ACS in UE, RAN4 to split the DL ACIR based on the assumption of BS ACLR of 45dB.****Observation 4: Based on the DL co-existence simulation results, the UE ACS is ~31dB which is ONLY 2dB less than UE ACS requirements in FR1.** |
| R4-2016237 | Qualcomm | **Proposal 1:** **Split the UL ACIR based on the assumption of BS ACS of 46dB. And the UE ACLR is 22dB for 7 and 10GHz with 23dBm Tx power.** |

## Open issues summary

### Sub-topic 3-1

**Issue 3-1: BS and UE - ACLR and ACS**

* Based on simulation results and associated companies’ proposals, below table captures the different options. Once the target ACIR values are agreed, BS/UE ACLR/ACS could be further discussed and compromised.
* Recommended WF
	+ UL and DL ACIR target values should first be agreed, but companies are encouraged to early make compromised proposals in the 1st round.

|  |  |  |
| --- | --- | --- |
|  | **6.425-7.125 GHz** | **10.0-10.5 GHz** |
|  | **BS** **ACLR** | **UE ACS** | **BS ACS** | **UE ACLR** | **BS ACLR** | **UE ACS** | **BS ACS** | **UE ACLR** |
| **CATT** | 40 | 28 | 40 | 27 | 40 | 26 | 35-40 | 23 |
| **Ericsson** | 37 | 31 | 40 | 27 | 36 | 30 | 35 | 25 |
| **Huawei** | 36 | 33 | 46 | 28 | 36 | 33 | 46 | 28 |
| **Nokia** | 45(\*) | 33(\*) | 45(\*) | 30(\*) | 45(\*) | 33(\*) | 45(\*) | 30(\*) |
| **Qualcomm** | 45 | 31 | 46 | 22 | 45 | 31 | 46 | 22 |
| Note (\*): proposed values are considering urban macro and indoor scenarios |

### Sub-topic 3-2

**Issue 3-2: BS Spectral mask**

* Proposals
	+ Option 1: Consider only CBW greater than 50MHz and so update existing FR1 OBUE (Huawei)

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic limits* (Note 1, 2) | *Measurement bandwidth* |
| 0 MHz ≤ Δf < 50 MHz | 0.05 MHz ≤ f\_offset < 50.05 MHz |  | 100 kHz  |
| 50 MHz ≤ Δf <min(100 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <min(10.05 MHz, f\_offsetmax) | -14 dBm | 100 kHz  |
| 100 MHz ≤ Δf ≤ Δfmax | 100.5 MHz ≤ f\_offset < f\_offsetmax  | -15 dBm (Note 3) | 1MHz  |

* + Option 2: Further discuss once BS/UE ACLR/ACS have been agreed.
* Recommended WF
	+ TBA

### Sub-topic 3-3

**Issue 3-3: BS in-band blocking**

* Proposals
	+ Option 1: blocking level at 44 dB for 6.425-7.125 GHz and 40dB for 10.0-10.5 GHz (CATT).
	+ Option 2: In-band blocking: Keep same as 38.104 for 6.425-7.125 GHz and 10.0-10.5 GHz (Nokia, Huawei)
	+ Option 3: Further discuss once BS/UE ACLR/ACS have been agreed.
* Recommended WF
	+ TBA

### Sub-topic 3-4

**Issue 3-4: BS out of band blocking**

* Proposals
	+ Option 1: -15 dBm CW interferer applies from 1MHz to FUL,low – 200MHz and from FUL,high + 200MHz up to 12750 MHz (Huawei)
	+ Option 2 (CMCC):
		- Change limits’ applicability

From 30MHz to FUL,low - ΔfOOB and from FUL,high + ΔfOOB up to 12.75GHz

With:

From 30MHz to FUL,low - ΔfOOB and from FUL,high + ΔfOOB up to 2nd harmonic of the upper frequency edge of the band.

* + - Limits: to be further discussed.
* Recommended WF
	+ TBA

### Sub-topic 3-5

**Issue 3-5: BS spurious for 6.425-7.125 GHz**

* Proposals
	+ Option 1 (CATT, Huawei):

TS 38.104, clause 6.6.5.2.1 and 9.7.5.2

|  |  |  |
| --- | --- | --- |
| Spurious frequency range | Basic limit | *Measurement bandwidth* |
| 9 kHz – 150 kHz | -36 dBm | *1 kHz* |
| 150 kHz – 30 MHz | *10 kHz*  |
| 30 MHz – 1 GHz | *100 kHz* |
| 1 GHz – 12.75 GHz | -30 dBm | *1 MHz* |
| 12.75 GHz – 5th harmonic of the upper frequency edge of the DL operating band in GHz | *1 MHz* |

* + Option 2 (CMCC, ZTE, Ericsson):

Conducted:

|  |  |  |
| --- | --- | --- |
| Spurious frequency range | Basic limit | *Measurement bandwidth* |
| 9 kHz – 150 kHz | -36 dBm | *1 kHz* |
| 150 kHz – 30 MHz | *10 kHz*  |
| 30 MHz – 1 GHz | *100 kHz* |
| 1 GHz – 12.75 GHz | -30 dBm | *1 MHz* |
| 12.75 GHz – 26 GHz | *1 MHz* |

 OTA – basic limits:

|  |  |  |
| --- | --- | --- |
| Spurious frequency range | Basic limit | *Measurement bandwidth* |
| 30 MHz – 1 GHz | -36 dBm  | *100 kHz* |
| 1 GHz – 26 GHz | -30 dBm | *1 MHz* |

* Recommended WF
	+ TBA

### Sub-topic 3-6

**Issue 3-6: BS spurious for 10.0-10.5 GHz**

* Proposals
	+ Option 1 (CATT, Ericsson, ZTE)
		- 30MHz ≤ f ≤ 1 GHz: -36dBm/100kHz

1 GHz ≤ f ≤18GHz : -30dBm/1MHz

18GHz ≤ f ≤ 26 GHz: -20dBm/10MHz

* + - Should we also send LS to CEPT SE21 as there is no limit specified for those frequency ranges? (Ericsson)
	+ Option 2 (Huawei)

TS 38.104, clause 6.6.5.2.1 and 9.7.5.2

|  |  |  |
| --- | --- | --- |
| Spurious frequency range | Basic limit | *Measurement bandwidth* |
| 9 kHz – 150 kHz | -36 dBm | *1 kHz* |
| 150 kHz – 30 MHz | *10 kHz*  |
| 30 MHz – 1 GHz | *100 kHz* |
| 1 GHz – 12.75 GHz | -30 dBm | *1 MHz* |
| 12.75 GHz – 5th harmonic of the upper frequency edge of the DL operating band in GHz | *1 MHz* |

* Recommended WF
	+ If option 1 is preferred, answer also the question if a LS should be sent to CEPT SE21 to notify them no limit exist for those frequency range.

### Sub-topic 3-7

**Issue 3-7:** fOBUE

* Proposals
	+ Option 1: 40 MHz for 6.425-7.125GHz (CMCC).
	+ Option 2: Keep FSS (Huawei)
* Recommended WF
	+ TBA

### Sub-topic 3-8

**Issue 3-8: UE Spectral mask**

* Proposals
	+ Option 1: Out of band emission in clause 6.5.2.2 of TS 38.101-1 for 6.425-7.125 GHz and 10.0-10.5 GHz (Huawei).
	+ Option 2: Further discuss once BS/UE ACLR/ACS have been agreed.
* Recommended WF
	+ TBA

### Sub-topic 3-9

**Issue 3-9: UE blocking**

* Proposals
	+ Option 1: For 6.425-7.125 GHz and 10.0-10.5 GHz, same limits as in clause 7.6 in 38.101-1 (Huawei, CATT)
	+ Option 2: Further discuss once BS/UE ACLR/ACS have been agreed.
* Recommended WF
	+ TBA

### Sub-topic 3-10

Sub-topic description: Those TPs to TR 38.921 are new text proposals to capture UE and BS parameters.

**Issue 3-10: TPs to TR 38.921**

* Recommended WF
	+ Provide any comment to the TPs to TR here after and/or mention if they are agreeable.

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 3-1: Sub topic 3-2:Sub topic 3-3:Sub topic 3-4:Sub topic 3-5:Sub topic 3-6:Sub topic 3-7:Sub topic 3-8:Sub topic 3-9:Others: |
| Huawei | Sub topic 3-1: some principle on the trade-off should be discussed. We propose to keep the existing ACS values for both BS and UE since we do not find the implementation constrains to reuse existing FR1 ACS. While it is desired to adopt lower ACLR considering that lower power efficiency at higher frequency band and larger channel bandwidth. Sub topic 3-2: option 1Sub topic 3-3: option 2Sub topic 3-4:option 1Sub topic 3-5: ok with option 2Sub topic 3-6:ok with option 1Sub topic 3-7: option 2, 40 MHz may be not enough considering the larger number of T/R unites and larger transmission bandwidth will be used for the band.Sub topic 3-8: Option 1Sub topic 3-9: Option 1 |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2015676 | *UE IMT technology related parameters* |
| Company A |
| Company B |
| R4-2015677 | *BS remaining parameters* |
| Company A |
| Company B |
| R4-2016133 | *BS spurious emission* |
| Company A |
| Company B |
| R4-2016369 | *Draft LS to ECC SE21 on Spurious emission limits for AAS BS in 6.425 – 7.125 GHz and 10-10.5 GHz* |
| Company A |
| Company B |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *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

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #4: Relevant information for the sharing and compatibility studies

This topic is collecting any relevant information for the sharing and compatibility studies.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2014978 | Ericsson | It is proposed to capture additional information from this contribution as a complement to the antenna array model and corresponding parameters to better describe typical base station spatial characteristics in the planned LS reply to ITU-R WP 5D.  |
| R4-2015680 | Huawei | TP to TR 38.921 |

## Open issues summary

### Sub-topic 4-1

**Issue 4-1: Additional information to be captured in the LS Reply**

* Proposals: Include following information in the LS Reply to ITU-R:
	+ - Steering Range
		- Coverage optimization
		- Adaptive beamforming
		- Array geometry
	+ Option 1: Yes, all.
	+ Option 2: Yes, partly. Mention which information should be added then.
	+ Option 3: No
* Recommended WF
	+ Select one of the 3 options, mentioning which information are relevant when selecting option 2.

### Sub-topic 4-2

Sub-topic description: Those TPs to TR 38.921 are new text proposals to capture UE and BS parameters.

**Issue 4-2: TPs to TR 38.921**

* Recommended WF

Provide any comment to the TPs to TR here after and/or mention if they are agreeable.

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 4-1: Others: |
| Huawei | Issue 4-1: we support Option 1, all the information are relevant to sharing study to better understand the typical base station spatial characteristics. We think it also should be captured in the TR. |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2015680 | *on spatial emission and interference mitigation* |
| Company A |
| Company B |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *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

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #5: LS from ITU-R WP5D

This topic is related to the received LS from ITU-R WP5D

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2017799 | ITU-R WP5D | LS In |

## Open issues summary

### Sub-topic 5-1

Sub-topic description: ITU-R WP5D sent LS to RAN4 requesting RAN4 support to review and provid feedback on the revised Table 1.

**Issue 4-1: LS in from ITU-R WP5D**

* Proposals: Check the proposed update and identify any issue to be discussed below.
* Recommended WF
	+ Bring any identified issue with the review of Table 1.

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 5-1: Others: |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2017799 | Company A |
| Company B |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *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

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |