**3GPP TSG-RAN WG4 Meeting # 101-e-Bis R4-22**

**Electronic Meeting, January 17-25, 2022**

**Agenda item:** 5.3

**Source:** Moderator (Huawei, HiSilicon)

**Title:** Email discussion summary for [101-bis-e][103] NR\_6 GHz\_licensed

**Document for:** Information

# Introduction

This email thread discuss the band definition for 6GHz licensed band. The contributions are in agenda 5.3, which includes:

* Topic #1: General aspects
* Topic #2: System parameters
* Topic #3: UE RF requirements
* Topic #4: BS RF requirements

Due to the limited time for this meeting, moderator suggests not to discuss the contributions related to performance part, contributions for IAB specs (currently it is not included in the WID), and R4-2201454 which is maintenance CR for TR 38.921.

# Topic #1: General aspects

## Companies’ contributions summary

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2201330 | Ericsson | **Observation: In the scope of the licensed 6Ghz band WI, RAN4 should only specify and introduce a new band covering the 6 425-7 125 MHz frequency range.** |
| R4-2201503 | Huawei, HiSilicon | **Proposal 1**: It is proposed to include the 6425-7125 MHz band into the specification once the RF requirements are completed, without the need to wait the completion of the range 5925-7125 MHz.  **Proposal 2**: It is proposed to discuss the work split at RAN4#101-e-bis |
| R4-2201987 | MediaTek (Chengdu) Inc. | It is proposed to send an LS to RCC to request more information in relation to the points raised   * With which type of 5G NR system configuration does RCC consider that coexistence with fixed and other services would be facilitated? * The recommendation gives freedom for national administrations to restrict the use of frequency blocks, but it is unclear as to what kind of restrictions may be required or applicable. * Article 21 of the Radio Regulations seems to allow quite a broad range of Tx power, and RCC has indicated that these requirements are applicable for base stations and user equipment. This suggests that a very high UE power class could be applicable for 6GHz operation. |
| R4-2200436 | Apple | **Proposal: We kindly request to discuss further presented co-existence issues for the upper 6GHz licensed band.** |
| R4-2201231 | CATT | **Proposal 1: RF requirements for 6GHz licensed band should be specified based on RCC regulatory requirements but the use of this band should not be limited to RCC countries. Such RF requirements can be applied to other countries or regions if they are willing to use.**  **Proposal 2: No RF requirement for co-existence with FS, FSS and SOS within the same band is defined. The co-existence of IMT and other system within the same band can leave up to administrations or using site engineering solutions.** |
| R4-2201545 | Skyworks Solutions Inc. | **Observation 1: The RCC recommendation points at the 6425-7075 MHz range for coexistence, but it seem related to measurements over the ocean measurements while the 7075-7250 MHz range is more general.**  **Observation 2: If coexistence with adjacent services above the 7125 MHz upper bound are discussed up to 7250 MHz it is not the cases for adjacent services below 6425 MHz.**  **Observation 3: Although only RR 5.458 is cited in [3] based on article 5 of [4], there are other services and regulations applicable to the range:**   * **Radio astronomy in 6650-6675.2 MHz (RR 5.149)** * **Standard frequency and time signal-satellite service Earth-to-space transmissions at 6427 MHz (RR 5.440)** * **Use of the bands 6 725-7 025 MHz (Earth-to-space) by fixed satellite service (RR 5.441)** * **There may to be an omission of the fact that 7100-7155 MHz and 7190-7235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis in the Russian Federation (RR 5.459).**    + **It is important to better understand this, at least for the first range that is in-band for 6425-7125MHz**   **Observation 4: To manage coexistence with other services based on [3]:**   * **Use of reference blocks may be restricted. It is unclear if creation of guard bands is implied by using 10MHz extensions and also how this may be compatible with (“*Administrations may restrict the use of frequency blocks, including within the 6425-6525 MHz and 7100-7125 MHz frequency bands, in order to ensure compatibility with stations in FS, FSS, SOS, SRS and EESS*”).** * **It is unclear if the creation of guard bands is implied by using 10MHz extensions and also how this may be compatible with (“*the necessary bandwidth for 5G-NR/IMT-2020 systems in this frequency band is not less than 100 MHz per operator*”) unless non-contiguous CA is implied.**   **Observation 5: In general, we observe that it would be useful that the coexistence with other services is better understood, including which mitigation techniques are within the scope of the RAN4 work or local regulations:**   * **Use of guard bands to known incumbent services.** * **Use of NS and A-MPR, if required.**   **Observation 6: 43 dBm TRP is applicable to BS with peak EIRP depending on geographical separation or separation angle to satellite services.**  **Observation 7: Interfering services require additional study to further understand which ones of the NR UE receiver blocking and selectivity requirements are sufficient, if any.**  **Observation 8: The general NR spurious emission requirement is adequate.** |
| R4-2201855 | Qualcomm Incorporated | **Proposal: Send an LS to RCC to clarify what (if any) additional spurious emission requirements are needed to ensure compatibility with adjacent services in the band. Further clarify whether emission requirements or other necessary restrictions will be forthcoming from individual administrations.** |
|  |  |  |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1 – general aspects

**Issue 1-1-1: Scope**

The WI covers two frequency ranges, and the RAN4 work starts for one of them, i.e. 6425-7125 MHz, which is according to RCC Recommendation 1/21. The range 5925-7125 MHz is still on hold unless there are regulatory requirements are available for the frequency range.

* Proposals:
  + It is proposed to include a new band into the specification once the RF requirements covering the 6 425-7125 MHz frequency range are completed, without the need to wait the completion of the range 5925-7125 MHz.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 1-1-2: Work split**

There are quite a few draft CRs submitted in this meeting. As usual it is proposed to take big CR approach for the WI.

* Proposals:

|  |  |  |
| --- | --- | --- |
| TS No. | Remarks | Work split |
| 38.101-1 | Core UE part | Huawei |
| 38.133 | Core UE part | Ericsson |
| 38.104 | Core BS part | ZTE |
| 36.104 | Core BS part | ZTE |
| 37.104 | Core BS part | Nokia |
| 37.105 | Core BS part | CATT |
| 37.145-1 | Perf. BS part | Huawei |
| 37.145-2 | Perf. BS part | Huawei |
| 38.141-1 | Perf. BS part | CATT |
| 38.141-2 | Perf. BS part | Ericsson |
| 36.141 | Perf. BS part | ZTE |
| 37.141 | Perf. BS part | Nokia |
| 38.174 | Core BS part | ZTE |
| 38.176-1 | Perf. BS part |  |
| 38.176-1 | Perf. BS part |  |

* Recommended WF
  + Discuss and approve the work split

### Sub-topic 1-2 – Study on RCC Recommendation

Regarding the RCC Recommendation 1/21, some contributions have been submitted in this meeting to seek the further clarifications on the harmonized technical conditions. Meanwhile many companies believe the band definition work can be done and also some contributions were provide the study on BS and UE RF requirements according to RCC Recommendation 1/21. Hence it is suggested to have more discussion on the aspect,

**Issue 1-2-1: Clarification on RCC Recommendation 1/21**

* Proposals:
  + **Proposal 1:** To discuss further presented co-existence issues in R4-2200436
  + **Proposal 2:** Send an LS to RCC for more clarification
  + **Proposal 3:** No RF requirement for co-existence with FS, FSS and SOS within the same band is defined
* Recommended WF
  + TBA based on 1st round discussion

**Issue 1-2-2: Whether need to define additional UE RF requirements in 3GPP to ensure compatibility with adjacent services in the band according to RCC Recommendation 1/21?**

* Proposals:
  + **Option 1:** yes
  + **Option 2:** no
* Recommended WF
  + TBA based on 1st round discussion

## Companies views’ collection for 1st round

### Open issues

**Collection of comments:**

**To Sub-topic 1-1 – general aspects**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Company A | **Issue 1-1-1:** *Comment*  **Issue 1-1-2:** *Comment* |
| ZTE | **Issue 1-1-1:**  *Agree with proposal*  **Issue 1-1-2:**  *Fine with current work split, please also include the impacts on IAB spec and repeater spec due to coexistence issues.*  *ZTE is also interested in both IAB spec (38.174, 38.176-1, 38.176-2 ) and repeater spec.* |
| Huawei | **Issue 1-1-1:**  *Agree*  **Issue 1-1-2:**  Repeater spec are not available yet in our understanding and hence can be considered later. |
| Xiaomi | **Issue 1-1-1**  agree the proposal |

**To 1-2 – Study on RCC Recommendation**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Company A | **Issue 1-2-1:** *Comment*  **Issue 1-2-2:** *Comment* |
| ZTE | We need to discuss the RF requirement based on the LS information from RCC. In addition, based on RCC recommendation, the coexistence with fixed service, the fixed-satellite service (Earth-to-space, space-to-Earth) and the space operation service (space-to-Earth) has been mentioned and considered. |
| Huawei | **Issue 1-2-1:**  Regarding co-existence issues mentioned in R4-2200436, protection of passive service in 7075-7250 MHz, co-existence with other radio systems and cross-border co-existence have been considered in the recommendation and the harmonized technical conditions also present in the Annex of RCC recommendation 1/21. For co-existence with unlicensed L6G, from the ECC decision, it is clearly stated that the usage of unlicensed L6G is based on non-protected basis.    We think according to RCC recommendation 1/21, if there is no specific protection requirements then no need for 3GPP to define additional requirements, i.e. in these cases the co-existence is ensured by deployment measures.  Regarding some companies’ question on recommendation 2) for the restriction of frequency blocks. It means no operation at all in certain blocks to ensure co-existence.  Hence we support option 3 no additional RF requirements are needed to be defined in 3GPP.  To MTK R4-2201987 on the type of 5G NR system configuration, one question for clarification, does it ask which type of Base stations are considered?  **Issue 1-2-2:**  Option 2, see comment above |

## 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** |
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*Suggestion on WF/LS assignment*

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

## Discussion on 2nd round (if applicable)

|  |  |
| --- | --- |
| **Issues** | **Company Comments** |
|  | Company A:  Company B: |
|  |  |
|  |  |

## 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** |
|  |  |

# Topic #2: System parameters

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2200149 | CATT | Discussion on system parameters for 6GHz licensed band |
| R4-2201304 | Xiaomi | Discussion on system parameters for 6G license band |
| R4-2201447 | ZTE Corporation | Discussion on system parameters for 6425-7125MHz |
| R4-2201504 | Huawei, HiSilicon | System parameters for 6GHz NR licensed band |
| R4-2201545 | Skyworks Solutions Inc. | 6GHz licensed band attributes based on RCC recommendations |
| R4-2201855 | Qualcomm Incorporated | **Proposal: RAN4 to decide whether the defined 6 GHz licensed band should be specific to 6425 – 7125 MHz with possible NS, or a more general band 5925 – 7125 MHz with specific NS requirements for countries allowing only the subset.**  **Proposal: Channel bandwidths for this band as 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 MHz.** |
| R4-2201824 | ZTE Corporation | draft CR on introduction of 6GHz system parameters for 38.101-1 |
| R4-2201825 | ZTE Corporation | draft CR on introduction of 6GHz system parameters for 38.104 |
| R4-2201330 | Ericsson | Based on the above information, we would propose to specify at least the following channel BWs for this new 6GHz licensed band: 60, 70, 80, 90 and 100 MHz. And other channel BWs are not precluded. |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 2-1 – Band definition

**Issue 2-1-1: Frequency range**

Most contributions propose to define the new band covering the range according to the RCC Recommendation 1/21. At the same time R4-2201855 propose to discuss whether it could be defined as the entire range.

* Proposals:
  + **Option 1:** Define a new band covering the 6425-7125 MHz frequency range
  + **Option 2:** A more general band 5925 – 7125 MHz with specific NS requirements for countries allowing only the subset
* Recommended WF
  + Option 1 as this follows the WID scope.

**Issue 2-1-2: Band number**

The new band should defined as the next available band number, considering,

* n100: RMR 900 MHz.
* n101: RMR 1900MHz.
* n102: unlicensed 6GHz band for Europe.
* 103: Upper 700MHz band?
* Proposals:
  + **Option 1:** Defining a new band as n103
  + **Option 2:** Defining a new band as n104
* Recommended WF
  + Further check which one is the next available band number

### Sub-topic 2-2 – Channel arrangment

**Issue 2-2-1: channel bandwidth**

* Proposals:
  + **Option 1:** 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 MHz
  + **Option 2:** 20, 30, 40, 50, 60, 70, 80, 90, 100 MHz
  + **Option 3:** 20,25,30,40,50, 60,70,80,90, 100MHz FFS for 35MHz and 45MHz
  + **Option 4:** 60, 70, 80, 90, 100 MHz, other channel BWs are not precluded
* Recommended WF
  + TBA based on 1st round discussion

**Issue 2-2-2: Channel raster**

* Proposals:
  + To define the applicable NR-ARFCN as the Table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **NR *operating band*** | **ΔFRaster**  **(kHz)** | **Uplink**  **range of NREF**  **(First – <Step size> – Last)** | **Downlink**  **range of NREF**  **(First – <Step size> – Last)** |
| nx | 15 | 828334 – <1> –875000 | 828334 – <1> –875000 |
|  | 30 | 828334 – <2> –875000 | 828334 – <2> –875000 |

* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 2-2-3: Synchronization raster**

The sync raster entries is related to the assumption of minimum channel bandwidth and the choice of step size.

* Proposals: to define the applicable SS raster entries as,
  + **Option 1:**

|  |  |  |  |
| --- | --- | --- | --- |
| NR operating band | SS Block SCS | SS Block pattern1 | Range of GSCN  (First – <Step size> – Last) |
| nx | 30 kHz | Case C | 9881 – <1> – 10360 |

* + **Option 2:**

|  |  |  |  |
| --- | --- | --- | --- |
| NR *operating band* | SS Block SCS | SS Block pattern (NOTE 1) | Range of GSCN  (First – <Step size> – Last) |
| nx | 30 kHz | Case C | 9884 – <4> – 10360 |

* + **Option 3:**

|  |  |  |  |
| --- | --- | --- | --- |
| NR *operating band* | SS Block SCS | SS Block pattern (NOTE 1) | Range of GSCN  (First – <Step size> – Last) |
| [n104] | 15 kHz | Case A | 16068 – <1> – 17805 |
| 30 kHz | Case C | 16074 – <1> – 17799 |

* Recommended WF
  + TBA based on 1st round discussion

## Companies views’ collection for 1st round

### Open issues

**Collection of comments:**

**To Sub-topic 2-1 – Band definition**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Company A | **Issue 2-1-1:** *Comment*  **Issue 2-1-2:** *Comment* |
| ZTE | **Issue 2-1-1:**  *Support the option 1*  **Issue 2-1-2:**  *Both option 1 and option 2 is fine for us, if 103 has been reserved for LTE band, then we are fine to go with option 2.* |
| Huawei | **Issue 2-1-1:**  *Option 1 to follow WID scope*  **Issue 2-1-2:**  Option 2, it seems 103 is to be used for upper 700MHz band |
| Xiaomi | **Issue 2-1-1:**  *Support the option 1*  **Issue 2-1-2:**  we are fine for both options, if n103 was assigned to other band, n104 is OK |

**To Sub-topic 2-2 –Channel arrangment**

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| --- | --- |
| **Company** | **Comments** |
| Company A | **Issue 2-2-1:** *Comment*  **Issue 2-2-2:** *Comment*  **Issue 2-2-3:** *Comment* |
| ZTE | **Issue 2-2-1:**  *Based on the outcome of study phase for ITU-R reply, the minimum channel bandwidth could be 20MHz.*  **Issue 2-2-2:**  *Fine with NR-ARFCN in the table.*  **Issue 2-2-3:**  *We need to agree on the minimum channel bandwidth firstly, then we could derive the sync raster easily.* |
| Huawei | **Issue 2-2-1:**  *Our preference is to consider 20 MHz as minimum channel bandwidth, and We can further discussion on option 2 and 4*  **Issue 2-2-2:** *Comment*  *agree*  **Issue 2-2-3:** *Comment*  *Our preference is to consider 20 MHz as minimum channel bandwidth, so we support option 2.* |
| Xiaomi | **Issue 2-2-1:**  *prefer Option2 and 1, consider 20 or 10 MHz as minimum channel bandwidth.*  **Issue 2-2-2:**  we are OK with the proposal  **Issue 2-2-3:**  Depends on issue 2-2-1. |
|  |  |

## 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** |
|  |  |

*Suggestion on WF/LS assignment*

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

## Discussion on 2nd round (if applicable)

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| --- | --- |
| **Issues** | **Company Comments** |
|  | Company A:  Company B: |
|  |  |
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## 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** |
|  |  |

# Topic #3: UE RF requirements

## Companies’ contributions summary

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2200150 | CATT | Discussion on UE RF requirements for 6GHz licensed band |
| R4-2201305 | Xiaomi | Discussion on UE RF requirements for 6G license band |
| R4-2201332 | Ericsson | 6GHz licensed band - UE requirements |
| R4-2201448 | ZTE Corporation | Discussion on UE RF requirements for 6425-7125MHz |
| R4-2201505 | Huawei, HiSilicon, CMCC, China Unicom, OPPO | UE RF requirements |
| R4-2201506 | Huawei, HiSilicon,CMCC, China Telecom, China Unicom, OPPO | Draft CR for 38.101-1: 6GHz NR licensed band |
| R4-2201826 | ZTE Corporation | draft CR on introduction of 6GHz UE RF requirements for 38.101-1 |
| R4-2201855 | Qualcomm Incorporated | 6 GHz licensed band |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 3-1 – TX requirements

**Issue 3-1-1: Maximum output power**

* Proposals:
  + **Option 1:** Specify PC3 and PC2 power classes for this band, with the default power class as PC3. The tolerance is +2/-3 dB
  + **Option 2:** PC 3 with the tolerance +2/-3 dB
* Recommended WF
  + Discuss whether option 1 is acceptable since it also cover option 2.

**Issue 3-1-2: MPR**

MPR requirements are defined as band agnostic, and relative channel BW for this new band is less than 4%

* Proposals:
  + Existing FR1 MPR requirement can apply to 6425-7125MHz and no ∆MPR will be needed
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-1-3: Output power dynamics**

* Proposals:
  + Requirements specified in TS 38.101-1 sub-clause 6.3 apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-1-4: Transmit signal quality**

* Proposals:
  + Requirements specified in TS 38.101-1 sub-clause 6.4 apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-1-5: Occupied bandwidth**

* Proposals:
  + Requirement specified in TS 38.101-1 sub-clause 6.5.1 shall also apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-1-6: Spectral emission mask**

* Proposals:
  + To adopt the SEM requirement defined in TR 38.921 for 6425-7125MHz.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-1-7: ACLR**

* Proposals:
  + According to the SI TR clause 7.1.3, it is proposed to adopt 26 dB ACLR for 6.425 - 7.125 GHz band.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-1-8: Spurious emission-general**

* Proposals:
  + Requirements specified in TS 38.101-1 sub-clause 6.5.3.1 apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposal is agreeable

Note: the additional spurious emission pending the discussion in Issue 1-2-1.

**Issue 3-1-9: Transmit intermodulation**

* Proposals:
  + Requirements specified in TS 38.101-1 sub-clause 6.5.4 apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-1-10: UL MIMO**

* Proposals: UL MIMO should be supported for 6425-7125MHz
  + **Option 1:** yes
  + **Option 2:** no
* Recommended WF
  + TBA based on 1st round discussion

### Sub-topic 3-2 – RX requirements

**Issue 3-2-1: Reference sensitivity**

According to the SI TR clause 7.2.1, a noise figure in the [9, 13] dB interval was agreed for reporting to ITU WP5D sharing studies. In the meeting companies provide evaluations and proposal for reference sensitivity.

* Proposals:
  + **Option 1:** it is proposed to define the same REFSENS as n78 and n79 for the new band

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| nx | 15 | 20, 30, 40, 50 | [-92.5] + 10log10(NRB/106) | TDD |
|  | 30 | 20, 30, 40, 50, 60, 70, 80, 90, 100 | [-92.8] + 10log10(NRB/51) |  |
|  | 60 | 20, 30, 40, 50, 60, 70, 80, 90, 100 | [-93.1] + 10log10(NRB/24) |  |

* + **Option 2:** Adopt 10.5 dB NF for 6GHz NR band.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Operating band / SCS / Channel bandwidth / REFSENS** | | | | |
| **Operating band** | **SCS**  **kHz** | **Channel bandwidth (MHz)** | **REFSENS (dBm)8** | **Duplex Mode** |
| nX | 15 | 20, 30, 40, 50 | [-92.2] + 10log10(NRB/106) | TDD |
|  | 30 | 20, 30, 40, 50, 60, 70, 80, 90, 100 | [-92.4] + 10log10(NRB/51) |  |
|  | 60 | 20, 30, 40, 50, 60, 70, 80, 90, 100 | [-92.6] + 10log10(NRB/24) |  |

**Option 3: FFS**

* Recommended WF
  + TBA based on 1st round discussion

**Issue 3-2-2: Maximum input level**

* Proposals:
  + Requirements specified in TS 38.101-1 sub-clause 6.3 apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-2-3: ACS**

* Proposals:
  + According to the SI TR clause 7.2.4, it is proposed to adopt 32 dBc adjacent channel selectivity (ACS) for 6.425 - 7.125 GHz band.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-2-4: blocking**

* Proposals:
  + UE blocking is specified conventionally without the need to improve blocking beyond the standard requirements.
  + Requirement specified in TS 38.101-1 sub-clause 7.6 for frequency above than 3300 MHz shall also apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposals are agreeable

**Issue 3-2-5: Intermodulation**

* Proposals:
  + Requirement specified in TS 38.101-1 sub-clause 7.8 shall also apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 3-2-6: Spurious emissions**

* Proposals:
  + Requirement specified in TS 38.101-1 sub-clause 7.9 shall also apply for the new 6GHz licensed band.
* Recommended WF
  + Discuss whether the proposal is agreeable

## Companies views’ collection for 1st round

### Open issues

**Collection of comments:**

**To Sub-topic 3-1 – TX requirements**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Nokia | **Issue 3-1-1:** *Comment*  **Issue 3-1-2:** *Proposal is agreeable*  **Issue 3-1-3:** *Proposal is agreeable*  **Issue 3-1-4:** *Proposal is agreeable*  **Issue 3-1-5:** *Proposal is agreeable*  **Issue 3-1-6:** *Proposal is agreeable*  **Issue 3-1-7:** *Proposal is agreeable*  **Issue 3-1-8:** *Proposal is agreeable*  **Issue 3-1-9:** *Proposal is agreeable*  **Issue 3-1-10:** *Option 1* |
| ZTE | **Issue 3-1-1:**  *Our original proposal is for PC3, if the majority of companies are interested in PC2, we are also fine with that.*  **Issue 3-1-2:**  *The proposal is fine for us.*  **Issue 3-1-3:**  *The proposal is fine for us.*  **Issue 3-1-4:**  *The proposal is fine for us.*  **Issue 3-1-5:**  *The proposal is fine for us.*  **Issue 3-1-6:**  *In general, we are fine with that, however this should also be discussed together with channel bandwidth.*  **Issue 3-1-7:**  *The proposal is fine for us.*  **Issue 3-1-8:**  *The proposal is also fine for us. The spurious emission in TR 38.921 and TS 38.101-1 should be same.*  **Issue 3-1-9:**  *The proposal is fine for us.*  **Issue 3-1-10:**  *UL MIMO is necessary for this high band to improve the experienced throughput.* |
|  |  |
| Huawei | **Issue 3-1-1:**  *Option 1 which is the same as C band.*  **Issue 3-1-2:**  *The proposal is agreeable*  **Issue 3-1-3:**  *The proposal is agreeable*  **Issue 3-1-4:**  *The Proposal is agreeable*  **Issue 3-1-5:**  *The proposal is agreeable*  **Issue 3-1-6:**  *The proposal is agreeable*  **Issue 3-1-7:**  *The proposal is agreeable*  **Issue 3-1-8:**  *The proposal is agreeable*  **Issue 3-1-9:**  *The proposal is agreeable*  **Issue 3-1-10:**  *Ok to Option 1* |
| Xiaomi | **Issue 3-1-1:**  *Prefer Option 2, PC2 can be requested by the Operator.*  **Issue 3-1-2:**  *we are OK with the proposal*  **Issue 3-1-3:**  *we are OK with the proposal*  **Issue 3-1-4:**  *we are OK with the proposal*  **Issue 3-1-5:**  *we are OK with the proposal*  **Issue 3-1-6:**  *we are OK with the proposal*  **Issue 3-1-7:**  *we are OK with the proposal*  **Issue 3-1-8:**  *we are OK with the proposal*  **Issue 3-1-9:**  *we are OK with the proposal*  **Issue 3-1-10:**  *Option 1 is OK* |

**To Sub-topic 3-2 – RX requirements**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Nokia | **Issue 3-2-1:** *Option 1*  **Issue 3-2-2:** *Proposal is agreeable*  **Issue 3-2-3:** *Proposal is agreeable*  **Issue 3-2-4:** *Proposals are agreeable*  **Issue 3-2-5:** *Proposal is agreeable*  **Issue 3-2-6:** *Proposal is agreeable* |
| ZTE | **Issue 3-2-1:**  *Option 1 as baseline, whether this could be further retuning which could be further discussed.*  **Issue 3-2-2:**  *Proposal is fine for us.*  **Issue 3-2-3:**  *The proposal is fine for us to follow the SI agreement.*  **Issue 3-2-4:**  *The proposal is fine for us.*  **Issue 3-2-5:**  *The proposal is fine for us.*  **Issue 3-2-6:**  *The proposal is fine for us.* |
| Huawei | **Issue 3-2-1:**  *Option 1*  **Issue 3-2-2:**  *The proposal is agreeable*  **Issue 3-2-3:**  *The proposal is agreeable*  **Issue 3-2-4:**  *The proposals are agreeable*  **Issue 3-2-5:**  *The proposal is agreeable*  **Issue 3-2-6:**  *The proposal is agreeable* |
| Xiaomi | **Issue 3-2-1:** *Option 2, the value need modify according to the discussion of issue 2-2-1: channel bandwidth*  **Issue 3-2-2:** *Proposal is agreeable*  **Issue 3-2-3:** *Proposal is agreeable*  **Issue 3-2-4:** *Proposals are agreeable*  **Issue 3-2-5:** *Proposal is agreeable*  **Issue 3-2-6:** *Proposal is agreeable* |

## 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** |
|  |  |

*Suggestion on WF/LS assignment*

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

## Discussion on 2nd round (if applicable)

|  |  |
| --- | --- |
| **Issues** | **Company Comments** |
|  | Company A:  Company B: |
|  |  |
|  |  |

## 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** |
|  |  |

# Topic #4: BS RF requirements

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2201331 | Ericsson | 6GHz licensed band - BS requirements |
| R4-2200153 | CATT | Analysis on BS requirements for operation in 6GHz band |
| R4-2200154 | CATT | draft CR on introduction of 6GHz licensed band for 38.104 |
| R4-2200155 | CATT | draft CR on introduction of 6GHz licensed band for 38.141-1 |
| R4-2200156 | CATT | draft CR on introduction of 6GHz licensed band for 38.141-2 |
| R4-2200157 | CATT | draft CR on introduction of 6GHz licensed band for 37.104 |
| R4-2200158 | CATT | draft CR on introduction of 6GHz licensed band for 37.105 |
| R4-2200159 | CATT | draft CR on introduction of 6GHz licensed band for 37.141 |
| R4-2200160 | CATT | draft CR on introduction of 6GHz licensed band for 37.145-1 |
| R4-2200161 | CATT | draft CR on introduction of 6GHz licensed band for 37.141-2 |
| R4-2200480 | CATT | draft CR on introduction of 6GHz licensed band for 38.174 |
| R4-2200481 | CATT | draft CR on introduction of 6GHz licensed band for 38.176-1 |
| R4-2200482 | CATT | draft CR on introduction of 6GHz licensed band for 38.176-2 |
| R4-2201449 | ZTE Corporation | Discussion on BS RF requirements for 6425-7125MHz |
| R4-2201450 | ZTE Corporation | draft CR to TS38.104 the introduction of 6425-7125MHz |
| R4-2201451 | ZTE Corporation | draft CR to TS36.104 the introduction of coexistence requirements of licensed band 6425-7125MHz |
| R4-2201452 | ZTE Corporation | draft CR to TS36.141 the introduction of coexistence requirements of licensed band 6425-7125MHz |
| R4-2201507 | Huawei, HiSilicon, China Unicom, CMCC | BS RF requirements |
| R4-2201508 | Huawei, HiSilicon | Draft CR for 38.104: 6GHz NR licensed band |
| R4-2201827 | ZTE Corporation | draft CR to TS 38.174 introduction of 6GHz coexistence requirement in IAB spec |
| R4-2201828 | ZTE Corporation | draft CR to TS 38.176-1 on introduction of coexistence requirement for 6GHz |
| R4-2201829 | ZTE Corporation | draft CR to TS 38.176-1 on introduction of coexistence requirement for 6GHz |
| R4-2201453 | ZTE Corporation | Discussion on MR/LA BS UEM requirements for 6425-7125MHz and 10-10.5GHz |
| R4-2201454 | ZTE Corporation | draft CR to TR38.921 MR and LA BS requirements for 6425-7125MHz and 10-10.5GHz |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 4-1 – 38.104 RF requirements

**Issue 4-1-1: BS type**

* Proposals:
  + **Option 1:** Specify BS type 1-H and type 1-O for the 6GHz licensed band
  + **Option 2:** Specify BS type 1-C, BS type 1-H and type 1-O for the 6GHz licensed band
* Recommended WF
  + TBA based on 1st round discussion.

**Issue 4-1-2: Conducted Tx requirements**

Several contributions with similar proposals are submitted for the topic.

* Proposals: WF for conducted Tx requirements is proposed as in below table

|  |  |
| --- | --- |
| **Requirement** | **WF** |
| BS output power | Requirement specified in TS 38.104 sub-clause 6.2.3 shall also apply for the new 6GHz licensed band. |
| RE power control dynamic range | Requirement specified in TS 38.104 sub-clause 6.3.2 shall also apply for the new 6GHz licensed band. |
| Total power dynamic range | Requirement specified in TS 38.104 sub-clause 6.3.3 shall also apply for the new 6GHz licensed band. |
| Transmit OFF power | Requirement specified in TS 38.104 sub-clause 6.4.1 shall also apply for the new 6GHz licensed band. |
| Transient period | Requirement specified in TS 38.104 sub-clause 6.4.2 shall also apply for the new 6GHz licensed band. |
| Frequency error | Requirement specified in TS 38.104 sub-clause 6.5.1 shall also apply for the new 6GHz licensed band. |
| Modulation quality | Requirement specified in TS 38.104 sub-clause 6.5.2 shall also apply for the new 6GHz licensed band. |
| Time alignment error | Requirement specified in TS 38.104 sub-clause 6.5.3 shall also apply for the new 6GHz licensed band. |
| Occupied bandwidth | Requirement specified in TS 38.104 sub-clause 6.6.2 shall also apply for the new 6GHz licensed band. |
| ACLR | Based on the coexistence study, an ACLR value of 38dB shall apply for the band.  See TR 38.921 sub-clause 6.1.3 |
| OBUE | For Wide BS, the OBUE mask for 6425-7125MHz in TR 38.921 sub-clause 6.1.2 shall apply.  For Medium range and Local area BS, See Issue 4-1-3  For ΔfOBUE requirement, see Issue 4-1-7 |
| Transmit spurious | The requirement in sub-clause 6.1.4 of TR 38.921 shall apply for licensed band 6425-7125MHz. |
| Transmitter intermodulation | Requirement specified in TS 38.104 sub-clause 6.7.3 shall also apply for the new 6GHz licensed band. |

* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 4-1-3: OBUE for Medium range and Local area BS**

It seems R4-2200153 and R4-2201453 made the same mask proposal.

* Proposals:
* Table 1a. MR BS UEM limit values for 6425-7125MHz, 31< Prated,x ≤ 38 dBm

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic limits* | *Measurement bandwidth* |
| 0 MHz ≤ Δf < 50 MHz | 0.05 MHz ≤ f\_offset < 50.05 MHz |  | 100 kHz |
| 50 MHz ≤ Δf <  min(100 MHz, Δfmax) | 50.05 MHz ≤ f\_offset <  min(100.05 MHz, f\_offsetmax) | Prated,x - 60dB | 100 kHz |
| 100 MHz ≤ Δf ≤ Δfmax | 100.5 MHz ≤ f\_offset < f\_offsetmax | Min(Prated,x - 60dB, -25dBm) | 100 kHz |
| NOTE 1: For a BS supporting *non-contiguous spectrum* operation within any *operating band* the emission limits within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent *sub-blocks* on each side of the *sub-block gap*. Exception is f ≥ 100MHz from both adjacent *sub-blocks* on each side of the *sub-block gap*, where the emission limits within *sub-block gaps* shall be Min(Prated,x -60dB, ‑25dBm)/100kHz.  NOTE 2: For a *multi-band connector* with *Inter RF Bandwidth gap* < 2\*ΔfOBUE the emission limits within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent *sub-blocks* or RF Bandwidth on each side of the *Inter RF Bandwidth gap*.  NOTE 3: The requirement is not applicable when Δfmax < 100 MHz. | | | |

* Table 1b. MR BS UEM limit values for 6425-7125MHz, Prated,x ≤ 31 dBm

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic limits* | *Measurement bandwidth* |
| 0 MHz ≤ Δf < 50 MHz | 0.05 MHz ≤ f\_offset < 50.05 MHz |  | 100 kHz |
| 50 MHz ≤ Δf <  min(100 MHz, Δfmax) | 50.05 MHz ≤ f\_offset <  min(100.05 MHz, f\_offsetmax) | -29 dBm | 100 kHz |
| 100 MHz ≤ Δf ≤ Δfmax | 100.5 MHz ≤ f\_offset < f\_offsetmax | -29 dBm | 100 kHz |
| NOTE 1: For a BS supporting *non-contiguous spectrum* operation within any *operating band* the emission limits within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent *sub-blocks* on each side of the *sub-block gap*. Exception is f ≥ 100MHz from both adjacent *sub-blocks* on each side of the *sub-block gap*, where the emission limits within *sub-block gaps* shall be -29dBm/100kHz.  NOTE 2: For a *multi-band connector* with *Inter RF Bandwidth gap* < 2\*ΔfOBUE the emission limits within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent *sub-blocks* or RF Bandwidth on each side of the *Inter RF Bandwidth gap*.  NOTE 3: The requirement is not applicable when Δfmax < 100 MHz. | | | |

* Table 2. LA BS UEM limit values for 6425-7125MHz,

|  |  |  |  |
| --- | --- | --- | --- |
| 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) | 50.05 MHz ≤ f\_offset <  min(100.05 MHz, f\_offsetmax) | -37 dBm | 100 kHz |
| 100 MHz ≤ Δf ≤ Δfmax | 100.5 MHz ≤ f\_offset < f\_offsetmax | -37 dBm | 100 kHz |
| NOTE 1: For a BS supporting *non-contiguous spectrum* operation within any *operating band* the emission limits within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent *sub-blocks* on each side of the *sub-block gap*. Exception is f ≥ 100MHz from both adjacent *sub-blocks* on each side of the *sub-block gap*, where the emission limits within *sub-block gaps* shall be -37dBm/100kHz.  NOTE 2: For a *multi-band connector* with *Inter RF Bandwidth gap* < 2\*ΔfOBUE the emission limits within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent *sub-blocks* or RF Bandwidth on each side of the *Inter RF Bandwidth gap*  NOTE 3: The requirement is not applicable when Δfmax < 100 MHz. | | | |

* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 4-1-4: Conducted Rx requirements**

Several contributions with similar proposals are submitted for the topic.

* Proposals: WF for conducted Rx requirements is proposed as in below table

|  |  |
| --- | --- |
| **Requirement** | **WF** |
| Reference sensitivity | Reference sensitivity requirements in TS 38.104 sub-clause 7.2.2 shall be updated considering the agreed Noise Figure (6 dB for Wide Area BS, 11 dB for Medium Range BS and 14 dB for Local Area BS). |
| Dynamic range | Dynamic range requirements in TS 38.104 sub-clause 7.3.2 shall be updated considering this agreed Noise Figure. |
| ACS | Based on TR 38.921 sub-clause 6.2.4, an ACS value of 42dB shall be specified. |
| In-band blocking | The in-band blocking has been agreed in TR 38.921 sub-clause 6.2.3 shall be specified |
| Out-of-band blocking | Requirement specified in TS 38.104 sub-clause 7.5.2 shall also apply for the new 6GHz licensed band.  For ΔfOOB requirement, see Issue 4-1-8A new NOTE proposed in R4-2201508 is to be discussed |
| Receiver spurious | Requirement specified in TS 38.104 sub-clause 7.6.4 shall also apply for the new 6GHz licensed band. |
| Receiver intermodulation | Requirement specified in TS 38.104 sub-clause 7.7.2 shall also apply for the new 6GHz licensed band. |
| In-channel selectivity | Requirement specified in TS 38.104 sub-clause 7.8.2 shall also apply for the new 6GHz licensed band. |

* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 4-1-5: OTA Tx requirements**

* Proposals: WF for OTA Tx requirements is proposed as in below table

|  |  |
| --- | --- |
| **Requirement** | **Suggested limits** |
| Radiated transmit power | Requirement specified in TS 38.104 sub-clause 9.2.2 shall also apply for the new 6GHz licensed band. |
| OTA BS output power | Requirement specified in TS 38.104 sub-clause 9.3.2 shall also apply for the new 6GHz licensed band. |
| OTA RE power control dynamic range | Requirement specified in TS 38.104 sub-clause 9.4.2.2 shall also apply for the new 6GHz licensed band. |
| OTA total power dynamic range | Requirement specified in TS 38.104 sub-clause 9.4.3.2 shall also apply for the new 6GHz licensed band. |
| OTA transmit OFF power | Requirement specified in TS 38.104 sub-clause 9.5.2.2 shall also apply for the new 6GHz licensed band. |
| OTA transient period | Requirement specified in TS 38.104 sub-clause 9.5.3.2 shall also apply for the new 6GHz licensed band. |
| OTA frequency error | Requirement specified in TS 38.104 sub-clause 9.6.1.2 shall also apply for the new 6GHz licensed band. |
| OTA modulation quality | Requirement specified in TS 38.104 sub-clause 9.6.2.2 shall also apply for the new 6GHz licensed band. |
| OTA time alignment error | Requirement specified in TS 38.104 sub-clause 9.6.3.2 shall also apply for the new 6GHz licensed band. |
| OTA occupied bandwidth | Requirement specified in TS 38.104 sub-clause 9.7.2.2 shall also apply for the new 6GHz licensed band. |
| OTA ACLR | The requirements are referring to conducted requirement. No change is needed. |
| OTA OBUE | The requirements are referring to conducted requirement. No change is needed. |
| OTA transmit spurious | The requirements are referring to conducted requirement. No change is needed. |
| OTA transmitter intermodulation | Requirement specified in TS 38.104 sub-clause 9.8.2 shall also apply for the new 6GHz licensed band. |

* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 4-1-6: OTA Rx requirements**

* Proposals: WF for OTA Rx requirements is proposed as in below table

|  |  |
| --- | --- |
| **Requirement** | **Suggested limits** |
| OTA sensitivity | Requirement specified in TS 38.104 clause 10.2.1 shall also apply for the new 6GHz licensed band. |
| OTA reference sensitivity | The requirements are referring to conducted requirement. No change is needed. |
| OTA dynamic range | The requirements are referring to conducted requirement. No change is needed. |
| OTA ACS | The requirements are referring to conducted requirement. No change is needed. |
| OTA in-band blocking | The requirements are referring to conducted requirement. No change is needed. |
| OTA out of band blocking | Requirement specified in TS 38.104 sub-clause 10.6.2 shall also apply for the new 6GHz licensed band. |
| OTA receiver spurious | Requirement specified in TS 38.104 sub-clause 10.7.2 shall also apply for the new 6GHz licensed band. |
| OTA receiver intermodulation | Requirement specified in TS 38.104 sub-clause 10.8.2 shall also apply for the new 6GHz licensed band. |
| OTA in-channel selectivity | This requirement is not depending on the considered frequency range. |

* Recommended WF
  + Discuss whether the proposal is agreeable

**Issue 4-1-7:** ΔfOBUE

* Proposals:
  + **Option 1:** defineΔfOBUE = 100 MHz for the 6GHz licensed band
  + **Option 2:** defineΔfOBUE = 100 MHz for BS type 1-H and type 1-O, and ΔfOBUE = 40 MHz for BS type 1-C
* Recommended WF
  + TBA based on 1st round discussion

**Issue 4-1-8:** ΔfOOB

* Proposals:
  + **Option 1:** define ΔfOOB = 100 MHz for the 6GHz licensed band
  + **Option 2:** define ΔfOOB = 100 MHz for BS type 1-H and type 1-O, and ΔfOOB = 60 MHz for BS type 1-C
* Recommended WF
  + TBA based on 1st round discussion

### Sub-topic 4-2 – other core RF requirements

**Issue 4-2-1: TS 37.104**

* Proposals: draft CR in R4-2200157
* Recommended WF
  + Comments collection on the draft CR

**Issue 4-2-2: TS 37.105**

* Proposals: draft CR in R4-2200158
* Recommended WF
  + Comments collection on the draft CR

**Issue 4-2-3: TS 36.104**

* Proposals: draft CR in R4-2201451
* Recommended WF
  + Comments collection on the draft CR

## Companies views’ collection for 1st round

### Open issues

**Collection of comments:**

**To Sub-topic 4-1 – 38.104 RF requirements**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Company A | **Issue 4-1-1:** *Comment*  **Issue 4-1-2:** *Comment*  **Issue 4-1-3:** *Comment*  **Issue 4-1-4:** *Comment*  **Issue 4-1-5:** *Comment*  **Issue 4-1-6:** *Comment*  **Issue 4-1-7:** *Comment*  **Issue 4-1-8:** *Comment* |
| ZTE | **Issue 4-1-1:**  *For BS class, currently we don’t see the necessity to preclude BS type 1-C, in addition, there is no harm to define it in spec since BS type 1-H requirement is also defined based on basic limit of BS type 1-C.*  **Issue 4-1-2:**  *Fine with proposals from Ericssson which is also aligned with ours.*  **Issue 4-1-3:**  *We support the proposals in Issue 4-1-3 to define MR and LA BS requirements;*  **Issue 4-1-4:**  *Narrow band related blocking and intermodulation requirement is not applicable for licensed 6GHz band; it should be clarified firstly.*  *In channel selectivity requirement is also related with noise figure, therefore we think that this requirement should also been updated for licensed 6GHz similar as refersense and dynamic range requirements;*  **Issue 4-1-5:**  *Similar comments as conducted part, ACLR, OBUE and Fobue requirement should be updated for licensed 6GHz band;*  **Issue 4-1-6:**  *Similar comments as conducted Rx requirements* |
| Nokia | **Issue 4-1-1:** *Support option 2; see no need to exclude BS type 1-C which is applicable for n96.*  **Issue 4-1-2:** *Ok with proposals in general, but OBUE and transmit spurious need to be agreed together with* *ΔfOBUE.*  **Issue 4-1-3:** *Ok with proposals in general, but they need to be agreed together with* *ΔfOBUE.*  **Issue 4-1-4:** *Narrow band blocking and intermodulation requirements are not applicable; wanted and interfering signal levels for ICS should be updated with 1dB higher NFs.*  **Issue 4-1-5:** *Same comment as on issue 4-1-2.*  **Issue 4-1-6:** *Same comment as on issue 4-1-4.*  **Issue 4-1-7:** *Propose to define ΔfOBUE similar to band n102 at least for MR and LA BS, i.e., 40 MHz for BS type 1-C and type 1-H (ref. R4-2201082).*  **Issue 4-1-8:** *Propose to define ΔfOOB similar to band n102 at least for MR and LA BS, i.e., 60 MHz for BS type 1-C and type 1-H (ref. R4-2201082).* |
| Huawei | **Issue 4-1-1:**  Option2, at least for LA and MR BS, type 1-C will be needed.  **Issue 4-1-2:**  The proposal is agreeable  **Issue 4-1-3:**  The proposal is agreeable  **Issue 4-1-4:**  Agree with ZTE and Nokia on narrow blocking, intermodulation and ICS requirements.  **Issue 4-1-5:**  The proposal is agreeable  **Issue 4-1-6:**  Same comment as issue 4-1-4.  **Issue 4-1-7:**  Agree to define ΔfOBUE = 100 MHz for BS type 1-H and type 1-O, open to discuss ΔfOBUE for BS type 1-C  **Issue 4-1-8:**  Agree to define ΔfOOB = 100 MHz for BS type 1-H and type 1-O, open to discuss ΔfOBUE for BS type 1-C |
|  |  |

**To 4.2.2 Sub-topic 4-2 – other core RF requirements**

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2200157 | ZTE: the band number might be updated, other part seem okay for us |
| Nokia: focus on CR for TS 38.104 first, CR leading company may be different. |
| Huawei: we are ok to focus on TS 38.104 firstly in this meeting |
| R4-2200158 | ZTE: similar comments as previous one. |
| Nokia: focus on CR for TS 38.104 first, CR leading company may be different. |
| Huawei: we are ok to focus on TS 38.104 firstly in this meeting |
| R4-2201451 | Nokia: focus on CR for TS 38.104 first, CR leading company may be different. |
| Huawei: we are ok to focus on TS 38.104 firstly in this meeting |
|  |
| R4-2200154 | Nokia:  - 38 dB ACLR would be used also for other bands than n103, so should not define a n103 specific ACLR table,  - Table 6.6.4.2.3-1 should not be changed,  - it should be clarified that Table 6.6.5.2.1-1 does not apply to n103,  - why n103 is added for n96 in Table 6.6.5.2.4-1 but there are no exceptions for other requirements?  - it should be clarified that Table 7.2.2-2 does not apply to n103,  - receiver dynamic range requirements should also be updated,  - ACS is relaxed by 4dB not 3dB,  - receiver spurious emission requirements should also be specified. |
|  |
|  |
| R4-2201450 | Nokia:  - in Table 5.3.5-1, is 25/35/45MHz CHBW needed?  - 38 dB ACLR would be used also for other bands than n103, so should not define a n103 specific ACLR table  - table references in clauses 6.6.3.3 and 6.6.3.4 should also be updated  - statement about measurement bandwidth scaling should also apply for Note 1 in Table 6.6.4.2.2.1-3  - it should be clarified that Table 6.6.5.2.1-1 does not apply to n103  - clause 6.6.5.2.2 should also be updated  - 'could' is not clear wording on 1dB refsens relaxation  - OOBB requirements should also be specified. |
|  |
|  |
| R4-221508 | Nokia:  - NC ACLR and CACLR should also be specified; missing notes in OBUE table  - it should be clarified that Table 6.6.5.2.1-1 does not apply to n103  - clause 6.6.5.2.2 should also be updated  - why n103 is added for n96 in Table 6.6.5.2.4-1 but there are no exceptions for other requirements?  - receiver dynamic range requirements should also be updated  - ACS is relaxed by 4dB not 3dB  - receiver spurious emission requirements should also be specified.  Huawei: Thanks Nokia for the comments, I think the proposal and comments will be considered in the running CR. |
|  |
|  |

## 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** |
|  |  |

*Suggestion on WF/LS assignment*

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

## Discussion on 2nd round (if applicable)

|  |  |
| --- | --- |
| **Issues** | **Company Comments** |
|  | Company A:  Company B: |
|  |  |
|  |  |

## 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** |
|  |  |

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |
| --- | --- | --- |
| **Title** | **Source** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |

**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
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Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics incl. existing and new tdocs.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. For new LS documents, please include information on To/Cc WGs in the comments column
4. Do not include hyper-links in the documents

## 2nd round

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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| R4-210xxxx | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-210xxxx | LS on … | ZZZ | Agreeable, Revised, Noted |  |
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