**3GPP TSG-RAN WG4 Meeting #116bis R4-251xxxx**

**Prague, Czech Republic, 13 October – 17 October 2025**

Title: WF on 6G BS RF and coexistence

Agenda item: 8.5

Source: Feature Lead (Ericsson)

Document for: Approval

# Agreements and Way Forward

## BS RF requirements

### Issue 1-1-1: Starting point

**Agreement**:

5G BS RF requirements should be considered as starting point when defining the 6G BS RF requirements.

### Issue 1-1-2: Requirements to be re-assessed

**Way Forward:**

For next meeting, companies are encouraged to evaluate how 5G BS RF requirements should be considered for 6G and provide their view using the tables in Annex A as example.

Note: The goal is to identify:

* 5G requirements that might also be applicable to 6G.
* 5G requirements which will need to be re-evaluated based on 6G system parameters but would not need a further study.
* 5G requirements which should be further studied in the scope of the 6G SI, a prioritization might be made in next meeting.

### Issue 1-2-1: BS type 1-H enhancement

**Agreement:**

BS Hybrid beamforming type of architecture shall be studied.

## Requirements for cmWave bands

### Issue 1-3-3: Rx Requirements

**Agreement:**

For above 7 GHz, further study how BS Rx requirements should be specified, using FR2 approach or not, including if blocking should be specified based on FR2 methodology.

## Coexistence studies

### Issue 2-1-1: Coexistence studies

**Way Forward:**

List of candidate frequencies: 700 MHz, 2 GHz, 4 GHz, 7 GHz, 15 GHz and 30 GHz.

For each exemplary frequency, companies proposing to redo coexistence studies should:

* + Identify the key assumptions differences (comparing to the assumptions used when RAN4 did the coex study e.g. the work done in TR 38.921 for 6.425-7.125GHz
  + Identify the potential impacts on the conclusions of previous coex studies (e.g. how much ACLR/ACS difference is expected).
  + Identify the next steps (update existing requirements? New requirements/new type? Regulation impacts?).

## MSR aspects

### Issue 3-1-1: RATs to be considered and new capability sets

**Agreement:**

Consider only new capability set(s) with 4G, 5G and 6G for MSR as starting point.

Additional capability sets with 2G and/or 3G could be considered ~~in the future~~, on operators’ request.

## SBFD

**Agreement:**

For SBFD in 6G SI, RAN4 will leverage the Rel-19 and Rel-20 outcomes, and additional scope can be considered if the necessity is identified later.

## NTN

**Way Forward:**

Additional input from satellite companies is expected for RAN4#117:

* List of requirements to be further studied (using the same format proposed in 1.1.2)
* List of coexistence studies to be considered (using the format proposed in 1.3.1).

# Annex A - BS RF requirements analysis

|  |  |  |  |
| --- | --- | --- | --- |
| 5G BS RF requirements | No impact expected, might be reused as is for 6G | To be re-evaluated based on system parameters decision for 6G (SU, channel BW, …), following TR 38.817-02 principles/formula | Would need to be studied in the 6G SI scope |
| *Conducted requirements* | | | |
| Base station output power |  |  |  |
| *Output power dynamics* |  |  |  |
| RE power control dynamic range |  |  |  |
| Total power dynamic range |  |  |  |
| Transmit ON/OFF |  |  |  |
| *Transmitted signal quality* |  |  |  |
| Frequency error |  |  |  |
| Modulation quality |  |  |  |
| Time alignment error |  |  |  |
| *Unwanted emissions* |  |  |  |
| Occupied bandwidth |  |  |  |
| ACLR |  |  |  |
| Operating Band Unwanted Emissions |  |  |  |
| *Transmitter spurious emission* |  |  |  |
| General requirement |  |  |  |
| Protection of BS receiver of own  or different BS |  |  |  |
| Additional spurious (coex) |  |  |  |
| Co-location |  |  |  |
| Transmitter intermodulation |  |  |  |
| Receiver sensitivity level |  |  |  |
| Dynamic range |  |  |  |
| *In-band selectivity and blocking* |  |  |  |
| ACS |  |  |  |
| In-band blocking |  |  |  |
| Out of band blocking |  |  |  |
| Receiver spurious emissions |  |  |  |
| Receiver intermodulation |  |  |  |
| In channel selectivity |  |  |  |
| ***Radiated requirements*** | | | |
| Radiated transmit power |  |  |  |
| OTA base station output power |  |  |  |
| *OTA output power dynamics* |  |  |  |
| OTA RE power control dynamic range |  |  |  |
| OTA Total power dynamic range |  |  |  |
| OTA transmit ON/OFF |  |  |  |
| *OTA transmitted signal quality* |  |  |  |
| OTA Frequency error |  |  |  |
| OTA Modulation quality |  |  |  |
| OTA Time alignment error |  |  |  |
| *OTA Unwanted emissions* |  |  |  |
| OTA Occupied bandwidth |  |  |  |
| OTA ACLR |  |  |  |
| OTA Operating Band Unwanted Emissions |  |  |  |
| *OTA Transmitter spurious emission* |  |  |  |
| OTA General requirement |  |  |  |
| OTA Protection of BS receiver of  own or different BS |  |  |  |
| OTA Additional spurious (coex) |  |  |  |
| OTA Co-location |  |  |  |
| OTA transmitter intermodulation |  |  |  |
| OTA sensitivity |  |  |  |
| OTA receiver sensitivity level |  |  |  |
| OTA dynamic range |  |  |  |
| *OTA in-band selectivity and blocking* |  |  |  |
| OTA ACS |  |  |  |
| OTA In-band blocking |  |  |  |
| OTA out of band blocking |  |  |  |
| OTA receiver spurious emissions |  |  |  |
| OTA receiver intermodulation |  |  |  |
| OTA in channel selectivity |  |  |  |

**Example on how to fill in the above table:**

Considering the following analysis:

* The limits and interferer power + offset(s) of the following Rx requirements (below 7 GHz) should be re-calculated with the conclusion of 6G system parameters (spectrum utilization, channel BW, waveform…), based on NR TR 38.817-02 formula, but they don’t need a new re-evaluation/study:
  + REFSENS
* The following requirement should be put “On hold” (not studied in the 6G SI, for the time being) – pending on Rel-19/Rel-20 conclusions
  + Spurious Co-location
* The following requirement should be considered for further study:
  + In band blocking
* The following requirement should still be applicable to 6G BS RF:
  + Tx spurious – general requirement

The above table would then be filled in with the following information:

|  |  |  |  |
| --- | --- | --- | --- |
| **5G BS RF requirements** | **No impact expected, might be reused as is for 6G** | **To be re-evaluated based on system parameters decision for 6G (SU, channel BW, …), following TR 38.817-02 principles/formula** | **Would need to be studied in the 6G SI scope** |
| *Transmitter spurious emission* |  |  |  |
| General requirement | X |  |  |
| Co-location |  |  | On hold, pending on Rel-19/20 conclusions |
| REFSENS |  | X |  |
| *In-band selectivity and blocking* |  |  |  |
| In-band blocking |  |  | X + justification |