3GPP TSG-RAN WG2 Meeting #110 electronic R2-200xxxx

Online, June 1 – June 12, 2020

Source: CATT

Title: Summary of RRM relaxation behaviors

Agenda Item: 6.11.6

Document for: Discussion and Decision

# Introduction

This contribution captures RAN2 understanding of the UE’s RRM relaxation behaviours across all usecases and configurations.

# Discussion

Table 1 captures RAN2 understanding of the UE’s RRM relaxation behaviours across all usecases and configurations.

**Table 1: Comprehensive UE’s RRM relaxation behaviours**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Channel condition** | **Frequency** | **NW configures below criteria and when fulfilled** | **Measurement approach (or with relaxation)** | **Use case ID** |
| **For inter-frequency / inter-RAT frequency measurement, this part is deduced from RAN4 LS** | | | |
| When Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ. | Higher priority frequencies | Low mobility  (i.e. when NW only configures low mobility, and it is fulfilled) | If *highPriorityMeasRelax* is configured:  UE can stop high priority inter-freq/inter-RAT measurements with at most 1-hour measurement time interval.  TS38.133:  Section 4.2.2.9.2 for inter-freq NR  Section 4.2.2.10.2 for inter-RAT  TS38.304: Section 5.2.4.9.0. | A-1 |
| If *highPriorityMeasRelax* is not configured:  The UE shall perform measurements with the requirement of Thigher\_priority\_search according to TS 38.133.  (i.e. legacy behavior)  TS38.133:  Sections 4.2.2.4 (legacy) and 4.2.2.9.2 for inter-freq NR  Sections 4.2.2.5 (legacy) and 4.2.2.10.2 for inter-RAT | A-2 |
| Not at cell edge (i.e. when NW only configures not-at-cell-edge, and it is fulfilled) | The UE shall perform measurements with the requirement of Thigher\_priority\_search according to TS 38.133.  (i.e. legacy behavior)  Note: this criterion is always fulfilled, if it is configured.  TS38.133:  Sections 4.2.2.4 (legacy) for inter-freq NR  and 4.2.2.5 (legacy) for inter-RAT. | B-1 |
| When NW configures both while *combineRelaxedMeasCondition* is not configured, not at cell edge is fulfilled but low mobility is not fulfilled | The UE shall perform measurements with the requirement of Thigher\_priority\_search according to TS 38.133.  (i.e. legacy behavior)  TS38.133:  Sections 4.2.2.4 (legacy) for inter-freq NR  and 4.2.2.5 (legacy) for inter-RAT. | B-2 |
| Low mobility and Not at cell edge  (i.e. when NW configure both, and both are fulfilled, regardless whether *combineRelaxedMeasCondition is configured* ) | If *highPriorityMeasRelax* is configured:  UE can stop high priority inter-freq/inter-RAT measurements with at most 1-hour measurement time interval.  TS38.133:  Sections 4.2.2.9.4 for inter-freq NR and 4.2.2.10.4 for inter-RAT.  TS38.304, Section 5.2.4.9.0 | C-1 |
| If *highPriorityMeasRelax* is not configured:  The UE shall perform measurements with the requirement of Thigher\_priority\_search according to TS 38.133.  (i.e. legacy behavior)  TS38.133:  Sections 4.2.2.4 (legacy) for inter-freq NR  and 4.2.2.5 (legacy) for inter-RAT | C-2 |
| Equal/Lower priority frequencies | All scenario | UE may choose not to perform measurements of NR inter-frequencies or inter-RAT frequency cells. (According to current TS 38.304).  (i.e. legacy behavior)  TS38.304:  Section 5.2.4.2 (legacy) | D |
| When Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ | Higher priority and equal/Lower priority frequencies | Low mobility  including:  case 1) when NW only configures low mobility, and it is fulfilled;  case 2) When NW configure both while *combineRelaxedMeasCondition* is not configured, low mobility is fulfilled but not at cell edge is not fulfilled; | UE may choose to perform relaxed measurements with longer intervals.  TS38.133:  Section 4.2.2.9.2 for inter-freq NR  and 4.2.2.10.2 for inter-RAT | E |
| Not at cell edge  including:  case 1) when NW only configures not at cell edge, and it is fulfilled;  case 2) When NW configure both while *combineRelaxedMeasCondition* is not configured, not at cell edge is fulfilled but low mobility is not fulfilled; | UE may choose to perform relaxed measurements with longer intervals.  TS38.133:  Section 4.2.2.9.3 for inter-freq NR  and 4.2.2.10.3 for inter-RAT | F |
| Low mobility and Not at cell edge  (i.e. when NW configure both, and both are fulfilled, regardless whether *combineRelaxedMeasCondition is configured* ) | If *highPriorityMeasRelax* is configured:  UE can stop both equal/low priority and high priority inter-freq/inter-RAT measurements with at most 1-hour measurement time interval.  TS38.304, Section 5.2.4.9.0 | G-1 |
| If *highPriorityMeasRelax* is not configured:  For higher priority frequencies: UE can stop inter-freq/inter-RAT measurements with a maximum measurement time interval of Thigher\_priority\_search.  For equal/lower priority frequencies: UE can stop inter-freq/inter-RAT measurements with at most 1-hour measurement time interval.  TS38.304: Section 5.2.4.9.0. | G-2 |
| **For intra-frequency measurement, this part is deduced from RAN2/RAN4 conclusion** | | | |  |
| Srxlev> SIntraSearchP and Squal > SIntraSearchQ | N/A | All scenarios | UE may choose not to perform intra-frequency measurements. (According to current TS 38.304) (i.e. legacy behavior)  TS38.304: Section 5.2.4.2 (legacy) | H |
| Srxlev≤ SIntraSearchP or Squal ≤ SIntraSearchQ | N/A | Low mobility  including:  case 1) when NW only configures low mobility, and it is fulfilled;  case 2) When NW configure both while *combineRelaxedMeasCondition* is not configured, low mobility is fulfilled but not at cell edge is not fulfilled; | UE may choose to perform relaxed measurements with longer intervals.  TS38.133: Section 4.2.2.8.2 | I |
| N/A | Not at cell edge  including:  case 1) when NW only configures not at cell edge, and it is fulfilled;  case 2) When NW configure both while *combineRelaxedMeasCondition* is not configured, not at cell edge is fulfilled but low mobility is not fulfilled; | UE may choose to perform relaxed measurements with longer intervals.  TS38.133: Section 4.2.2.8.3. | J |
| N/A | Low mobility and Not at cell edge  (i.e. when NW configure both, and both are fulfilled, regardless whether *combineRelaxedMeasCondition is configured* ) | UE can stop intra-frequency measurement with a maximum measurement time interval of 1 hour.  TS38.133: Section 4.2.2.8.4.  TS38.304, Section 5.2.4.9.0. | K |

# Conclusion

**Proposal: Table 1 in this contribution captures RAN2 understanding of the UE’s RRM relaxation behaviours across all usecases and configurations**.