TSG-RAN Working Group 4 meeting #100-ER4-210xyz

Electronic Meeting, 16th - 27th August 2021

**Source:** Ericsson

**Title:** WF on the RedCap RF

**Agenda item:** 9.20.1

**Document for:** Approval

# Introduction

During RAN4#100-E meeting a way-forward on RedCap UE is created based on the discussion in 1st round [1].

# Way-Forward

## 2.1 FR1

**RedCap UE power class**

*Tentative agreements:*

1. *PC3 should be specified for Redcap in FR1*
2. *No PC1 and PC1.5 for RedCap UE in FR1*
3. *PC2 for RedCap UE depending on operator request*

**Operating Bands:**

*Tentative agreements:*

1. *ALL FDD band should be supported by RedCap UE*
2. *ALL TDD band except n47, n79, n46 and n96 should be supported by RedCap UE*

**Other RX requirements than REFSENS**

*Moderator’s note: One Company wants to decide this next meeting, try to see if working assumption below would be ok:*

*Tentative working assumption:*

1. Reuse the ACS, maximum input level, Blocking, Spurious response, Rx IM, Spurious and based on Redcap REFSENS

**Half-duplex FDD switching time**

*Moderator’s note: One Company wants to decide 2nd round. Could capture the discussion outcome later.*

**Issue 7-1: RX-TX switching time**

* Proposals
  + Option 1: The Rx-Tx switching time for HD-FDD RedCap UE is 13 µs.
  + Option 2: TBA

## 2.2 FR2

*Moderator’s note: Please add your company name at the end of the option so possibly the option that no companies prefer could be removed.*

**RAN4 Priority on RedCap UE in FR2**

1. Option 1: Deprioritize RedCap UE in FR2 in Rel-17
2. Option 2: Specify RedCap UE in FR2 in Rel-17
3. Option 3: FFS depending on discussion in Issue 6-1, 6-2, 6-3 and 6-4.

**Issue 6-1: Use case for RedCap UE**

* + Option 1: consider the below use case for RedCap UE in FR2
* **Table 2-2 the characteristics of three use cases for Redcap UE**

|  |  |  |
| --- | --- | --- |
| Use cases | Specific characteristics | General characteristics |
| Industrial wireless sensors | The device is stationary  The battery should last at least few years | Lower cost and complexity  Small and compact form factor  Supporting all FR1/FR2 bands for FDD and TDD |
| Video surveillance | The device has low mobility |
| Wearables | The battery should last multiple days |

* + Option 2: FFS

**Issue 6-2: new RedCap UE type**

* + Option 1: define a new RedCap UE type
  + Option 2: define RedCap UE based on existing FR2 UE type
  + Option 3: FFS

**Issue 6-3: Power class for RedCap UE in FR2**

* + Option 1: define a new power class
  + Option 2: TBA

**Issue 6-4: RF architecture for RedCap UE in FR2**

* + Option 1: Reduction of RX branches: A simplification of only the baseband architecture, to a single baseband RX (rank 1) [Ericsson, Huawei, Xiaomi]
  + Option 2: Reduction of the number of elements in the antenna panel
  + Option 3: Reduction of the number of antenna panels [Xiaomi, Nokia, OPPO, Qualcomm]
  + Option 4: Option 1, option 2 and option 3 possible but depending on use case [Sony, Vivo]

# References

1. R4-2114742, Email discussion summary for [100-e][142] NR\_RedCap, Ericsson