**3GPP TSG-RAN WG4 Meeting # 102-eR4-220xxxx**

**Electronic Meeting, February 21- March 3, 2022**

**Source:** Skyworks Solutions, Inc.

**Title:** WF on MPR and A-MPR requirements for PC5 NR-U UL MIMO

**Agenda Item:** 9.37.2 UE RF requirements [NR\_bands\_UL\_MIMO\_PC3\_R17-Core]

**Document for:** Approval

# Background

In Release 16 38.101-1 specification NR-U bands n46 and n96 are captured in Table 5.2D-1: NR operating bands for UL MIMO in FR1. Furthermore, in release 17 38.101-1 NR-U band n102 is added to Table 5.2D-1. But there is no written requirement for NR-U UL MIMO and especially, there is no MPR associated to UL MIMO in the specification.

In this meeting a discussion paper [1] to justify the need for additional requirement in the clause 6.2F and a draft CR [2] was provided. Although there is support in round 1 for introducing the change and technical questions on the CR have been addressed, from a procedure point of view, PC5 is not part of the WID for NR\_bands\_UL\_MIMO\_PC3\_R17-Core while all other power classes are covered. At this point, the CR is postponed to allow the WID to be modified to include PC5. Since this is a rather procedural issue this way forward is there the capture the technical aspects that are agreeable.

# WF on introducing PC5 UL MIMO MPR for NR-U

## WID for NR\_bands\_UL\_MIMO\_PC3\_R17-Core

**WF: WID for NR\_bands\_UL\_MIMO\_PC3\_R17-Core is revised for the March RAN plenary meeting to include NR-U PC5 UL MIMO and bands n46, n96 and n102**

## Assumptions for NR-U PC5 UL MIMO MPR

Similar to NR where the PC3 1Tx MPR is applicable to NR PC3 UL MIMO based on the assumption of two full power PAs, The 1Tx PC5 NR-U MPR is applicable to NRU PC5 UL MIMO if two full power PAs architecture is assumed.

**WF: Based on similar architecture assumptions than for PC3 NR UL MIMO, 1Tx NR-U MPR in Table 6.2F.2-1 is applicable to PC5 NR-U UL MIMO. Similarly, the NR-U PC5 1Tx A-MPRs for n46, n96 and n102 are applicable to PC5 NR-U UL MIMO with the same NS.**

## Introduction in release 17 38.101-1 specification

Given than NR-U requirements are in a specific suffix F clause and similar to the CA sub-clause 6.2F.2A, an UL MIMO sub-clause 6.2F.2D can be added with further sub-clauses for:

* UE maximum output power for UL MIMO
* UE maximum output power reduction for UL MIMO
* UE additional maximum output power reduction for UL MIMO
* Configured transmitted power for UL MIMO

**WF: In Release 17, clause 6.2F.2D is added with relevant sub-clauses and tables and will point at the relevant NR-U specific requirements (UL MIMO power class, MPR, A-MPR) and NR UL MIMO requirements where appropriate (as implemented in postponed CR [2])**

# Handling of Release 16 38.101-1

Since the understanding of the group is that UL MIMO feature is introduced in a release independent manner, bands n46 and n96 can be removed from Release 16 Table 5.2D-1.

**WF: For Release 16 bands n46 and n96 are removed from the list of UL MIMO bands in Table 5.2D-1 of 38.101-1 as UL MIMO can be introduced in a release independent manner for these bands. A Release 16 38.101-1 CR will be provided to that effect on top of the postponed R17 CR [2]**

# References

1. R4-2204092 Introducing missing MPR for NR-U PC5 UL MIMO, Skyworks Solutions, Inc., RAN4#102-e
2. R4-2204093 Draft CR TS 38.101-1 Introducing missing MPR for NR-U PC5 UL MIMO, Skyworks Solutions, Inc., RAN4#102-e