**3GPP TSG-RAN WG4 Meeting #108bis R4-231xxxx**

**Xiamen, China, Oct. 9 ‒ Oct. 13, 2023**

**Title: WF for Enhancement of Dynamic Spectrum Sharing demodulation requirements**

**Agenda Item: 5.36.2**

**Source: Ericsson**

**Document for:** Approval

# Topic #1: Work plan

**Work plan**

**Agreement**:

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| **Target completion date:** June 2024.**RAN4#108bis (Oct 2023):*** Discussion on test scope, simulation assumptions and test parameters.

**RAN4#109 (Nov 2023):*** Finalize the test scope.
* Agree on part of baseline assumptions, test parameters and test metrics.

**RAN4#110 (Feb 2024):*** Agree on baseline assumptions, test parameters and test metrics.
* Collection of initial simulation results.
* CR work split (if necessary).

**RAN4#110bis (Apr 2024):*** Collection of updated & additional simulation results if any.
* Review draft CRs.

**RAN4#111 (May 2024):*** Agreement on the test requirement value.
* Endorse draft CRs.
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# Topic #2: NR PDCCH reception in symbols with LTE CRS REs

**Whether to define PDCCH demodulation requirements for Rel-18 eDSS feature**

**Agreement:**

* Define PDCCH demodulation requirements for eDSS

**Evaluation scenario**

**Agreement:**

* 2-symbol CORESET

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| Symbol #0: LTE PDCCH/PCFICHSymbol #1: NR PDCCH overlapping with LTE CRSSymbol #2: NR PDCCH |

* Common assumptions
	+ Single non-overlapping CRS rate matching patterns for PDCCH demodulation.
	+ 4 CRS ports for LTE
	+ LTE PDCCH/PCFICH is transmitted in symbol #0

**gNB assumption for PDCCH symbols overlapped with LTE CRS**

**Agreement:**

* PDCCH data and DMRS REs overlapped with LTE CRS are punctured.

**UE receiver assumption (e.g., channel estimation)**

**Agreement:**

* PDCCH channel estimation is assumed to use only the clean PDCCH symbol.

**Simulation assumption for evaluation**

**Way forward:**

* FFS on the parameter configuration for the PDCCH
	+ Option 1

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| --- | --- |
| * Parameters
 | Values |
| Carrier frequency | 2 GHz |
| SCS | 15 kHz  |
| Bandwidth  | 10 MHz |
| Channel model | TDLC300-100 |
| Antenna configuration | 1x2, 1x4; 2x2, 2x4 |
| CRS  | 4 port CRS without power boosted |
| DCI payload (excluding CRC) | 60 bits |
| Interleaving | Non-interleaved |
| Precoding | Precoder cycling per REG bundle |
| REG bundle size | 6 REGs |

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| --- | --- | --- | --- | --- | --- | --- |
| Test number | Bandwidth (MHz) | Symbols with PDCCH | Aggregation level | Propagation Condition | Antenna configuration and correlation Matrix | Reference value |
| Pm-dsg (%) | SNR (dB) |
| 1 | 10 | 2 | 4 | TDLA30-10 | 1x2, 1x4 Low | 1 |  |
| 2 | 10 | 2 | 8 | TDLC300-100 | 2x2, 2x4 Low | 1 |  |

* + Option 2
		- Cover all PDCCH Aggregation levels for evaluation purpose. (Not for requirements definition purpose)

|  |  |
| --- | --- |
| Parameters | Values |
| Carrier frequency | 2 GHz |
| SCS | 15 kHz  |
| Bandwidth  | 20MHz |
| LTE Bandwidth  | 20MHz |
| Channel model | TDL-C 300-100 |
| Correlation | Low |
| Number of BS antennas | 4Tx |
| Number of UE antennas | 2 Rx |
| DCI payload (excluding CRC) | 60 bits |
| Interleaving | Non-Interleaved |
| Precoding | Precoder cycling per REG bundle |
| REG bundle size | 6 PRBs |
| CRS | single 4 port CRS pattern |
| Aggregation level | 1,2,4,8,16 |
| CORESET  | Scenario a): CORESET: 2nd and 3rd symbols, LTE: 4 CRS PortsScenario b): CORESET: 2nd symbol, LTE: 4 CRS Ports |
| Channel estimation | Scenario a): Use clean symbolScenario b): Use legacy channel estimation |
| Transmitter | DMRS REs and data REs overlapped with CRS are punctured |
| Receiver | Puncture the CRS REs |
| Power ratio of LTE-CRS RE/NR PDCCH-DMRS RE | 3dB |

# Topic #3: PDSCH demodulation requirements with two overlapping CRS rate matching patterns

**Whether to define the PDSCH demodulation requirements with two overlapping CRS rate matching patterns**

**Agreement:**

* Not define PDSCH demodulation requirements.