**3GPP TSG-RAN WG4 Meeting # 101-bis-e R4-2202748**

**Electronic Meeting, January 17-25, 2022**

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| *CR-Form-v11.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** |  | **rev** |  | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | Draft Big CR: RRM requirements for Rel-17 NR SL Relay | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | OPPO | | | | | | | | | |
| ***Source to TSG:*** | RAN4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_SL\_relay | | | | |  | | ***Date:*** | | 2022-01-26 |
|  |  | | | |  | | |  | |  |
| ***Category:*** | **B** |  | | | | | | ***Release:*** | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | R4-2202709, CR: SL discovery signal intra-frequency measurement accuracy requirements, Qualcomm   * Intra-frequency measurement accuracy requirements for discovery signal is introduced   R4-2202708, DraftCR on interruption requirements for NR SL relay, Huawei, Hisilicon   * In R17, it has been agreed to define the interruption requirements for NR SL relay.   R4-2202707, CR to 38133 on measurement requirements for Selection/reselection of relay UE, OPPO   * The measurement requirements for Selection/reselection of relay UE need to be defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | R4-2202709, CR: SL discovery signal intra-frequency measurement accuracy requirements, Qualcomm   * Add Intra-frequency measurement accuracy requirements for discovery signal   R4-2202708, DraftCR on interruption requirements for NR SL relay, Huawei, Hisilicon   * To add the interruption requirements for NR SL relay.   R4-2202707, CR to 38133 on measurement requirements for Selection/reselection of relay UE, OPPO   * Add measurement and evaluation delay requirements for Selection/reselection of relay. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | R4-2202709, CR: SL discovery signal intra-frequency measurement accuracy requirements, Qualcomm   * Missing Intra-frequency measurement accuracy requirements for discovery signal   R4-2202708, DraftCR on interruption requirements for NR SL relay, Huawei, Hisilicon   * The interruption requirements for NR SL relay are missing in R17.   R4-2202707, CR to 38133 on measurement requirements for Selection/reselection of relay UE, OPPO   * The requirements for Selection/reselection of relay UE are not completed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | New clause 10.x.x, 12.y, 12.z | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | |  | | | |
| ***Other specs*** | |  | **X** | Other core specifications | | |  | | | |
| ***affected:*** | | **X** |  | Test specifications | | | TS38.533 | | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | |  | | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |

<<< Start of changed 1>>>

10.x.x Intra-Frequency Discovery Signal Measurement Accuracy Requirements

The requirements in this clause are applicable for a remote sidelink UE:

- is out of coverage on the frequency used for sidelink, and

- that is synchronised to the sidelink relay UE that is measured.

10.x.x.1 Absolute Discovery Signal Measurement Accuracy

The requirements for absolute accuracy of discovery signal measurement in this clause apply to a sidelink UE performing [SD-RSRP] measurements for direct to indirect path swich or [SL-RSRP] measurements for indirect to direct path switch on the same frequency as used by the sidelink relay UE transmitting the relay Discovery message.

The accuracy requirements in Table 10.x.x.1-1 are valid under the following conditions:

- Demodulation reference signals for PSCCH and/or PSSCH are transmitted from one port.

- Conditions defined in clause 7.3E of TS38.101-1 [18] for reference sensitivity are fulfilled.

- PSCCH-RSRP|dBm and/or PSSCH-RSRP|dBm according to Annex B.4.4 for a corresponding Band are fulfilled.

Table 10.x.x.1-1: Intra-frequency discovery signal measurement absolute accuracy for a remote sidelink UE [2] capable of sidelink Communication and sidelink Discovery and configured by upper layers for relay operation.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | | |
| Normal condition | Extreme condition | Ês/Iot Note 3 | Io Note 1 range | | | | | |
| NR V2X operating band groups Note 2 | Minimum Io | | | | Maximum Io |
| dB | dB | dB |  | dBm/SCS | | | dBm/BWChannel | dBm/BWChannel |
| SCS = 15kHz | SCS = 30kHz | SCS = 60kHz |
| ± 4.5 | ± 9 | ≥0 dB | NR\_TDD\_FR1\_B | -120.5 | -117.5 | -114.5 | N/A | -70 |
| NR\_TDD\_FR1\_J | -116.5 | -113.5 | -110.5 | N/A | -70 |
| ± 8 | ± 11 | ≥0 dB | NR\_TDD\_FR1\_B NR\_TDD\_FR1\_J | N/A | N/A | N/A | -70 | -50 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: NR sidelink operating band groups are as defined in Section 3.5 for the corresponding NR operating bands.  NOTE 3: The parameter Ês/Iot is the Ês/Iot of PSCCH-DMRS and/or PSSCH-DMRS. | | | | | | | | |

<<< End of changed 1>>>

<<< Start of changed 2>>>

12.y Interruptions at NR sidelink discovery configuration

This clause contains the requirements related to the interruptions on the PCell/serving cell due to NR sidelink discovery.

12.y.2 Requirements

A UE capable of NR sidelink discovery may indicate its interest (initiation or termination) in NR sidelink discovery to the connected gNodeB using IE [TBD] in TS38.331[2].

The UE is allowed an interruption of up to the duration shown in Table 12.y-1 on the PCell/serving cell during the RRC reconfiguration procedure that includes the NR sidelink discovery configuration message [TBD] in TS 38.331[2] (setup and release). This interruption is for both uplink and downlink of the PCell/serving cell.

**12.y-1: Interruption length at NR sidelink discovery configuration**

|  |  |  |
| --- | --- | --- |
|  | **NR Slot length (ms)** | **Interruption length**  **(number of slots)** |
| 0 | 1 | 2 |
| 1 | 0.5 | 3 |
| 2 | 0.25 | 5 |
| 3 | 0.125 | 9 |

<<< End of changed 2>>>

<<< Start of changed 3>>>

12.z Selection / Reselection of relay UE

12.z.1 Introduction

This section contains the requirements related to selection and reselection of relay UE.

The requirements apply for the selection and reselection of candidate relay UEs that are transmitting relay discovery signals within the resource pool as configured for the remote UE.

12.z.2 Selection / Reselection of relay UE

For a remote UE configured by upper layer for relay operation, the remote UE shall search for candidate relay UEs for selection and/or reselection every discovery period which is determined by resource reservation period or SPS transmission periodicity configured by network.

If the remote UE has a selected sidelink relay UE, then the remote UE shall measure the [SD-RSRP or SL-RSRP] of the selected relay once in every four discovery periods and evaluate if it meets the relay selection criterion as defined in [TS 38.331, clause [TBD]].

The remote UE shall measure [SD-RSRP or SL-RSRP] of the candidate relay UEs every Tmeasure, SL\_Relay\_Intra for relay UEs that are detected and measured according to the measurement rules.

For intra-frequency relay UEs that are detected, but that has not been selected or reselected to, the remote UE shall be capable of evaluating that the intra-frequency relay UE has met selection or reselection criterion defined in [TS 38.331, clause [TBD]] within Tevaluate, SL\_Relay\_Intra as specified in table 12.z.2-1.

The minimum requirements are required to meet when the selected and candidate relay UEs are transmitting relay discovery message every discovery period.

Table 12.z.2-1: Tmeasure, SL\_Relay\_Intra and Tevaluate, SL\_Relay\_Intra

|  |  |  |
| --- | --- | --- |
| Discovery Period [s] | Tmeasure,SL\_Relay\_Intra [s] (number of discovery periods) | Tevaluate, SL\_Relay\_Intra [s] (number of discovery periods) |
| 0.04≤Discovery period≤10.24 | Note 1 (4) | Note 1 (16) |
| Note 1: Time depends upon the discovery period which is resource reservation period (in mode 2) or SPS transmission periodicity (in mode 1).  Note 2: [SL-RSRP or SD-RSRP] can be derived from PSCCH-DMRS and/or PSSCH-DMRS. | | |

<<< End of changed 3>>>