**3GPP TSG-RAN WG1 Meeting #110 *R1-2208021***

**Toulouse, France, August 22 – 26, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **TS 38.214** | **CR** | 305 | **rev** | **-** | **Current version:** | **17.2.0** |  |
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| *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 | **X** | Core Network |  |

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| ***Title:*** | CR on PRS reception and SRS transmission outside initial BWP | | | | | | | | | |
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| ***Source to WG:*** | Moderator (Huawei), vivo, ZTE, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | RAN1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_pos\_enh-Core | | | | |  | ***Date:*** | | | 2022-08-25 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | (1) In Rel-17, methods/measurements/signalling and procedures are specified to support positioning for UE in RRC\_INAVTICE state. Specifically, a UE in RRC\_INAVTICE state can support DL-PRS processing outside and inside the initial DL BWP, but this UE is only expected to process DL PRS either outside or inside of the initial DL BWP, instead of both outside and inside of the initial DL BWP.  (2) For SRS transmission inside/outside initial UL BWP in inactive state, the descriptions of ‘inside initial UL BWP’ and ‘outside BWP’ are easily confused by readers due to the lack of an explicit 'SRS outside initial UL BWP’ hint in the relevant description of ‘SRS outside initial UL BWP’.  (3) Different from what’s specified in Rel-16, it is feasible for a UE in RRC\_INACTIVE state to transmit an SRS for positioning. We prefer to explicitly distinguish the behaviors between UE(s) in RRC\_CONNECTED state and UE(s) in RRC\_INACTIVE state.  (4) For positioning transmission in RRC\_INACTIVE, a UE capability for switching time between SRS Tx and other Tx in initial UL BWP or Rx in initial DL BWP is introduced. For better understanding, we may change the position of the phrase “subject to UE capability” next to “the switching time”. | | | | | | | | |
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| ***Summary of change:*** | | (1) Change “and” to “or” for UE in RRC\_INAVTICE state processing DL-PRS.  (2) For SRS transmission outside initial UL BWP in inactive state, add explicit descriptions of ‘outside initial UL BWP’.  (3) Add “during RRC\_CONNECTED mode” to indicate the scenario under which UE transmits an SRS.  (4) Change the position of the phrase “subject to UE capability” next to “the switching time” | | | | | | | | |
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| ***Consequences if not approved:*** | | For the description related to PRS collision detection timeline for the case when PRS is lower priority, wrongly left the descriptions over-interpreted the agreement.  For SRS transmission inside/outside initial UL BWP in inactive state, It is easy to misinterpret descriptions specific to ‘SRS outside initial UL BWP’ as applicable to ‘SRS both inside and outside initial UL BWP’ | | | | | | | | |
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| ***Clauses affected:*** | | 5.1.6.5, 6.2.1.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
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| ***Other comments:*** | | **Isolated Impact Analysis:**  No inter-operability issue is identified. | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

#### 5.1.6.5 PRS reception procedure

<Unrelated part omitted>

The UE in RRC\_INACTIVE mode is expected to prioritize the reception of any other DL signals and DL channels than the reception of DL PRS.

The UE in RRC\_INACTIVE mode, subject to UE capability, is expected to process DL PRS outside or inside of the initial DL BWP. For DL PRS processing outside of the initial DL BWP, the UE may be configured with the same or different numerology and CP for PRS resources than those of the initial DL BWP. For DL PRS processing inside of the initial DL BWP, the UE is configured with the same numerology and CP for PRS resources as those of the initial DL BWP.

<Unrelated part omitted>

6.2.1.4 UE sounding procedure for positioning purposes

When the SRS is configured by the higher layer parameter *SRS-PosResource* and if the higher layer parameter *spatialRelationInfoPos* is configured*,* it contains the ID of the configuration fields of a reference RS according to Clause 6.3.2 of [TS 38.331]. The reference RS can be an SRS configured by the higher layer parameter *SRS-Resource* or *SRS-PosResource*, CSI-RS, SS/PBCH block, or a DL PRS configured on a serving cell or a SS/PBCH block or a DL PRS configured on a non-serving cell. If the UE is configured for transmission of *SRS-PosResource* in RRC\_INACTIVE mode, the configured *spatialRelationInfoPos* is also applicable.

The UE is not expected to transmit multiple SRS resources with different spatial relations in the same OFDM symbol.

If the UE is not configured with the higher layer parameter *spatialRelationInfoPos* the UE may use a fixed spatial domain transmission filter for transmissions of the SRS configured by the higher layer parameter *SRS-PosResource* across multiple SRS resources or it may use a different spatial domain transmission filter across multiple SRS resources.

In RRC\_CONNECTED mode, the UE is only expected to transmit an SRS configured by the higher layer parameter *SRS-PosResource* within the active UL BWP of the UE.

<Unrelated part omitted>

Subject to UE capability, the UE may be configured with an SRS resource for positioning associated with the initial UL BWP, and the SRS resource is transmitted inside the initial UL BWP during RRC\_INACTIVE mode with the same CP and numerology as configured for the initial UL BWP. Subject to UE capability, the UE may be configured with an SRS resource for positioning outside the initial BWP including frequency location and bandwidth, numerology, and CP length for transmission of the SRS in RRC\_INACTIVE mode. If the transmission of SRS for positioning outside the initial BWP in RRC\_INACTIVE mode with the switching time in unpaired spectrum, subject to UE capability, collides in time domain with other DL signals or channels or UL signals or channels, the SRS for positioning transmission is dropped in the symbol(s) where the collision occurs. If the transmission of SRS for positioning outside the initial BWP in RRC\_INACTIVE mode with the switching time in paired spectrum or SUL band, subject to UE capability, collides in time domain with UL signals or channels on the same carrier, the SRS for positioning transmission is dropped in the symbol(s) where the collision occurs. The SRS resource for positioning outside the initial BWP in RRC\_INACTIVE mode is configured in the same band and CC as the initial UL BWP.

<Unrelated part omitted>