**3GPP TSG-SA5 Meeting #144-e *S5-224034***

e-meeting, 27 June 2022 - 1 July 2022

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **<28.552>** | **CR** | **Draft CR** | **rev** | **-** | **Current version:** | **17.7.0** |  |
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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 |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | R18 draftCR TS 28.552 Add remote interference related performance measurement  |
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| ***Source to WG:*** | China Telecom, Huawei |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | PM\_KPI\_5G\_Ph3  |  | ***Date:*** | 2022-06-13 |
|  |  |  |  |  |
| ***Category:*** | ***B*** |  | ***Release:*** | Rel-18 |
|  | *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 canbe 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)* |
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| ***Reason for change:*** | Remote interference adversely affects network performance. Therefore, it is useful to add performance measurement to identify the UL remote interference, to learn whether the interfernce increase or not. |
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| ***Summary of change:*** | Add remote interference related performance measurement including: * GP symbol interference
* SRS symbol interference
* PUSCH symbol interference
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| ***Consequences if not approved:*** | Remote interference cannot be identified efficiently. |
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| ***Clauses affected:*** | 3.2, 5.1.1.X(new) , 5.1.1.X.1(new), 5.1.1.X.2(new), 5.1.1.X.3(new), A.X(new) |
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|  | **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:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **1st change** |

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1], TS 23.501 [4] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1] and TS 23.501 [4].

CHO Conditional Handover

DAPS Dual Active Protocol Stack

HO Handover

kbit kilobit (1000 bits)

LHO Legacy Handover

MN Master Node.

NG-RAN Next Generation Radio Access Network

PI Performance Indicator

SN Secondary Node.

TEID Tunnel Endpoint Identifier

GP Guard Period

SRS Sounding Reference Signal

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| **2nd change** |

### 5.1.1 Performance measurements valid for all gNB deployment scenarios

#### 5.1.1.X UL remote Interference Identification related measurements

##### 5.1.1.X.1 GP symbol interference

1. This measurement provides the interference of the GP symbol in the uplink.

b) CC.

c) This measurement is obtained by counting the interference power of the GP symbol. This measurement is used to indicate the interference on the GP symbol in a cell. This measurement is taken at layer 1.

d) A single integer value. The unit is dBm.

e) N.GP.Symbol.IN

f) NRCellDU.

g) Valid for packet switched traffic.

h) 5GS.

i) One usage of this performance measurement is for performance assurance.

##### 5.1.1.X.2 SRS symbol interference

1. This measurement provides the interference of the SRS symbol in the uplink.

b) CC.

c) This measurement is obtained by counting the interference power of the SRS symbol. This measurement is used to indicate the interference on the SRS symbol in a cell. This measurement is taken at layer 1.

d) A single integer value. The unit is dBm.

e) N.SRS.Symbol.IN

f) NRCellDU.

g) Valid for packet switched traffic.

h) 5GS.

i) One usage of this performance measurement is for performance assurance.

##### 5.1.1.X.3 PUSCH symbol interference

1. This measurement provides the interference of the PUSCH symbol in the uplink.

b) CC.

c) This measurement is obtained by counting the interference power of the PUSCH symbol. This measurement is used to indicate the interference on the uplink PUSCH symbol in a cell. This measurement is taken at layer 1.

d) A single integer value. The unit is dBm.

e) N.PUSCH. Symbol.IN

f) NRCellDU.

g) Valid for packet switched traffic.

h) 5GS.

i) One usage of this performance measurement is for performance assurance.

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| **3rd change** |

# A.X Use case of UL Remote Interference Identification

When atmospheric ducting phenomenon happens, radio signals can travel a relatively long distance, and the propagation delay goes beyond the gap. In this case, the downlink signals of an aggressor base station can travel a long distance and interfere with the uplink signals of a victim base station that is far away from the aggressor. Such interference is termed as 'remote interference'. When it happens, the IoT of the victim base station demonstrates a "sloping" characteristic, the closer the uplink symbol is to gap, the higher interference it experienced. The reason behind this is that, the remote interference is caused by accumulated signals from a number of remote base stations with different distances.

This type of interference affects the effective reception of SRSs, resulting in a series of problems affecting user experience, such as call drops, access failures, and low rates. Therefore, some related measurements, such as GP symbol interference, SRS symbol interference and PUSCH symbol interference measurement, are required to monitor/detect remote interference.

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| **End of changes** |