**3GPP TSG RAN WG1 #106-e R1-210xxxx**

**e-Meeting, August 16th – 27th, 2021**

**Agenda item:** 7.2.4

**Source:** Moderator (OPPO)

**Title:** Summary for email discussion [106-e-NR-5G\_V2X-01] Discussion on [R1-2107221](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106-e/Docs/R1-2107221.zip): Correct a parameter name for PSSCH power control in TS 38.213

**Document for:** Discussion and Decision

# Introduction

This summary collects companies view on the draft CR of [R1-2107221](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106-e/Docs/R1-2107221.zip).

# Discussion

## ***Related part in TS38.213***

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| \*\*\* Unchanged text is omitted \*\*\*16.2.1 PSSCHA UE determines a power $P\_{PSSCH,b,c}(i)$ for a PSSCH transmission on a resource pool in symbols where a corresponding PSCCH is not transmitted in PSCCH-PSSCH transmission occasion $i$ on active SL BWP $b$ of carrier $f$of serving cell $c$ as: $P\_{PSSCH}(i)=min\left(P\_{CMAX},P\_{MAX,CBR},min\left(P\_{PSSCH,D}\left(i\right),P\_{PSSCH,SL}(i)\right)\right)$ [dBm]where- $P\_{CMAX}$ is defined in [8-1, TS 38.101-1]- $P\_{MAX,CBR}$ is determined by a value of *sl-MaxTransPower* based on a priority level of the PSSCH transmission and a CBR range that includes a CBR measured in slot $i-N$ [6, TS 38.214]; if *sl-MaxTransPower-r16* is not provided, then $P\_{MAX,CBR}=P\_{CMAX}$;\*\*\* Unchanged text is omitted \*\*\* |

## ***Reason for change***

For PSSCH power control, the following is used to explain the parameter $P\_{MAX,CBR}$ used in the power control formula:

“$P\_{MAX,CBR}$ is determined by a value of *sl-MaxTransPower* based on a priority level of the PSSCH transmission and a CBR range that includes a CBR measured in slot $i-N$”.

While the pamameter ***sl-MaxTransPower*** is not related to CBR and priority. Another parameter ***sl-MaxTxPower-r16,*** which is defined in *SL-PSSCH-TxParameters-r16* and accordingly in *SL-CBR-PSSCH-TxConfig-r16*, is determined by CBR and priority.

## ***Corresponding modification***

The proposed CR in R1-2107221 is as follows:

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| \*\*\* Unchanged text is omitted \*\*\*16.2.1 PSSCHA UE determines a power $P\_{PSSCH,b,c}(i)$ for a PSSCH transmission on a resource pool in symbols where a corresponding PSCCH is not transmitted in PSCCH-PSSCH transmission occasion $i$ on active SL BWP $b$ of carrier $f$of serving cell $c$ as: $P\_{PSSCH}(i)=min\left(P\_{CMAX},P\_{MAX,CBR},min\left(P\_{PSSCH,D}\left(i\right),P\_{PSSCH,SL}(i)\right)\right)$ [dBm]where- $P\_{CMAX,f,c,}$ is defined in [8-1, TS 38.101-1]- $P\_{MAX,CBR}$ is determined by a value of *sl-MaxTxPower* based on a priority level of the PSSCH transmission and a CBR range that includes a CBR measured in slot $i-N$ [6, TS 38.214]; if *sl-MaxTxPower* is not provided, then $P\_{MAX,CBR}=P\_{CMAX}..f.c$;\*\*\* Unchanged text is omitted \*\*\* |

## ***Consequences if not approved:***

The wrong parameter name will cause confusion when determining transmission power for PSSCH.

## ***Moderator’s view:***

From moderator’s view, this CR is necessary and essential.

The motivation of parameter “$P\_{MAX,CBR}$” is to configue the maximum transmission power of PSSCH based on CBR and priority in case of congestion control. While the parameter “*sl-MaxTransPower*” introduced in *SL-ResourcePool* configuration in TS38.331 is not related to CBR and priority.

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| – *SL-ResourcePool*The IE *SL-ResourcePool* specifies the configuration information for NR sidelink communication resource pool.\*\*\* Unchanged text is omitted \*\*\*SL-PowerControl-r16 ::= SEQUENCE { sl-MaxTransPower-r16 INTEGER (-30..33), sl-Alpha-PSSCH-PSCCH-r16 ENUMERATED {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} OPTIONAL, -- Need M dl-Alpha-PSSCH-PSCCH-r16 ENUMERATED {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} OPTIONAL, -- Need S sl-P0-PSSCH-PSCCH-r16 INTEGER (-16..15) OPTIONAL, -- Need S dl-P0-PSSCH-PSCCH-r16 INTEGER (-16..15) OPTIONAL, -- Need M dl-Alpha-PSFCH-r16 ENUMERATED {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} OPTIONAL, -- Need S dl-P0-PSFCH-r16 INTEGER (-16..15) OPTIONAL, -- Need M ...}

| *SL-PowerControl* field descriptions |
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| ***sl-MaxTransPower***Indicates the maximum value of the UE's sidelink transmission power on this resource pool. The unit is dBm. |

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The parameter “*sl-MaxTxPower-r16*” introduced in *SL-CBR-CommonTxConfigList* is to configure maximum transmission power of PSCCH/PSSCH in case of congestion control. Therefore, this parameter should be used/referred to in PSSCH power control formula, instead of the parameter “*sl-MaxTransPower*”.

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| \*\*\* Unchanged text is omitted \*\*\*– *SL-CBR-CommonTxConfigList*The IE *SL-CBR-CommonTxConfigList* indicates the list of PSSCH transmission parameters (such as MCS, sub-channel number, retransmission number, CR limit) in *sl-CBR-PSSCH-TxConfigList*, and the list of CBR ranges in *sl-CBR-RangeConfigList*, to configure congestion control to the UE for sidelink communicaition.*SL-CBR-CommonTxConfigList* information element-- ASN1START-- TAG-SL-CBR-COMMONTXCONFIGLIST-STARTSL-CBR-CommonTxConfigList-r16 ::= SEQUENCE { sl-CBR-RangeConfigList-r16 SEQUENCE (SIZE (1..maxCBR-Config-r16)) OF SL-CBR-LevelsConfig-r16 OPTIONAL, -- Need M sl-CBR-PSSCH-TxConfigList-r16 SEQUENCE (SIZE (1.. maxTxConfig-r16)) OF SL-CBR-PSSCH-TxConfig-r16 OPTIONAL -- Need M}SL-CBR-LevelsConfig-r16 ::= SEQUENCE (SIZE (1..maxCBR-Level-r16)) OF SL-CBR-r16SL-CBR-PSSCH-TxConfig-r16 ::= SEQUENCE { sl-CR-Limit-r16 INTEGER(0..10000) OPTIONAL, -- Need M sl-TxParameters-r16 SL-PSSCH-TxParameters-r16 OPTIONAL -- Need M}\*\*\* Unchanged text is omitted \*\*\*\*\*\* Unchanged text is omitted \*\*\*SL-PSSCH-TxParameters-r16 ::= SEQUENCE { sl-MinMCS-PSSCH-r16 INTEGER (0..27), sl-MaxMCS-PSSCH-r16 INTEGER (0..31), sl-MinSubChannelNumPSSCH-r16 INTEGER (1..27), sl-MaxSubchannelNumPSSCH-r16 INTEGER (1..27), sl-MaxTxTransNumPSSCH-r16 INTEGER (1..32), sl-MaxTxPower-r16 SL-TxPower-r16 OPTIONAL -- Cond CBR}\*\*\* Unchanged text is omitted \*\*\*

| *SL-PSSCH-TxConfigList* field descriptions |
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| ***sl-MaxTxPower***This field indicates the maximum transmission power for transmission on PSSCH and PSCCH. |

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## ***Companies view:***

Each company is encouraged to provide the views on the following questions.

Q1: Do you think the modification in R1-2107221 is necessary?

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| Company | Yes/No | Views |
| Intel |  | We are fine in principle.However, then it is unclear when/how *sl-MaxTransPower* is applied. If the intention that it is used for Pcmax derivation, then TS 38.101-1 does not use this parameter either. We see two ways: (1) assume RAN4 spec uses this parameter, and it is accounted in Pcmax, (2) update 213 to use *sl-MaxTransPower* when CBR-based configuration is not provided. |
| ZTE,Sanechips | Y |  |
| NEC | Y | Changes are necessary. |
| NTT DOCOMO | Yes | Similar comment to Intel. I checked RRC parameter list of R1-1913674 and found ‘maximumtransmitPower-SL’ in the list, but the purpose is still unclear... |
| Sharp | Yes | Agree with Intel that use of *sl-MaxTransPower* should also be discussed. In our view it is OK to not use it. |
| LG | Yes | Change is necessary. Whether or how to use ‘maximumtransmitPower-SL’ is a separate issue.  |
| CATT, GOHIGH | Yes |  |
| Huawei, HiSilicon | Yes |  |
| Qualcomm | Yes | We also share that view that *sl-MaxTransPower* should be the one to use in 38.101-1. |
| Ericsson | Yes | Modification of the parameter is needed. |

Q2: Do you agree with the modification in R1-2107221?

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| --- | --- | --- |
| Company | Yes/No | Views |
| Intel |  | Need to resolve questions asked in Q1 first |
| ZTE,Sanechips | Y | Fine with the change. |
| NEC | Y | We have same concerns with Intel. As we can see in TS 38.101-1, *sl-MaxTxPower* is assumed as the total transmitted power in 6.2E.4.1. However, as pointed out in the CR, this parameter is associated with CBR and priority. Hence, seems *sl-MaxTransPower* should be used in TS 38.101-1. Considering there are other parts in 213 using Pcmax, it’s better to fix it in 38.101-1 |
| NTT DOCOMO |  | Agree with Intel. |
| Sharp | Yes |  |
| LG | Yes |  |
| CATT, GOHIGH | Yes | Fine with the change.Regarding the parameter of *sl-MaxTransPower*, we share the similar views as NEC, it would be better to be fixed in 38.101-1 |
| Huawei, HiSilicon | Yes | 213 should use *sl-MaxTxPower.*There is no need to use the same symbols between specs, as there is always an understanding of how to map from one WG spec to another (e.g. many RRC names from RAN2 specs are mapped to PHY variables directly in RAN1; same for this RAN4 variable). |
| Qualcomm | Yes |  |
| Ericsson | Yes | We agree with the concerns from some companies regarding the parameter to be used. This should be addressed before making the change. |