3GPP TSG RAN WG1 Meeting #xxx R1-200xxxx

**xxx, xxx, xxth – xxth xxx, 2020**

Title: Offline summary on SRS evaluation methodology

# General methodology for SRS evaluation

In Phase-1 discussion of Rel-17 FeMIMO EVM, 15 companies think LLS should be used to evaluate SRS enhancements, among which 4 companies think SLS can be used additionally. Hence the following is proposed.

* LLS is used to evaluate SRS enhancements in Rel-17 FeMIMO, while SLS can be used optionally.

Please provide your views on the above proposal.

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***Proposal 1:*** *TBD*

# LLS methodology

## Target enhancements

In Phase-1 discussion of Rel-17 FeMIMO EVM, 9 companies point out LLS is needed for SRS coverage/capacity enhancements and 3 companies think LLS is needed for antenna switching xTyR for up to 8 Rx antennas.

Please provide your views on the target enhancements requiring LLS, for which candidates include

* SRS coverage/capacity enhancement,
* SRS antenna switching xTyR for up to 8 Rx antennas.

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## Evaluation metrics

Please provide your views on evaluation metrics for the target enhancements in Section 2.1, with the following as a start point.

* DL or UL BLER

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## Baseline

Please provide your views on baseline scheme used for the target enhancements in Section 2.1, with the following as a start point.

* Rel-15 SRS with R=1. Use m\_SRS=4 for the case with frequency hopping.

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## System setting

Please provide your views on the general system setting for the target enhancements in Section 2.1, with the following as a start point.

* Carrier frequency, sub-carrier spacing and system bandwidth
  + For UL BLER, use 4GHz, 30KHz and 20MHz
  + For DL BLER, use 3.5GHz, 30KHz and 20MHz
* Channel model
  + CDL-C
* UE speed
  + 3 km/h

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## MIMO setting

Please provide your views on MIMO setting for the target enhancements in Section 2.1, with the following as a start point.

* gNB and UE antennas for UL/DL transmission, e.g., number of Tx/Rx antennas, antenna configuration etc..
  + 2 or 4 UE Tx/Rx antennas and 8-64 gNB Tx/Rx antennas
  + For FR1, use omni UE antennas
  + For FR2, use directional UE antennas
* Rank, precoder and MCS determination for UL/DL transmission
  + For UL, rank, precoder and MCS are adaptive and indicated in DCI
  + For DL, rank and precoder are derived with reciprocity and MCS can be fixed
* Precoding granularity for UL/DL transmission
  + For UL, wideband TPMI is assumed
  + For DL, a fixed PRG size = 2 PRBs, 4 PRBs or wideband can be assumed
* Number of TBs
  + Assume 1 TB

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## SRS setting

Please provide your views on SRS setting for the target enhancements in Section 2.1, with the following as a start point.

* SRS frequency hopping
  + Enable frequency hopping with m\_SRS=4
* Number of SRS ports
  + 2 or 4 port SRS
* SRS periodicity
  + 4 slots
* SRS comb
  + Comb 2 or 4
* Repetition factor R
  + R depends on the simulated scheme
* SRS channel estimation algorithm
  + SRS channel estimation algorithm is left to companies’ choice

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## Other comments

Please provide your views on other aspects which are not included in the above.

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***Proposal 2:*** *TBD*

# SLS methodology

## Target enhancements

In Phase-1 discussion of Rel-17 FeMIMO EVM, 2 companies think SLS can be used for SRS antenna switching xTyR for up to 8 Rx antennas, meanwhile 3 companies think SLS is useful for evaluating SRS capacity enhancement.

Please provide your views on the target enhancements which require SLS evaluation, for which candidates include

* SRS antenna switching xTyR for up to 8 Rx antennas
* SRS capacity enhancement

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## SLS assumptions

For the target enhancements in Section 3.1, please provide your views on what simulation assumptions are needed besides the assumptions agreed in Rel-16, including the following bullets.

* Metric
  + DL throughput
* Baseline
  + Rel-15 SRS
* SRS setting, e.g., SRS periodicity, SRS error modelling, etc.
  + 40 or 80 ms for SRS periodicity.
  + Table A.1-2 of TR 36.897 for SRS error modelling

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***Proposal 3:*** *TBD*