**#3GPP TSG RAN WG1 #103-e R1-200xxxx**

**e-Meeting, October 26th – November 13th, 2020**

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**Source:** Moderator (LG Electronics)

**Title:** Feature lead summary#1 for physical layer procedure aspects in AI 7.2.4

**Document for:** Discussion and decision

# **Potential issues for email discussions**

* Physical layer procedure
	+ Thread 1
		- Issue #2: Prioritization rule between PSCCH/PSSCH and PUCCH without SL HARQ reports/PUSCH without UL-SCH/SRS
		- Issue #3: Prioritization rule between PSFCH/S-SSB reception(s) and UL transmission(s)
		- Issue #4: MsgA PUSCH is prioritized over SL transmission
	+ Thread 2
		- Issue #7: Interpretation of sidelink slot for TRIV and resource reservation

# **Physical layer procedure**

Issue #1: Prioritization rule between PUSCH carrying SL HARQ-ACK reports and SL transmission [Huawei,4] [LGE,9] [Apple,48] [vivo,68] [KT,69] [Ericsson,70]

* Option 1: Reuse prioritization between PSFCH/S-SS/PSBCH block transmission and UL transmission other than a PRACH, or a PUSCH scheduled by an UL grant in a RAR, or a PUCCH with sidelink HARQ-ACK information report [LGE,9]
	+ No spec change is needed
* Option 2: SL transmission is prioritized when the SL transmission is prioritized over both UL-SCH and SL HARQ-ACK reporting [Huawei,4] [Apple,48] [vivo,68] [KT,69] [Ericsson,70]
	+ Relevant TP can be found in [Huawei,4] [Apple,48] [vivo,68]

Issue #2: Prioritization rule between PSCCH/PSSCH and PUCCH without SR/SL HARQ reports/PUSCH without UL-SCH/SRS

* Reuse prioritization between PSFCH/S-SS/PSBCH block transmission and UL transmission other than a PRACH, or a PUSCH scheduled by an UL grant in a RAR, or a PUCCH with sidelink HARQ-ACK information report [LGE,9] [ZTE,21] [DCM,59]
	+ Relevant TP can be found in [LGE,9] [ZTE,21] [DCM,59]
* PRACH is prioritized over PSCCH/PSSCH [DCM,59]

Issue #3: Prioritization rule between PSFCH/S-SSB reception(s) and UL transmission(s)

* Reuse prioritization between PSFCH/S-SS/PSBCH block transmission and UL transmission other than a PRACH, or a PUSCH scheduled by an UL grant in a RAR, or a PUCCH with sidelink HARQ-ACK information report [LGE,9] [ZTE,21] [Ericsson,70]
	+ Relevant TP can be found in [LGE,9] [ZTE,21]

Issue #4: MsgA PUSCH is prioritized over SL transmission

* Support: [Apple,48] [vivo,68] [Ericsson,70]
	+ Relevant TP can be found in [Apple,48] [vivo,68]

Issue #5: Prioritization rule between PSFCH TX and PSFCH RX or between PSFCH TX and PSFCH TX for tie-break

* Up to UE implementation [LGE,9] [Apple,48]
* Additional rule based on HARQ-ACK feedback option and HARQ-ACK state [CATT,16] [KT,69] [Ericsson,70]
	+ Relevant TP can be found in [CATT,16]

Issue #6: Prioritization rule between PUCCH carrying SL HARQ-ACK reporting and SL transmission for tie-break

* Up to UE implementation [LGE,9] [ZTE,21] [Apple,48]
* Additional rule [Ericsson,70]

Issue #7: Interpretation of sidelink slot for TRIV and resource reservation [Huawei,4] [LGE,5] [OPPO,32] [Apple,48]

* Option 1: For TRIV interpretation and resource reservation period, the logical slots belonging to a resource pool. [Huawei,4] [LGE,5] [Apple,48]
	+ Relevant TP can be found in [Huawei,4] [LGE,5]
* Option 2: For TRIV interpretation and resource reservation period, the logical slots can belong to a resource pool [OPPO,32]
	+ Relevant TP can be found in [OPPO,32]

Issue #8: Capture constraint on total SL TX power in case of simultaneous transmission of SL and UL

* Support: [LGE,9] [Spreadtrum,31]
	+ Relevant TP can be found in [LGE,9] [Spreadtrum,31]

Issue #9: Whether or how to handle the case where SL HARQ-ACK reports and Uu UCI are collided in a PUSCH [DCM,59]

* Non-overlapping PUCCH can overlapping with a PUSCH
* After resolving overlapping PUCCH(s), Uu UCI or SL HARQ-ACK reporting on PUCCH is collided with Uu UCI on PUSCH

Issue #10: UCI piggybacking on PUSCH based on priority value of SL and priority index of Uu link [vivo,68]

# **References**

1. R1-2007610 Correction on sidelink PT-RS sequence generation Huawei, HiSilicon
2. R1-2007611 Remaining details of sidelink resource allocation mode 1 Huawei, HiSilicon
3. R1-2007612 Remaining details of sidelink resource allocation mode 2 Huawei, HiSilicon
4. R1-2007613 Remaining details of physical layer procedures for sidelink Huawei, HiSilicon
5. R1-2007772 Discussion on essential corrections in physical layer structure LG Electronics
6. R1-2007773 Discussion on essential corrections in resource allocation for Mode 1 LG Electronics
7. R1-2007774 Discussion on essential corrections in resource allocation for Mode 2 LG Electronics
8. R1-2007775 Discussion on essential corrections in sidelink synchronization mechanism LG Electronics
9. R1-2007776 Discussion on essential corrections in physical layer procedure LG Electronics
10. R1-2007779 A remaining issue on UE procedures for reporting HARQ-ACK on uplink Fujitsu
11. R1-2007780 A remaining issue on simultaneous transmissions of uplink and PUSCH carrying sidelink HARQ-ACK Fujitsu
12. R1-2007809 Remaining issues on physical layer structure for NR sidelink CATT
13. R1-2007810 Remaining issues on Mode 1 resource allocation in NR V2X CATT
14. R1-2007811 Remaining issues on Mode 2 resource allocation in NR V2X CATT
15. R1-2007812 Remaining issues on sidelink synchronization mechanism in NR V2X CATT
16. R1-2007813 Remaining issues on physical layer procedures for NR V2X CATT
17. R1-2007921 Remaining issues of NR sidelink physical layer structure ZTE, Sanechips
18. R1-2007922 Remaining issues in Mode-1 ZTE, Sanechips
19. R1-2007923 Remaining issues in mode 2 ZTE, Sanechips
20. R1-2007924 Remaining issues of synchronization ZTE, Sanechips
21. R1-2007925 Remaining issues in PHY procedures for Rel-16 sidelink ZTE, Sanechips
22. R1-2007934 Remaining opens of sidelink physical structure for NR V2X design Intel Corporation
23. R1-2007935 Corrections related to Mode-2 resource allocation Intel Corporation
24. R1-2007936 Corrections related to Mode-1 resource allocation Intel Corporation
25. R1-2007986 Remaining issues on resource allocation mode 2 for NR V2X ETRI
26. R1-2007987 Physical layer procedures for sidelink ETRI
27. R1-2008081 Maintenance for mode 2 resource allocation NEC
28. R1-2008095 Remaining issues in NR sidelink mode 1 resource allocation Spreadtrum Communications
29. R1-2008096 Remaining issues in NR sidelink mode 2 resource allocation Spreadtrum Communications
30. R1-2008097 Remaining issues on sidelink physical layer procedure Spreadtrum Communications
31. R1-2008129 Text Proposals on Physical Layer Structures for NR Sidelink Samsung
32. R1-2008130 Draft CR on PUCCH Power Control for NR Sidelink Mode 1 Scheduling Samsung
33. R1-2008131 Draft CR on Mode 2 for NR Sidelink Samsung
34. R1-2008132 Draft CR on Sidelink Physical Duration to Logical Slot Conversion Samsung
35. R1-2008133 Draft CR on Physical Layer Procedures for NR Sidelink Samsung
36. R1-2008230 Draft TP on physical structure for NR sidelink OPPO
37. R1-2008231 Text proposal of mode 1 for NR sidelink OPPO
38. R1-2008232 Text proposal of physical layer procedure for NR sidelink OPPO
39. R1-2008236 Remaining open issues and corrections for mode 2 RA OPPO
40. R1-2008237 Corrections for FDM-based semi-static power split for in-device coexistence OPPO
41. R1-2008334 Correction on sidelink timing definition Huawei, HiSilicon
42. R1-2008381 Remaining issue on physical layer structure and procedure for sidelink in NR V2X Panasonic Corporation
43. R1-2008387 Remaining issues on physical layer structure for NR sidelink Sharp
44. R1-2008388 Remaining issues on resource allocation mode 1 for NR sidelink Sharp
45. R1-2008389 Remaining issues on resource allocation mode 2 for NR sidelink Sharp
46. R1-2008390 Remaining issues on synchronization mechanism for NR sidelink Sharp
47. R1-2008391 Remaining issues on physical layer procedures for NR sidelink Sharp
48. R1-2008428 Remaining Issues of Physical Layer Procedures Apple
49. R1-2008429 Remaining Issue of Sidelink Physical Layer Structure Apple
50. R1-2008430 Remaining Issues of Mode 1 Resource Allocation Apple
51. R1-2008431 Remaining Issues of Mode 2 Resource Allocation Apple
52. R1-2008496 Maintenance for PSFCH and PSCCH symbol on NR sidelink ASUSTeK
53. R1-2008497 Remaining issues on sidelink power control ASUSTeK
54. R1-2008498 Miscellaneous issues of SL HARQ-ACK reporting on PUCCH ASUSTeK
55. R1-2008529 Maintenance for sidelink physical layer structure NTT DOCOMO, INC.
56. R1-2008530 Maintenance for resource allocation mechanism mode 1 NTT DOCOMO, INC.
57. R1-2008531 Maintenance for resource allocation mechanism mode 2 NTT DOCOMO, INC.
58. R1-2008532 Maintenance for sidelink physical layer procedure NTT DOCOMO, INC.
59. R1-2008533 Maintenance for sidelink-related collision NTT DOCOMO, INC.
60. R1-2008604 Remaining Issues in Physical Layer Structure Qualcomm Incorporated
61. R1-2008605 Remaining Issues in Mode 1 Resource Allocation Qualcomm Incorporated
62. R1-2008606 Remaining Issues in Mode 2 Resource Allocation Qualcomm Incorporated
63. R1-2008633 Remaining issues for Mode 2 resource allocation in NR V2X ASUSTeK
64. R1-2008665 Remaining issues on physical layer structure for NR sidelink vivo
65. R1-2008666 Remaining issues on mode 1 resource allocation mechanism vivo
66. R1-2008667 Remaining issues on mode 2 resource allocation mechanism vivo
67. R1-2008668 Remaining issues on sidelink synchronization mechanism vivo
68. R1-2008669 Remaining issues on physical layer procedure for NR sidelink vivo
69. R1-2008721 Remaining issues on physical layer procedures for sidelink KT Corp.
70. R1-2008750 Discussion paper on the remaining issues in Rel. 16 for NR V2X Ericsson
71. R1-2008751 Draft\_CR\_TS38.211 Ericsson
72. R1-2008752 Draft\_CR\_TS38.212 Ericsson
73. R1-2008753 Draft\_CR\_TS38.213 Ericsson
74. R1-2008754 Draft\_CR\_TS38.214 Ericsson