**3GPP TSG RAN WG1 #122 R1-25nnnnn**

**Bengaluru, India, Aug 25th – 29th, 2025**

**Source: Ad-Hoc Chair (AT&T)**

**Title: Session Notes of AI** **9.1**

**Agenda Item: 9.1**

**Document for: Endorsement**

### 9.1 UE features for AI/ML for NR Air Interface

**Agreement: Adopt the following changes highlighted in chromatic fonts, while keeping the yellow highlighting, if any, as shown**

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| 58. NR\_AIML\_air | 58-0-1 | CSI report framework for UE-side inference | 1. Number of APU pools N  ~~1~~2. Maximum number of APUs in each APU pool ~~for all types~~ of UE-sided inference for CSI report(s) for simultaneously in a CC  ~~2~~3. Maximum number of APUs in each APU pool ~~for all types~~ of UE-sided inference for CSI report(s) simultaneously across all CCs | FFS | yes | n/a | Maximum number of APUs for UE-sided inference is unknown to the network | ~~FFS~~ Per UE | ~~FFS~~ N/A | ~~FFS~~ N/A | ~~FFS~~ N/A | Component 1 candidate values: {1,2}  Component ~~1~~2 candidate values: ~~FFS~~{1…8}  Component ~~2~~3 candidate values: ~~FFS~~{1…32}  Note: Component 2 and 3 candidate values are signalled separately for each pool  [A UE that does not support this FG reuses the CPU] | Optional with capability signalling |

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| 58. NR\_AIML\_air | 58-1-1 | Increased number of reported RSs for beam management | 1. Support of reporting format for L1-RSRP measurements not including CRI/SSBRI other than one for the largest measured L1-RSRP in a reporting instance, if the number of reported L1-RSRPs is equal to the size of the measurement resource set.  2. Support of reporting format for L1-RSRPs and corresponding beam information of Top M beam(s) with largest M measured value(s) of L1-RSRP(s) of a measurement resource set, where M is configured by gNB, if the number of reported L1-RSRPs is smaller than the size of the measurement resource set  3. Maximum number of M reported RSs, M>4 | FFS | yes | n/a | Increased number of reported beams for beam management is not supported | ~~FFS~~ Per UE | ~~FFS~~ N/A | ~~FFS~~ N/A | ~~FFS~~ N/A | Component 3 candidate values: {6,8} | Optional with capability signalling |

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| 58. NR\_AIML\_air | 58-1-2 | UE-side beam prediction for BM Case1 [for inference] | 1. Support of beam prediction with reporting of predicted beam index for BM-Case1 [for inference] with UE-side model  3. Maximum number of inference report(s) configured for BM-Case1 per BWP  3a. Maximum number of inference report(s) configured for BM-Case1 across all CCs  [4. Maximum number of inference report(s) activated for BM-Case1 per BWP]  [4a. Maximum number of inference report(s) activated for BM-Case1 across all CCs]  [5. Maximum number of inference report(s) triggered for BM-Case1 per BWP]  [5a. Maximum number of inference report(s) triggered for BM-Case1 across all CCs]  6. Support of SSB as RS type for Set B  6a. Support of CSI-RS as RS type for Set B  6b. Support of SSB as RS type for Set A  6c. Support of CSI-RS as RS type for Set A  [7. Supported combinations of the number of resources for Set B and the number of resources for Set A]  [7a: Supported maximum number of resources for Set B]  [7b: Supported maximum number of resources for Set A]  ~~[~~8. Supported CSI-RS resource types: Periodic CSI-RS, Semi-persistent CSI-RS, Aperiodic CSI-RS~~]~~  ~~[~~9. Supported inference report types: Periodic CSI report, Aperiodic CSI report, semi-persistent CSI report~~]~~  ~~[10. Supported options for performance monitoring for beam case 1 with UE side model]~~  ~~[~~11. Supported BM-Case 1 sub-usecase(s): {setB-subset-of-setA, setB-different-from-setA, both}  12. Supported maximum number of predicted beams in each reporting instanceFFS: whether/how to merge this FG with other FG(s) for performance monitoring and/or data collection  13. Supported number of occupied CPU  14. Supported number of occupied APU  15. Supported value of d for the relaxation of Z3 timeline  16. Supported value of d’ for the relaxation of Z’3 timeline  17. Index of the occupied APU pool | FFS | yes | n/a | UE-side~~d~~ beam prediction for BM Case 1 [for inference] is not supported | FFS | FFS | FFS | FFS | ~~FFS: CPU/AIMLPU related information~~ | Optional with capability signalling |

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| 58. NR\_AIML\_air | 58-1-3 | UE-side beam prediction for BM Case1 with predicted RSRP [for inference] | 1. Support of beam prediction, reporting of predicted beam index and predicted RSRP, for BM-Case1 [for inference]  2. Supported maximum number of predicted beams with RSRP in each reporting instance | 58-1-2 | yes | n/a | UE-side beam prediction for BM Case 1 with predicted RSRP [for inference] is not supported | FFS | FFS | FFS | FFS | Component 2 candidate values: {1, 2, 3, 4}  ~~FFS: CPU/AIMLPU related information~~ | Optional with capability signalling |

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| 58. NR\_AIML\_air | 58-1-4 | UE-side beam prediction for BM Case2 [for inference] | 1. Support of beam prediction with reporting of predicted beam index for BM-Case2 [for inference] with UE-side model  3. Maximum number of inference report(s) configured for BM-Case2 per BWP  3a. Maximum number of inference report(s) configured for BM-Case2 across all CCs  [4. Maximum number of inference report(s) activated for BM-Case2 per BWP]  [4a. Maximum number of inference report(s) activated for BM-Case2 across all CCs]  [5. Maximum number of inference report(s) triggered for BM-Case2 per BWP]  [5a. Maximum number of inference report(s) triggered for BM-Case2 across all CCs]  6. Support of SSB as RS type for Set B  6a. Support of CSI-RS as RS type for Set B  6b. Support of SSB as RS type for Set A  6c. Support of CSI-RS as RS type for Set A  [7. Supported combinations of the number of resources for Set B and the number of resources for Set A]  [7a: Supported maximum number of resources for Set B]  [7b: Supported maximum number of resources for Set A]  ~~[~~8. Supported CSI-RS resource types: Periodic CSI-RS, Semi-persistent CSI-RS~~]~~  ~~[~~9. Supported inference report types: Periodic CSI report, Aperiodic CSI report, semi-persistent CSI report~~]~~  ~~[10. Supported options for performance monitoring for beam case 2 with UE side model]~~  11. Supported maximum number of predicted beams in each predicted time instance  12. Supported maximum number of predicted time instances  ~~[~~13. Supported maximum total number of reported predicted beams for predicted time instances in one report~~]~~  14. Supported combinations of supported value(s) of valid time duration for each predicted time instance and number of predicted beams for each value of valid time duration  ~~[20. Supported BM-Case 2 sub usecase(s): e.g., setB-equals-to-setA, setB-subset-of-setA, setB-different-from-setA, or merged version(s)]~~  21. supported number of occupied CPU  22. supported number of occupied APU  23. supported value of d for the relaxation of Z3 timeline  24. supported value of d’ for the relaxation of Z’3 timeline  17. Index of the occupied APU pool | FFS | yes | n/a | UE-side beam prediction for BM-Case2 [for inference] is not supported | FFS | FFS | FFS | FFS | ~~FFS: CPU/AIMLPU related information~~  FFS: candidate values for components | Optional with capability signalling |

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| 58. NR\_AIML\_air | 58-1-5 | UE-side beam prediction for BM-Case2 with predicted RSRP [for inference] | 1. Support of beam prediction, reporting of predicted beams and predicted RSRP, for BM-Case2 (spatial and time domain beam prediction) [for inference] | 58-1-4 | yes | n/a | UE-side beam prediction for BM-Case2 [for inference] is not supported | FFS | FFS | FFS | FFS | ~~FFS: CPU/AIMLPU related information~~ | Optional with capability signalling |

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| 58. NR\_AIML\_air | 58-1-7 | Data collection for UE-side beam prediction [for BM case 1] | 1. Support of data collection for UE-side beam prediction [for BM case 1]  2. Support of SS/PBCH block and 1-port CSI-RS based RSRP measurements for measurement RS resource sets (Set B and Set A) for data collection  ~~[~~3. Supported sub-use cases~~: {‘Set B equal to Set A’, ‘Set B subset of Set A’,’Set B not a subset of Set A’}]~~  ~~[~~6: Supported maximum number of resources for Set B~~]~~  ~~[~~7: Supported maximum number of resources for Set A~~]~~  8. Support of SSB as RS type for Set B  9. Support of CSI-RS as RS type for Set B  10. Support of SSB as RS type for Set A  11. Support of CSI-RS as RS type for Set A | FFS | yes | n/a | Data collection for UE-side beam prediction is not supported [for BM case 1] | ~~FFS~~ Per UE | ~~FFS~~ N/A | ~~FFS~~ N/A | ~~FFS~~ N/A | Component 3 candidate values: {‘Set B equal to Set A’, ‘Set B subset of Set A’,’Set B not a subset of Set A’}  Component 6 candidate values: {4, 8, 16, 32, 64}  Component 7 candidate values: {8, 16, 32, 64}  Note: it is up to RAN2 whether this FG is merged into data collection FG defined by RAN2 | Optional with capability signalling |

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| 58. NR\_AIML\_Air | 58-3-1 | CSI prediction for UE-sided inference when N4=1 | 1. Support of CSI prediction for UE-sided inference when N4=1  2. Support for reporting predicted PMI with N4=1  3. A list of supported combinations, each combination is { Max # of Tx ports in one resource, Max # of resources and total # of Tx ports} across all CCs in a band when reported per band, and across all CCs in a band combination when reported per BC simultaneously  4. Support of Rel-16 eType-II regular codebook refinement for predicted PMI with PMI subband R=1  5. Support parameter combinations with L=2,4  6. Support for rank = 1,2  7. Support for the size of DD-basis, N4=1  8. Support X=1 CQI based on the first/earliest slot of the CSI reporting window and the first/earliest predicted PMI (TDCQI=’1-1’)  ~~[9. Value for CPU occupation, when P/SP-CSI-RS is configured for CMR]~~  ~~[10. Value for CPU occupation, when A-CSI-RS is configured for CMR]~~  11. Scaling factor for active resource counting Kp  12. supported value of t for the relaxation of Z and Z’ timeline  13. supported number of occupied CPU  14. supported number of occupied APU  15. Index of the occupied APU pool | ~~2-35~~ 58-0-1 | yes | n/a | CSI prediction for N4=1 for inference is not supported | ~~[~~Per band and Per BC~~]~~ | n/a | n/a | n/a | Component 3 candidate values:  a. {4,8,12,16,24,32}  b. {2,3,4 … 64}  c. {4, …, 256} | Optional with capability signalling |

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| 58. NR\_AIML\_Air | 58-3-1-7 | Active CSI-RS resources and ports for mixed R16 based doppler codebook for CSI prediction via UE side model with other codebooks in any slot | 1. List of codebook combinations of two types  2. List of {max number of ports per resource, max number of resources, max number of total ports} for each codebook combination | 23-9-1, 16-3a, 2-36, 2-40, 2-41, 23-9-2, 23-9-4, 40-3-2-1, 40-3-2-1a, 40-3-2-2, X-1-1, X-1-1a, X-1-2 | Yes | n/a | Active CSI-RS resources and ports for mixed R16 based doppler codebook for CSI prediction via UE side model with other codebooks in any slot is not supported | Per band and Per BC | n/a | n/a | n/a | Component 1 candidate values: ~~FFS~~  {Type I SP, CSI prediction for UE-sided inference when N4=1 and R=1}  {Type I SP, CSI prediction for UE-sided inference when N4>1 and R=1}  {eType II R=1, CSI prediction for UE-sided inference when N4=1 and R=1}  {eType II R=1, CSI prediction for UE-sided inference when N4>1 and R=1}  Component 2 candidate values: ~~FFS~~  - Maximum 16 triplets  - Max # of Tx ports in one resource: {4,8,12,16,24,32}  - Max # resources: {1 to 64}  - Max # total ports: {4 to 256}  Note: if a UE reports one or more codebook combinations in 58-3-1-7, then usage of active CSI-RS resources and ports for multiple codebooks in any slot is allowed only within those combinations  Note: For coexisting of mixed codebooks in any slot, gNB need to honor 16-8, 23-9-5, 58-3-1-7 and per-codebook capability 2-36/40/41, 16-3a, and 23-9-1/23-9-2/23-9-4.  ~~[Note: Up to 4 combinations for component 1]~~ | Optional with capability signaling |

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| 58. NR\_AIML\_Air | 58-3-2 | CSI prediction for UE-sided inference when N4>1 | 1. Support of CSI prediction for UE-sided inference when N4>1  2. Support for reporting predicted PMI with N4>1  3. A list of supported combinations, each combination is {Max N4, Max # of Tx ports in one resource, Max # of resources and total # of Tx ports} across all CCs in a band when reported per band, and across all CCs in a band combination when reported per BC simultaneously  4. Value of d=m for the DD unit size when A-CSI-RS is configured for CMR  5. Support for the size of DD-basis, N4>1  ~~7~~6. A list of supported combinations, each combination is {Max N4, Max # of Tx ports in one resource, Max # of resources and total # of Tx ports} for one CSI report setting  7. Supported number of occupied CPU  8. Supported number of occupied APU  9. Index of the occupied APU pool  ~~[8. Supported values of the Maximum number of observation number]~~ | 58-3-1 | yes | n/a | CSI prediction for N4>1 for inference is not supported | ~~[~~Per band and Per BC~~]~~ | ~~FFS~~ N/A | ~~FFS~~ N/A | ~~FFS~~ N/A | ~~FFS: CPU/AIMLPU related information~~  Component 3 candidate values: ~~FFS~~  a. {1,2,4,8}  b. {4,8,12,16,24,32}  c. {2,3,4 … 64}  d. {4, …, 256}  Component 6 candidate values:  a. {1,2,4,8}  b. {4,8,12,16,24,32}  c. {4,8,12}  d.{4, …, 256} | Optional with capability signalling |

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| 58. NR\_AIML\_Air | 58-3-4 | UE side data collection for CSI prediction | 1. Support of data collection for CSI prediction | FFS | yes | n/a | UE side data collection for CSI prediction is not supported | ~~FFS~~ Per band and Per BC | ~~FFS~~ N/A | ~~FFS~~ N/A | ~~FFS~~ N/A |  | Optional with capability signalling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-3-5 | Performance monitoring for CSI prediction model | 1. Supported number of performance metric SGCS  2. Support of one wideband frequency granularity SGCS per layer  3. Support of one configured time instance for N4>1  4. A list of supported combinations, each combination is {Max # of Tx ports in one resource, Max # of resources and total # of Tx ports} across all CCs in a band when reported per band, and across all CCs in a band combination when reported per BC simultaneously | 58-3-1 | Yes | n/a | Performance monitoring for CSI prediction model is not supported | Per Band and Per BC | N/A | N/A | N/A | Component 1 candidate values: {1,2}  Component 4 candidate values:  - Maximum 16 triplets  - Max # of Tx ports in one resource: {4,8,12,16,24,32}  - Max # resources: {1 to 64}  - Max # total ports: {4 to 256}  Note: If the UE reports candidate value ‘1’ for component 1 then the SGCS is for the predicted CSI | Optional with capability signalling |

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| 58. NR\_AIML\_Air | 58-2-1 | UE-based positioning Case 1 ~~[for inference]~~ | 1. ~~Indicates~~ Support of UE-based positioning Case 1 ~~[for inference]~~ | ~~FFS~~  58-2-4 | N/A | N/A | UE-based positioning Case 1 ~~[for inference]~~ is not supported | ~~FFS~~  Per UE | n/a | n/a | n/a | Need for location server to know if the feature is supported. | Optional with capability signalling |

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| 58. NR\_AIML\_Air | 58-2-4 | DL PRS Processing Capability for UE-based positioning Case 1 | 1. Maximum DL PRS bandwidth in MHz, which is supported and reported by UE.  2. DL PRS buffering capability: Type 1 or Type 2  a) Type 1 – sub-slot/symbol level buffering  b) Type 2 – slot level buffering  3. Duration of DL PRS symbols N in units of ms a UE can process every T ms assuming maximum DL PRS bandwidth in MHz, which is supported and reported by UE.  4. Max number of DL PRS resources that UE can process in a slot under it  Note: The above parameters are reported assuming a configured measurement gap and a maximum ratio of measurement gap length (MGL) / measurement gap repetition period (MGRP) of no more than 30%. | ~~FFS~~ | No | N/A |  | Per band | n/a | n/a | n/a | Need for location server to know if the feature is supported.  Component 1 candidate values:  -FR1 bands values {5, 10, 20, 40, 50, 80, 100}  -FR2 bands values {50, 100, 200, 400}  Component 3 candidate values:  -T: {8, 16, 20, 30, 40, 80, 160, 320, 640, 1280} ms  -N: {0.125, 0.25, 0.5, 1, 2, 4, 6, 8, 12, 16, 20, 25, 30, 32, 35, 40, 45, 50} ms  Component 4 candidate values:  -FR1 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 15kHz, 30kHz, 60kHz  -FR2 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 60kHz, 120kHz  Notes for component 3:  a. UE reports one combination of (N, T) values per band, where N is a duration of DL PRS symbols in ms processed every T ms for a given maximum bandwidth (B) in MHz supported by UE  b. UE is not expected to support DL PRS bandwidth that exceeds the reported DL PRS bandwidth value  c. UE DL PRS processing capability is defined for a single positioning frequency layer. UE capability for simultaneous DL PRS processing across positioning frequency layers is not supported in Rel.16 (i.e. for a UE supporting multiple positioning frequency layers, a UE is expected to process one frequency layer at a time)  d. UE DL PRS processing capability is agnostic to DL PRS comb factor configuration  e. The reporting of (N, T) values for maximum BW in MHz is not dependent on SCS  Note: if the UE does not indicate this capability for a band or band combination, the UE does not support PRS processing in this band or band combination.  ~~[Note: If the UE reports both FG 13-1 and [this FG], then the UE is not expected to perform simultaneous processing of legacy methods and Case 1 positioning method.~~  [Note: If UE does not provide [this FG] but the UE supports Case 1, FG 13-1 indicates the DL PRS processing capabilities common across all positioning methods including UE-based positioning Case 1.] | Optional with capability signaling |
| 58. NR\_AIML\_Air | 58-2-7 | Simultaneous UE-based positioning Case 1 and DL-TDoA positioning | 1. Support of simultaneous operation for UE-based positioning Case 1 and DL TDoA | 58-2-3 and 13-3 | No | N/A |  | Per band | n/a | n/a | n/a | If it is not indicated, a UE is not expected to perform simultaneously the UE-based positioning Case 1 and DL TDoA positioning  Need for location server to know if the feature is supported. | Optional with capability signaling |
| 58. NR\_AIML\_Air | 58-2-8 | Simultaneous UE-based positioning Case 1 and DL-AoD positioning | 1. Support of simultaneous operation for UE-based positioning Case 1 and DL AoD | 58-2-3 and 13-2 | No | N/A | Simultaneous UE-based positioning Case 1 and DL-AoD positioning is not supported | Per band | n/a | n/a | n/a | If it is not indicated, a UE is not expected to perform simultaneously the UE-based Case 1 and DL AoD positioning  Need for location server to know if the feature is supported. | Optional with capability signaling |

**Proposal: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-7 | Support of PRS measurement in RRC\_INACTIVE state for case 1 | Support of PRS measurement in RRC\_INACTIVE state for case 1 - location server | 58-2-3, 27-6 | No |  | PRS measurement in RRC\_INACTIVE state for case 1 is not supported | Per band | n/a | n/a | n/a | Need for location server to know if the feature is supported.  Note: PRS capabilities for case 1 described in FGs in 58-2-3, 58-2-3a, 58-2-3b are the same for RRC Inactive.  Support of PRS processing measurement in RRC\_INACTIVE state does not imply that LMF is aware of or controlling UE RRC state | Optional with capability signaling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-9 | DL PRS measurement outside MG and in a PRS processing window for UE-based positioning Case 1 | 1. Supported PRS processing types subject to the UE determining that DL PRS to be higher priority for PRS measurement outside MG and in a PRS processing window  2. Support of priority handing options of PRS: Option1, Option2 or Option3  − Option 1: Support of "st1" and "st3" defined in clause 5.1.6.5 of TS 38.214 [20]  − Option 2: Support of "st1", "st2", and "st3" defined in clause 5.1.6.5 of TS 38.214 [20]  - Option 3: Support of "st1" only defined in clause 5.1.6.5 of TS 38.214 [20] | 58-2-4 | N/A | N/A | DL PRS measurement outside MG and in a PRS processing window for UE-based positioning Case 1 is not supported | Per band | n/a | n/a | n/a | Component 1 candidate values: One or more of {Type 1A, Type 1B, Type 2}  Component 2 candidate values: {option1, option2, option3}  Need for location server to know if the feature is supported  Note: Component 2 can be reported per supported band for each type supported by the UE, details left to RAN2  Note:  - Type 1A refers to the determination of prioritization between DL PRS and other DL signals/channels in all OFDM symbols within the PRS processing window. The DL signals/channels from all DL CCs (per UE) are affected across LTE and NR  - Type 1B refers to the determination of prioritization between DL PRS and other DL signals/channels in all OFDM symbols within the PRS processing window. The DL signals/channels from a certain band are affected  - Type 2 refers to the determination of prioritization between DL PRS and other DL signals/channels only in DL PRS symbols within the PRS processing window  Note: When the UE determines higher priority for other DL signals/channels over the PRS measurement/processing, the UE is not expected to measure/process DL PRS which is applicable to all of the above capability options  Note: Within a PRS processing window, UE measurement is inside the active DL BWP with PRS having the same numerology as the active DL BWP  Note: Support of configuration of PRS processing window in RRC and support of using DL MAC CE to activate/deactivate the PRS processing window for PRS measurements is part of the FG , but no dedicated signaling is required. | Optional with capability signalling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-10 | DL PRS Processing Capability outside MG - buffering capability for UE-based positioning Case 1 | 1. DL PRS buffering capability  a) Type 1 – sub-slot/symbol level buffering  b) Type 2 – slot level buffering  2a. Duration of DL PRS symbols N in units of ms a UE can process every T ms assuming maximum DL PRS bandwidth in MHz, which is supported and reported by UE  2b. Duration of DL PRS symbols N2 in units of ms a UE can process inT2 ms assuming maximum DL PRS bandwidth in MHz, which is supported and reported by UE  3. Max number of DL PRS resources that UE can process in a slot  4. Maximum DL PRS bandwidth in MHz, which is supported and reported by UE for PRS measurement outside MG within the PPW | 58-2-9 | N/A | N/A | DL PRS Processing Capability outside MG - buffering capability for UE-based positioning Case 1 is not supported | Per band | n/a | n/a | n/a | Component 1 candidate values: {Type 1, Type 2}  Component 2a candidate values:  a) T: {1, 2, 4, 8, 16, 20, 30, 40, 80, 160, 320, 640, 1280} ms  b) N: {0.125, 0.25, 0.5, 1, 2, 4, 6, 8, 12, 16, 20, 25, 30, 32, 35, 40, 45, 50} ms  Candidate 2b component values:  a) N2: {0.125, 0.25, 0.5, 1, 2, 3, 4, 5, 6, 8, 12} ms  b) T2: {4, 5, 6, 8} ms  Component 3 candidate values:  FR1 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 15kHz, 30kHz, 60kHz  FR2 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 60kHz, 120kHz  Component 4 candidate values:  FR1 bands: {5, 10, 20, 40, 50, 80, 100}  FR2 bands: {50, 100, 200, 400}  Need for location server to know if the feature is supported  Note 1:The (N, T) UE capabilities are interpreted as legacy (N, T) in FG 58-2-4, and the UE is expected to receive the PRS within the PRS processing window and but the processing of the received PRS may be outside a PRS processing window.  The (N2, T2) UE capabilities are interpreted such that the UE is capable of measuring up to N2 ms PRS within a PPW and is capable of completing the PRS processing within the PPW, e.g., if the time duration from the last symbol of the measured PRS resource(s) inside the PPW, to the end of PPW is not smaller than T2 ms  Note 3: UE shall support either component 2a and component 2b , but not both for each supported type in a band  Note 4: A UE shall declare PRS processing capabilities of each of the supported Type-1A, Type-1B, Type-2 capabilities in case it supports multiple types in a band  Note: if UE supports same values for one or more components as in FG 27-3-3, then the UE can skip indicating these components in this FG and the values in corresponding FG 27-3-3 components indicate supported PRS processing capabilities outside MG for Case 1 | Optional with capability signalling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-11 | Support of more than one activated PRS processing windows across all active DL BWPs for UE-based positioning Case 1 | 1. Number of supported activated PRS processing windows | 58-2-9 | N/A | N/A | DL PRS measurement outside MG and in a PRS processing window for UE-based positioning Case 1 is not supported | Per UE | No | No | No | Candidate values: {2, 3, 4} | Optional with capability signalling |

**Proposal: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-12 | Support of UE-based positioning Case 1 in RRC\_INACTIVE state | UE-based positioning Case 1 in RRC\_INACTIVE state is supported | [58-2-3 and 58-2-13~~]~~ | N/A | N/A | UE-based positioning Case 1 in RRC\_INACTIVE state is not supported | Per Band | n/a | n/a | n/a | Support of UE-based positioning Case 1 in RRC\_INACTIVE state does not imply that LMF is aware of or controlling UE RRC state | Optional with capability signalling |

**Proposal: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-13 | DL PRS processing capabilities in RRC inactive state for UE-based positioning Case 1 | 1. DL PRS buffering capability  a) Type 1 – sub-slot/symbol level buffering  b) Type 2 – slot level buffering  2. Duration of DL PRS symbols N in units of ms a UE can process every T ms assuming maximum DL PRS bandwidth in MHz, which is supported and reported by UE  3. Max number of DL PRS resources that UE can process in a slot | [58-2-4] | N/A | N/A |  | Per band | n/a | n/a | n/a | Component 1 candidate values: {Type 1, Type 2}  Component 2 candidate values:  T: {8, 16, 20, 30, 40, 80, 160, 320, 640, 1280} ms  N: {0.125, 0.25, 0.5, 1, 2, 4, 6, 8, 12, 16, 20, 25, 30, 32, 35, 40, 45, 50} ms  Component 3 candidate values:  FR1 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 15kHz, 30kHz, 60kHz  FR2 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 60kHz, 120kHz  Need for location server to know if the feature is supported  Note: Having the PRS processing capabilities in RRC\_INACTIVE state does not imply that LMF is aware of or controlling UE RRC state  Note: if UE supports same values for one or more components as in FG 27-6, then the UE can skip indicating these components in this FG and the values in corresponding FG 27-6 components indicate supported PRS processing capabilities in RRC inactive state for Case 1 | Optional with capability signalling |

**Proposal: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-14 | Support of UE-based positioning Case 1 in RRC\_IDLE | Support of UE-based positioning Case 1 in RRC\_IDLE | [ 58-2-4,  58-2-12,  58-2-13] | N/A | N/A | UE-based positioning Case 1 in RRC\_IDLE  is not supported | Per Band | n/a | n/a | n/a | Need for location server to know if the feature is supported | Optional with capability signalling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-15 | DL PRS processing capabilities for aggregated PRS processing of 2 PFLs in intra-band contiguous within a MG for RRC\_CONNECTED - UE-based positioning Case 1 | 1. Maximum aggregated DL PRS bandwidth in MHz, which is supported and reported by UE  2. Maximum DL PRS bandwidth in MHz, per PFL  3. DL PRS buffering capability  4. Duration of DL PRS symbols N in units of ms a UE can process every T ms assuming maximum aggregated DL PRS bandwidth in MHz, which is supported and reported by UE.  5. Maximum number of aggregated DL PRS resources across aggregated PFLs that UE can process in a slot | 58-2-4 | N/A | N/A | DL PRS processing capabilities for aggregated PRS processing of 2 PFLs in intra-band contiguous within a MG for RRC\_CONNECTED - UE-based positioning Case 1 is not supported | Per Band | n/a | n/a | n/a | Component 1 candidate values:  a) FR1 bands: {10, 20, 40, 50, 80, 100, 160, 200}  b) FR2 bands: {100, 200, 400, 800}  Component 2 candidate values:  a) FR1 bands: {5, 10, 20, 40, 50, 80, 100}  b) FR2 bands: {50, 100, 200, 400}  Note: Component 3 in this FG follows buffering capability type reported in FG 58-2-4  Component 4 candidate values:  a) T: {8, 16, 20, 30, 40, 80, 160, 320, 640, 1280} ms  b) N: {0.125, 0.25, 0.5, 1, 2, 4, 6, 8, 12, 16, 20, 25, 30, 32, 35, 40, 45, 50} ms  Note: this value N should be equal or smaller than the value N reported by FG 58-2-4, or this value T should be equal or larger than the value T reported by FG 58-2-4  Component 5 candidate values:  a. FR1 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 15kHz, 30kHz, 60kHz  b. FR2 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 60kHz, 120kHz  Note: each two linked PRS resources are counted as 1 resource  Note: this value should be equal or smaller than the value reported by FG 58-2-4  Note: The above parameters are reported assuming a configured measurement gap and a maximum ratio of measurement gap length (MGL)/measurement gap repetition period (MGRP) of no more than 30%  Note: if UE supports same values for one or more components as in FG 41-4-1, then the UE can skip indicating these components in this FG and the values in corresponding FG 41-4-1 components indicate supported aggregated PRS processing of 2 PFLs in intra-band contiguous within a MG for RRC\_CONNECTED for Case 1 | Optional with capability signalling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-15a | DL PRS processing capabilities for aggregated PRS processing of 3 PFLs in intra-band contiguous within a MG for RRC\_CONNECTED - UE-based positioning Case 1 | 1. Maximum aggregated DL PRS bandwidth in MHz, which is supported and reported by UE  2. Maximum DL PRS bandwidth in MHz, per PFL  3. DL PRS buffering capability  4. Duration of DL PRS symbols N in units of ms a UE can process every T ms assuming maximum aggregated DL PRS bandwidth in MHz, which is supported and reported by UE.  5. Maximum number of aggregated DL PRS resources across aggregated PFLs that UE can process in a slot | 58-2-15 | N/A | N/A | DL PRS processing capabilities for aggregated PRS processing of 3 PFLs in intra-band contiguous within a MG for RRC\_CONNECTED - UE-based positioning Case 1 is not supported | Per Band | n/a | n/a | n/a | Component 1 candidate values:  a) FR1 bands: {15, 20, 30, 40, 50, 60, 80, 100, 120, 140, 150, 160, 180, 200, 240, 300}}  b) FR2 bands: {150, 200, 300, 400, 600, 800, 1000, 1200}  Component 2 candidate values:  a) FR1 bands: {5, 10, 20, 40, 50, 80, 100}  b) FR2 bands: {50, 100, 200, 400}  Note: Component 3 in this FG follows buffering capability type reported in FG 58-2-4  Component 4 candidate values:  a) T: {8, 16, 20, 30, 40, 80, 160, 320, 640, 1280} ms  b) N: {0.125, 0.25, 0.5, 1, 2, 4, 6, 8, 12, 16, 20, 25, 30, 32, 35, 40, 45, 50} ms  Note: this value N should be equal or smaller than the value N reported by FG 58-2-4 or this value T should be equal or larger than the value T reported by FG 58-2-4  Component 5 candidate values:  a. FR1 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 15kHz, 30kHz, 60kHz  b. FR2 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 60kHz, 120kHz  Note: each three linked PRS resources are counted as 1 resource  Note: this value should be equal or smaller than the value reported by FG 58-2-4  Note: The above parameters are reported assuming a configured measurement gap and a maximum ratio of measurement gap length (MGL)/measurement gap repetition period (MGRP) of no more than 30%  Note: if UE supports same values for one or more components as in FG 41-4-1a, then the UE can skip indicating these components in this FG and the values in corresponding FG 41-4-1a components indicate supported aggregated PRS processing of 3 PFLs in intra-band contiguous within a MG for RRC\_CONNECTED for Case 1 | Optional with capability signalling |

**Proposal: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-15b | DL PRS processing capabilities for aggregated PRS processing of 2 PFLs in intra-band contiguous for RRC\_IDLE and RRC\_INACTIVE - UE-based positioning Case 1 | 1. Maximum aggregated DL PRS bandwidth in MHz, which is supported and reported by UE  2. Maximum DL PRS bandwidth in MHz, per PFL  3. DL PRS buffering capability  4. Duration of DL PRS symbols N in units of ms a UE can process every T ms assuming maximum aggregated DL PRS bandwidth in MHz, which is supported and reported by UE.  5. Maximum number of aggregated DL PRS resources across aggregated PFLs that UE can process in a slot | [58-2-13] | N/A | N/A | DL PRS processing capabilities for aggregated PRS processing of 2 PFLs in intra-band contiguous for RRC\_IDLE and RRC\_INACTIVE - UE-based positioning Case 1 is not supported | Per Band | n/a | n/a | n/a | Component 1 candidate values:  a) FR1 bands: {10, 20, 40, 50, 80, 100, 160, 200}  b) FR2 bands: {100, 200, 400, 800}  Component 2 candidate values:a) FR1 bands: {5, 10, 20, 40, 50, 80, 100}  b) FR2 bands: {50, 100, 200, 400}  Note: Component 3 in [FG 58-2-15b (this FG)] follows buffering capability type reported in [FG 58-2-4]  Component 4 candidate values:  a) T: {8, 16, 20, 30, 40, 80, 160, 320, 640, 1280} ms  b) N: {0.125, 0.25, 0.5, 1, 2, 4, 6, 8, 12, 16, 20, 25, 30, 32, 35, 40, 45, 50} ms  Note: this value N should be equal or smaller than the value N reported by [FG 58-2-13] or this value T should be equal or larger than the value T reported by [FG 58-2-13]  Component 5 candidate values:  a. FR1 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 15kHz, 30kHz, 60kHz  b. FR2 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 60kHz, 120kHz  Note: each two linked PRS resources are counted as 1 resource  Note: this value should be equal or smaller than the value reported by [FG 58-2-13]  Note: if UE supports same values for one or more components as in FG 41-4-1b, then the UE can skip indicating these components in this FG and the values in corresponding FG 41-4-1b components indicate supported for aggregated PRS processing of 2 PFLs in intra-band contiguous for RRC\_IDLE and RRC\_INACTIVE capabilities for Case 1 | Optional with capability signalling |

**Proposal: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-15c | DL PRS processing capabilities for aggregated PRS processing of 3 PFLs in intra-band contiguous for RRC\_IDLE and RRC\_INACTIVE - UE-based positioning Case 1 | 1. Maximum aggregated DL PRS bandwidth in MHz, which is supported and reported by UE  2. Maximum DL PRS bandwidth in MHz, per PFL  3. DL PRS buffering capability  4. Duration of DL PRS symbols N in units of ms a UE can process every T ms assuming maximum aggregated DL PRS bandwidth in MHz, which is supported and reported by UE.  5. Max number of aggregated DL PRS resources across aggregated PFLs that UE can process in a slot under it | [58-2-15b] | N/A | N/A | DL PRS processing capabilities for aggregated PRS processing of 3 PFLs in intra-band contiguous for RRC\_IDLE and RRC\_INACTIVE - UE-based positioning Case 1 is not suported | Per Band | n/a | n/a | n/a | Component 1 candidate values:  a) FR1 bands: {15, 20, 30, 40, 50, 60, 80, 100, 120, 140, 150, 160, 180, 200, 240, 300}  b) FR2 bands: {150, 200, 300, 400, 600, 800, 1000, 1200}  Component 2 candidate values:  a) FR1 bands: {5, 10, 20, 40, 50, 80, 100}  b) FR2 bands: {50, 100, 200, 400}  Note: Component 3 in [FG 58-2-15c (this FG)~~]~~ follows buffering capability type reported in [FG 58-2-4]  Component 4 candidate values:  a) T: {8, 16, 20, 30, 40, 80, 160, 320, 640, 1280} ms  b) N: {0.125, 0.25, 0.5, 1, 2, 4, 6, 8, 12, 16, 20, 25, 30, 32, 35, 40, 45, 50} ms  Note: this value N should be equal or smaller than the value N reported by [FG 58-2-13] or this value T should be equal or larger than the value T reported by [FG 58-2-13]  Component 5 candidate values:  a. FR1 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 15kHz, 30kHz, 60kHz  b. FR2 bands: {1, 2, 4, 6, 8, 12, 16, 24, 32, 48, 64} for each SCS: 60kHz, 120kHz  Note: each three linked PRS resources are counted as 1 resource  Note: this value should be equal or smaller than the value reported by [FG 58-2-13]  Note: if UE supports same values for one or more components as in FG 41-4-1c, then the UE can skip indicating these components in this FG and the values in corresponding FG 41-4-1c components indicate supported aggregated PRS processing of 3 PFLs in intra-band contiguous for RRC\_IDLE and RRC\_INACTIVE for Case 1 | Optional with capability signalling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-16 | PRS bandwidth aggregation with two PFL combinations - UE-based positioning Case 1 | Support of PRS bandwidth aggregation with two PFL combinations for UE-based positioning Case 1 | 58-2-15 | N/A | N/A | PRS bandwidth aggregation with two PFL combinations for UE-based positioning Case 1 is not supported | Per Band | n/a | n/a | n/a | Need for location server to know if the feature is supported.  Note: More than one combination are measured in TDMed manner | Optional with capability signalling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-17 | PRS bandwidth aggregation in RRC\_CONNECTED UE-based positioning Case 1 | Support of PRS bandwidth aggregation in RRC\_CONNECTED for UE-based positioning Case 1 | 58-2-3, 58-2-15 | N/A | N/A | PRS bandwidth aggregation in RRC\_CONNECTED for UE-based positioning Case 1 is not supported | Per Band | n/a | n/a | n/a | Need for location server to know if the feature is supported. | Optional with capability signalling |

**Proposal: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-18 | PRS bandwidth aggregation in RRC\_ INACTIVE UE-based positioning Case 1 | Support of PRS bandwidth aggregation in RRC\_ INACTIVE for UE-based positioning Case 1 | [58-2-12, 58-2-15b] | N/A | N/A | PRS bandwidth aggregation in RRC\_ INACTIVE for UE-based positioning Case 1 is not supported | Per Band | n/a | n/a | n/a | Need for location server to know if the feature is supported. | Optional with capability signalling |

**Proposal: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-19 | PRS bandwidth aggregation in RRC\_IDLE - UE-based positioning Case 1 | Support of PRS bandwidth aggregation in RRC\_IDLE for UE-based positioning Case 1 | [58-2-14, 58-2-15b] | N/A | N/A | PRS bandwidth aggregation in RRC\_IDLE  for UE-based positioning Case 1 is not supported | Per Band | n/a | n/a | n/a | Need for location server to know if the feature is supported. | Optional with capability signalling |

**Agreement: Introduce the following Rel. 19 UE FGs (yellow highlighting, if any, shows text that’s not yet agreed)**

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| 58. NR\_AIML\_Air | 58-2-20 | Support of PRS TEG association information for UE-based positioning Case 1 | Support of reception of association between PRS and TRP Tx TEG for UE-based positioning Case 1 | 58-2-4 | N/A | N/A | Reception of PRS TEG association information for UE-based positioning Case 1 is not supported | Per UE | No | No | No | Need for location server to know if the feature is supported. | Optional with capability signalling |

**Agreement: Adopt the following changes highlighted in chromatic fonts, while keeping the yellow highlighting, if any, as shown**

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| 58. NR\_AIML\_Air | 58-2-2 | Support reception of AD for UE-based positioning Case 1 | Indicates support of reception of AD for UE-based positioning Case 1 | ~~FFS~~ 58-2-1 | N/A | N/A | Reception of AD for UE-based positioning Case 1 is not supported | Per UE | n/a | n/a | n/a | Need for location server to know if the feature is supported.  Note: For specific ADs, UE indicate supported AD that can be received as in [FFS: FGs] | Optional with capability signalling |

R1-2505179 UE Features for Rel-19 AI/ML for NR Air Interface Ericsson Telecom S.A. de C.V.

R1-2505189 UE features for AI/ML for NR Air Interface Nokia

R1-2505334 Discussion on UE features for AI/ML for NR Air Interface CATT, CICTCI

R1-2505343 UE features for AI/ML for NR air interface Huawei, HiSilicon

R1-2505394 UE features for AI/ML for NR Air Interface vivo

R1-2505443 Discussion on UE features for AI/ML for NR Air Interface Xiaomi

R1-2505489 Discussion on UE features for AI/ML for NR Air Interface ZTE Corporation, Sanechips

R1-2505560 Remaining issues on UE features for AI/ML for NR air interface Samsung

R1-2505667 Views on Rel-19 UE features for AI/ML for NR Air Interface Ofinno

R1-2505734 UE features for AIML for NR air interface OPPO

R1-2505818 Discussion on UE features for AI/ML for NR Air Interface LG Electronics

R1-2505893 Views on UE features for AI/ML for NR Air Interface Apple

R1-2505899 Views on UE features for Rel-19 IoT-NTN TDD mode Apple

R1-2506086 Discussion on UE features for AI/ML for NR air Interface CMCC

R1-2506195 UE features for AI/ML for NR air interface Qualcomm Incorporated

R1-2506226 Summary of UE features for AI/ML for NR Air Interface Moderator (AT&T)

R1-2506284 Discussion on UE features for AI/ML for NR Air Interface NTT DOCOMO, INC.