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

**Prague, Czech Republic, October 13th –17th, 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**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 | 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: RAN1 respectfully asks RAN2 to specify signaling support for a ~~For specific ADs,~~ UE to indicate support~~ed~~ for each specific AD (applies to all types of AD, i.e., explicit Ads and implicit by associated ID) ~~that can be received as in [FFS: FGs]~~ | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_Air | 58-2-3 | DL PRS Resources for UE-based positioning Case 1 | 1. Max number of DL PRS Resource Sets per TRP per frequency layer supported by UE  2. Max number of TRPs across all positioning frequency layers per UE  3. Max number of positioning frequency layers UE supports | ~~[13-1~~ 58-2-4~~]~~ | N/A | N/A |  | Per UE | No | No | No | Component 1 candidate values: {1, 2}  Component 2 candidate values: {4, 6, 12, 16, 24, 32, 64, 128, 256}  Component 3 candidate values: {1, 2, 3, 4}  Need for location server to know if the feature is supported. | Optional with capability signaling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_Air | 58-2-3a | DL PRS Resources for UE-based positioning Case 1 on a band | [1. Max number of DL PRS Resources per DL PRS Resource Set  2. Max number of DL PRS Resources per positioning frequency layer | ~~[13-1~~ 58-2-4~~]~~ | N/A | N/A |  | Per band | n/a | n/a | n/a | Component 1 candidate values: {1, 2, 4, 8, 16, 32, 64}  Component 2 candidate values: {6, 24, 32, 64, 96, 128, 256, 512, 1024}  Note: For component 1, the values 16, 32, 64 are only applicable to FR2 bands  Note: For component 2, the value 6 is only applicable to FR1 bands  Need for location server to know if the feature is supported.  Note: if the UE does not indicate this capability for a band or band combination, the UE does not support this positioning method in this band or band combination | Optional with capability signaling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_Air | 58-2-3b | DL PRS Resources for UE-based positioning Case 1 on a band combination | 1. Max number of DL PRS Resources supported by UE across all frequency layers, TRPs and DL PRS Resource Sets for FR1-only  2. Max number of DL PRS Resources supported by UE across all frequency layers, TRPs and DL PRS Resource Sets for FR2-only  3. Max number of DL PRS Resources supported by UE across all frequency layers, TRPs and DL PRS Resource Sets for FR1 in FR1/FR2 mixed operation  4. Max number of DL PRS Resources supported by UE across all frequency layers, TRPs and DL PRS Resource Sets for FR2 in FR1/FR2 mixed operation | ~~[13-1~~ 58-2-4~~]~~ | N/A | N/A |  | Per BC | n/a | n/a | n/a | Component 1 candidate values: {6, 24, 64, 128, 192, 256, 512, 1024, 2048}  Note this is reported for FR1 only BC  Component 2 candidate values: {24, 64, 96, 128, 192, 256, 512, 1024, 2048}  Note this is reported for FR2 only BC  Component 3 candidate values: {6, 24, 64, 96, 128, 192, 256, 512, 1024, 2048}  Note this is reported for BC containing FR1 and FR2 bands  Component 4 candidate values: {24, 64, 96, 128, 192, 256, 512, 1024, 2048}  Note this is reported for BC containing FR1 and FR2 bands]  Need for location server to know if the feature is supported.  Note: the reported value is the total number across all bands in the corresponding BC  Note: if the UE does not indicate this capability for a band or band combination, the UE does not support this positioning method in this band or band combination | Optional with capability signaling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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%. |  | 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 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 |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_Air | 58-2-5 | Support of SSB from neighbour cell as QCL source of a DL PRS for UE-based positioning Case 1 | 1. Support of SSB from neighbour cell as QCL source of a DL PRS  2. Support of reuse SSB measurement from RRM for receiving PRS  ~~Note: Refers to Type-C for FR1 and Type-C & Type-D support for FR2~~ | ~~[~~58-2-4~~; otherwise~~  ~~13-1]~~ | No | N/A | SSB from neighbour cell as QCL source of a DL PRS 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: Refers to Type-C for FR1 and Type-C & Type-D support for FR2 | Optional with capability signaling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_Air | 58-2-6 | Support of DL PRS from serving/neighbour cell as QCL source of a DL PRS for UE-based positioning Case 1 | 1. Support of DL PRS from serving/neighbour cell as QCL source of a DL PRS  ~~Note 1: Refers to Type-D support for FR2~~  ~~Note 2: A PRS from a PRS-only TP is treated as PRS from a non-serving cell~~ | ~~[~~58-2-4~~; otherwise~~  ~~13-1]~~ | No | N/A | DL PRS from serving/neighbour cell as QCL source of a DL PRS 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: DL PRSs are in the same band  Note: Refers to Type-D support for FR2  Note: A PRS from a PRS-only TP is not considered in Rel. 19 | Optional with capability signaling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_air | 58-0-1 | CSI report framework for UE-side inference | 1. Number of ~~APU~~ CPU,x pools N  2. Maximum number of ~~APU~~ CPU,x in each ~~APU~~ CPU,x pool of UE-sided inference for CSI report(s) ~~for~~ simultaneously in a CC  3. Maximum number of ~~APU~~ CPU,x in each ~~APU~~ CPU,x pool of UE-sided inference for CSI report(s) simultaneously across all CCs | ~~FFS~~  2-35 | yes | n/a | Maximum number of APUs for UE-sided inference is unknown to the network | ~~Per UE~~  Per band and per BC | ~~No~~ n/a | ~~No~~ n/a | ~~No~~ n/a | Component 1 candidate values: {1,2}  Component 2candidate values: {1…8}  Component 3 candidate values: {1…32}  Note: Component 2 and 3 candidate values are signalled separately for each pool  ~~[~~A UE that does not support this FG should not report non-zero occupied CPU,2 or CPU,3 values in any dependency FG ~~reuses the CPU]~~ | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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~~  {2-21, 2-22} or {2-23, 2-23a} or 2-29 or 2-24 | yes | n/a | Increased number of reported beams for beam management is not supported | ~~Per UE~~  Per band | ~~No~~ n/a | ~~No~~ n/a | ~~No~~ n/a | Component 3 candidate values: {6,8} | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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~~ CC  3a. Maximum number of inference report(s) configured 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  7a: Supported maximum number of resources for Set B  7b: Supported maximum number of resources for Set A  8. Supported CSI-RS resource types for Set B  9. Supported inference report types  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 instance ~~FFS: 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~~ CPU,2/CPU,3  15. Supported value of d for the relaxation of Z3 timeline, where i is the index of SCS, i=1,2,3,4,5,6 corresponding to 15,30,60,120,480,960 kHz SCS  16. Supported value of d’ for the relaxation of Z’3 timeline, where i is the index of SCS, i=1,2,3,4,5,6 corresponding to 15,30,60,120,480,960 kHz SCS  17. ~~Index of the~~ Occupied ~~APU~~ resource pool between CPU,2 and CPU,3  18. Supported CSI-RS resource types for Set A | ~~FFS~~ 2-35 | yes | n/a | UE-side~~d~~ beam prediction for BM Case 1 for inference is not supported | ~~Per UE~~  Per band | ~~No~~ n/a | ~~No~~ n/a | ~~No~~ n/a | Component 3 candidate values: {1, 2, 3, 4}  Component 3a candidate values: {1, 2, 3, 4, 8}  Component 7a candidate values: {4, 8, 16}  Component 7b candidate values: {4, 8, 16}  Component 8 candidate values: {Periodic CSI-RS, Semi-persistent CSI-RS, Aperiodic CSI-RS}  Component 9 candidate values: {Periodic CSI report, Aperiodic CSI report, semi-persistent CSI report}  Component 11 candidate values: {setB-subset-of-setA, setB-different-from-setA, both}  Component 12 candidate values: {1, 2, 3, 4}  Component 13 candidate values: {0, 1, 2, …, 8}  Component 14 candidate values: {0, 1, 2, …, 8}  Note: The values of Component 13 and 14 are not allowed to be 0 simultaneously  Component 15 and 16 candidate values:  d1 is {2, 4, 8, 14}  d2 is {4, 8, 14, 28}  d3 is {8,14, 28, 56}  d4 is {14, 28, 56, 112}  d5 is {56, 112, 224, 448}  d6 is {112, 224, 448, 896}  Component 17 candidate values: {1, 2} representing the first APU pool (i.e., CPU,2) and the second APU pool (i.e., CPU,3), respectively  Component 18 candidate values: {Periodic CSI-RS, Semi-persistent CSI-RS, Aperiodic CSI-RS}  Note: “CPU” corresponds to “CPU,1” in TS 38.214, and “APU” corresponds to “CPU,x” in TS 38.214, x = 2, 3  ~~FFS: candidate values for components~~ | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 | ~~Per UE~~  Per band | ~~No~~ n/a | ~~No~~ n/a | ~~No~~ n/a | Component 2 candidate values: {1, 2, 3, 4} | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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~~ CC  3a. Maximum number of inference report(s) configured 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  7a: Supported maximum number of resources for Set B  7b: Supported maximum number of resources for Set A  8. Supported CSI-RS resource types for Set B  9. Supported inference report types  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~~  15. Supported value(s) of time gap between predicted time instances and between reference time to the first future time instance  16. Supported value(s) of setB periodicity  17. Supported CSI-RS resource types for Set A  19. Supported combinations of time gaps between predicted time instances and value of set B periodicity.  20. Supported BM-Case 2 sub usecase(s)  21. supported number of occupied CPU  22. supported number of occupied ~~APU~~ CPU,2/CPU,3  23. supported value of d for the relaxation of Z3 timeline, where i is the index of SCS, i=1,2,3,4,5,6 corresponding to 15,30,60,120,480,960 kHz SCS  24. supported value of d’ for the relaxation of Z’3 timeline, where i is the index of SCS, i=1,2,3,4,5,6 corresponding to 15,30,60,120,480,960 kHz SCS  25. ~~Index of the~~ Occupied ~~APU~~ resource pool between CPU,2 and CPU,3 | ~~FFS~~ 2-35 | yes | n/a | UE-side beam prediction for BM-Case2 for inference is not supported | ~~Per UE~~  Per band | ~~No~~ n/a | ~~No~~ n/a | ~~No~~ n/a | Component 3 candidate values: {1, 2, 3, 4}  Component 3a candidate values: {1, 2, 3, 4, 8}  Component 7a candidate values: {4, 8, 16, 32, 64}  Component 7b candidate values: {4, 8, 16, 32, 64}  Component 8 candidate values: {Periodic CSI-RS, Semi-persistent CSI-RS}  Component 9 candidate values: {Periodic CSI report, Aperiodic CSI report, semi-persistent CSI report}~~FFS: candidate values for components~~  Component 11 candidate values: {1, 2, 3, 4}  Component 12 candidate values: {1, 2, 4, 6, 8}  Component 13 candidate values: {1, 2, 4, 6, 8, 12, 16}  Component 14 candidate values: any combination between:  Number of predicted beams: {1,2,4,8}  Time gap: {10ms, 20ms, 40ms, 80ms, 160ms}  Component 15 candidate values: FFS  Component 16 candidate values: FFS  Component 17 candidate values: FFS  Component 19 candidate values: FFS  Component 20 candidate values: FFS  Component 21 candidate values: {0, 1, 2, 4, 8}  Component 22 candidate values: {0, 1, 2, 4, 8}  Note: The values of Component 21 and 22 are not allowed to be 0 simultaneously.  Component 23 candidate values:  d1 is {2, 4, 8, 14}  d2 is {4, 8, 14, 28}  d3 is {8,14, 28, 56}  d4 is {14, 28, 56, 112}  d5 is {56, 112, 224, 448}  d6 is {112, 224, 448, 896}  Component 25 candidate values: {1, 2} representing the first APU pool (i.e., CPU,2) and the second APU pool (i.e., CPU,3), respectively  Note: “CPU” corresponds to “CPU,1” in TS 38.214, and “APU” corresponds to “CPU,x” in TS 38.214, x = 2, 3  Note: UE should not report non-zero value for Component 22 if FG 58-0-1 is not signalled | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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  2. Supported maximum number of predicted beams in each predicted time instance  3. Supported maximum number of predicted time instances  4. Supported maximum total number of reported predicted beams for predicted time instances in one report | 58-1-4 | yes | n/a | UE-side beam prediction for BM-Case2 for inference is not supported | ~~Per UE~~  Per band | ~~No~~ n/a | ~~No~~ n/a | ~~No~~ n/a | Component 2 candidate values: {1, 2, 3, 4}  Component 3 candidate values: {1, 2, 4, 8}  Component 4 candidate values: {1, 2, 3, 4, 8, 12, 16, 32} | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_air | 58-1-6 | Performance monitoring for UE-sided model | 1. Support of performance monitoring with RS-PAI of AI/ML model for beam prediction.  2. Maximum total number of the configured SSB resources and/or CSI-RS resources for monitoring RS resource set  3. Maximum number of monitoring report(s) configured per ~~BWP~~ CC  4. Maximum number of monitoring report(s) configured across all CCs  5. Maximum number of monitoring occasions for RS-PAI calculation  6. Support of SSB as RS type for monitoring  7. Support of CSI-RS as RS type for monitoring  8. Supported monitoring resource types  9. Supported monitoring report types | ~~FFS~~ 58-1-2 or 58-1-4 | yes | n/a | Performance monitoring for UE-sided model is not supported | ~~FFS~~  Per band | ~~FFS~~ n/a | ~~FFS~~ n/a | ~~FFS~~ n/a | Component 2 candidate values: {4, 8, 16, 32, 64}  Component 3 candidate values: {1, 2, 4, 8}  Component 4 candidate values: {1, 2, 4, 8}  Component 5 candidate values: {1, 3, 7, 15}  Component 8 candidate values: {Periodic CSI-RS, Semi-persistent CSI-RS}  Component 9 candidate values: {Periodic CSI report, Aperiodic CSI report, semi-persistent CSI report}  ~~FFS: candidate values for components~~ | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_air | 58-1-7 | Data collection for UE-side beam prediction | 1. Support of data collection for UE-side beam prediction  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  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~~ 2-35 | yes | n/a | Data collection for UE-side beam prediction is not supported | ~~Per UE~~  Per band | ~~No~~ n/a | ~~No~~ n/a | ~~No~~ 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 |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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’)  11. Scaling factor for active resource counting Kp  12. supported value of t for the relaxation of Z and Z’ timeline, where i is the index of SCS, i=1,2,3,4,5,6 corresponding to 15,30,60,120,480,960 kHz SCS  13. supported number of occupied CPU  14. supported number of occupied ~~APU~~ CPU,2/CPU,3  15. ~~Index of the~~ Occupied ~~APU~~ resource pool between CPU,2 and CPU,3 | ~~58-0-1~~ 2-35 | 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}  Component 11 candidate values: {1,2,4}  Component 12 candidate values:  d1 is {0, 2, 4, 8, 14}  d2 is {0, 4, 8, 14, 28}  d3 is {0, 8,14, 28, 56}  d4 is {0, 14, 28, 56, 112}  d5 is {0, 56, 112, 224, 448}  d6 is {0, 112, 224, 448, 896}  Component 13 candidate values: {0, 1, 2, 4, 8}  Component 14 candidate values: {0, 1, 2, 4, 8}  Component 15 candidate values: {1, 2} representing the first APU pool (i.e., CPU,2) and the second APU pool (i.e., CPU,3), respectively.  Note: “CPU” corresponds to “CPU,1” in TS 38.214, and “APU” corresponds to “CPU,x” in TS 38.214, x = 2, 3  Note: UE should not report non-zero value for Component 14 if FG 58-0-1 is not signalled | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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  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~~ CPU,2/CPU,3  9. ~~Index of the~~ Occupied ~~APU~~ resource pool between CPU,2 and CPU,3 | 58-3-1 | 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. {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}  Component 7 candidate values: {0, 1, 2, 4, 8}  Component 8 candidate values: {0, 1, 2, 4, 8}  Component 9 candidate values: {1, 2} representing the first APU pool (i.e., CPU,2) and the second APU pool (i.e., CPU,3), respectively  Note: “CPU” corresponds to “CPU,1” in TS 38.214, and “APU” corresponds to “CPU,x” in TS 38.214, x = 2, 3  Note: UE should not report non-zero value for Component 8 if FG 58-0-1 is not signalled | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_Air | 58-3-4 | UE side data collection for CSI prediction | 1. Support of data collection for CSI prediction | ~~FFS~~ 2-33 or 2-35 | yes | n/a | UE side data collection for CSI prediction is not supported | Per band and Per BC | N/A | N/A | N/A |  | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_Air | 58-3-5 | Performance monitoring for CSI prediction model | 1. Support of two 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  5. Supported number of occupied CPU | 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 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}  Component 5 candidate values: {0, 1, 2}  Note: The summation of the value reported by Component 5 and the one reported by Component 13 of FG58-3-1 (or Component 7 of FG58-3-2) should not significant than the N\_CPU UE reported | Optional with capability signalling |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. NR\_AIML\_Air | 58-3-14 | Performance monitoring for CSI prediction | 1. Support of Type 3 performance monitoring based on SGCS for CSI prediction | 58-3-1 | Yes | n/a | Type 3 performance monitoring based on SGCS for CSI prediction is not supported | FFS | FFS | FFS | FFS |  | Optional with capability signaling |

R1-2506761 UE Features for Rel-19 AI/ML for NR Air Interface Ericsson

R1-2506772 Discussion on UE features for AI/ML for NR Air Interface ZTE Corporation, Sanechips

R1-2506881 UE features for AI/ML for NR Air Interface vivo

R1-2506935 UE features for AI/ML for NR air interface Huawei, HiSilicon

R1-2506972 Discussion on UE features for AI/ML for NR Air Interface Xiaomi

R1-2507004 Discussion on UE features for AI/ML for NR air Interface CMCC

R1-2507072 UE features for AI/ML for NR Air Interface Nokia

R1-2507100 UE features for AI/ML for NR Air Interface CATT, CICTCI

R1-2507156 UE features for AIML for NR air interface OPPO

R1-2507236 Remaining issues on UE features for AI/ML for NR air interface Samsung

R1-2507395 Discussion on UE features for AI/ML for NR Air Interface LG Electronics

R1-2507658 Views on UE features for Rel-19 AI/ML for NR air interface Apple

R1-2507704 UE features for AI/ML air interface Qualcomm Incorporated

R1-2507738 Summary of UE features for AI/ML for NR Air Interface Moderator (AT&T)

R1-2507795 Discussion on UE features for AI/ML for NR Air Interface NTT DOCOMO, INC.