**3GPP TSG RAN WG2 Meeting #131 R2-250xxxx**

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

**Title: draft LS on NW side data collection**

**Release: Release 19**

**Work Item: NR\_AIML\_air-Core**

**Source: ZTE Corporation (to be RAN2)**

**To: RAN1, RAN3**

**Contact person: Fei Dong**

[**dong.fei@zte.com.cn**](mailto:liziyi5@xiaomi.com)

**Send reply LS to: 3GPP Liaisons Coordinator,** [**mailto:3GPPLiaison@etsi.org**](mailto:3GPPLiaison@etsi.org)

**Attachments: None**

# Overall description

For NW side data collection on AI/ML based beam management, the agreements present in Annex have been achieved in Rel-19 for which RAN2 assumes those agreements may have RAN1 and RAN3 impact.

**For RAN1 to take into account:**

1. The resource configuration for logged NW side data collection is provided with CSI-ResourceConfig in CSI-MeasConfig

* The resource configuration does not have separate resources for Set A and Set B
* RAN2 assumes there is no separate CSI resource capability is introduced specifically for logged NW side data collection, that is, the legacy CSI resource capability (e.g. *beamManagementSSB-CSI-RS*) would be reused.

1. ~~The logging configuration is configured in the~~ *~~CSI-MeasConfig~~* ~~but the logging behavior is captured in RRC spec.~~The list of logging configurations is provided as a new list configurations within CSI-MeasConfig

* the data logging procedure based on receiving measurement quantities from lower layer is captured in RRC spec.

1. Logging periodicity which is different with CSI resource periodicity is configurable for NW side data collection.
2. The L3 event (i.e. Event A1 or Event A2) configuration is contained in the logging configuration to support the event based data logging.

* For event based data logging, UE shall perform and log the L1 measurement if the entering condition of configured L3 event is met; UE should not perform and log the L1 measurement if the leaving condition of configured L3 event is met.

1. From RAN2 point of view, it is sufficient to collect the L1-RSRP and/or Beam ID for the logging contents.
2. Only periodic CSI resources are used for NW side data collection.
3. ~~RAN2 assume to reuse feature 58-1-7 to indicate whether the UE supports logging L1 RSRP and beam ID of Set A/Set B for NW side data collection.~~

**For RAN3 to take into account:**

1. ~~The logging configuration is configured in the~~ *~~CSI-MeasConfig~~.* The list of logging configurations is provided as a new parameter in CSI-MeasConfig

* the data logging procedure is captured in RRC spec.

1. The L3 event (i.e. Event A1 or Event A2) configuration is contained in the logging configuration to support the event based data logging.
2. The logged data is reported via *UEInformationRequest/UEInformationResponse*.
3. The UE can send a UAI that indicates:

* Data is available
* Reason for trigger (full buffer, threshold)
* Low power indication

1. The NW side data collection configuration should be released if UE reports the lower power indication to the NW via UAI.

# Action

**To RAN1 and RAN3**

**ACTION:**

RAN2 respectfully asks RAN1 and RAN3 to take the agreements in the Annex and potentially caused RAN1/RAN3 impact listed above into account for the future work, and provide feedback, if any, on RAN2 agreements.

# Dates of the next TSG RAN WG2 meetings

TSG RAN2 Meeting #131bis 13th – 17th Oct, 2025 Prague, CZ

TSG RAN2 Meeting #132 17th – 21st Nov, 2025 Dallas, US

# 4 Annex

**RAN2#131 Meeting：**

**Agreements on NW side data collection**

1 RAN2 confirms that the network data logging is captured in a new clause (e.g. 5.5x) in the RRC specification.

2 A hysteresis should be configured and used (alongside threshold and timeToTrigger) for event-triggered logging for NW-side data collection.

3 The resource configuration does not have separate resources for Set A and Set B.

4 RAN2 to send an LS to RAN1 to inform about the RAN2 agreements on solution for network data logging, including L1 related content for NW-side data collection.

5 RAN2 to send an LS to RAN3 to inform about the RAN2 agreements on solution for network data logging

1. logging configuration is introduced as a new list of configurations under CSI-MeasConfig, based on TP1 in [R2-2505860](file:///C:/Users/panidx/OneDrive%20-%20InterDigital%20Communications,%20Inc/Documents/3GPP%20RAN/TSGR2_131/Docs/R2-2505860.zip),
2. Event evaluation for the event-triggered logging will be capturing within the existing A1/A2 events (in sub-clauses 5.5.4.2 and 5.5.4.3)
3. For L1-related content for NW-side data collection, it is sufficient to collect the L1-RSRP and/or beam ID as agreed by RAN2
4. RAN2 will not introduce separate CSI resource capability for logged NW-side data collection. Legacy capability will be used for logged NW-side data collection. Check with RAN1 on whether this assumption is ok .

**Agreements**

1. Multiplexing of legacy SON/MDT report and AIML logged data is not supported in the same UE information response message. Up to the network to ensure that data is not requested at the same time
2. The logging periodicity of a NW-side data collection configuration is configurable.
3. No further indication/condition is specified (beyond already agreed ones) for the UE to inform source gNB about data availability before HO in Rel-19.
4. The UE stores logged data for BM in a variable specific to L1 CSI related measurements.
5. Only periodic CSI resources are used for NW sided data collection. No need for new dynamic MAC CE mechanisms.

**Agreements:**

1 If LoggedDataCollectionAssistanceConfig is configured, then full buffer and low power indications are configured by default (i.e., no additional fields/bits required to configure them). Data threshold is (optionally) configured by including the threshold in the loggedDataCollectionAssistanceConfig.

2 Both the data collection configuration and the UAI configuration related to data collection are released when the UE transitions to IDLE/INACTIVE or initiates re-establishment (including RLF).

3 If the buffer is not full or the data threshold is configured and the amount of data is below the threshold, UE does not send data availability indication when it sends low power indication.

6 The UE will indicate the presence of a gap (i.e. there will be no indication on the length of gap or time instance, etc). Rapporteur will suggest a way to implemented as part of the RRC review.

**Agreements**

1. To define field names and IE based on the content of the logged data rather than the specific use case
2. Data forwarding to OAM or source gNB after HO is not in RAN2 scope and understands that other groups don’t have time to work on it.
3. UE discards the logged data upon inter-RAT handover.
4. RAN2 confirm that the solution agreed in RAN2#130 is applicable to regular HO and CHO (i.e. 1-bit indication corresponding to each candidate cell configuration in RRCReconfiguration is provided).
5. Do not introduce an indication from the UE to NW about unsuitable data collection configurations in Rel-19

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| **~~Agreements~~**   1. ~~If UE supports NW side data collection, it is mandatory for UE to support the minimum AS layer memory size of 64kB for UE supporting AI/ML based beam management, which is shared across all use cases with NW-sided model. The assumption is that this will be shared across all use cases (i.e. Rel-20 as well)~~ 2. ~~Introduce an optional per UE capability ‘loggedDataCollection-r19’ to indicate supporting logged measurements of data collection for NW-side model, which includes the following components:~~ 3. ~~the minimum 64kB AS layer memory size~~ 4. ~~periodic logging~~ 5. ~~Provide full buffer indication, low power indication~~ 6. ~~Event-based logging is an optional per UE capability separate from ‘loggedDataCollection-r19’. UE supporting this feature shall also indicate the support of ‘loggedDataCollection-r19’. If UE supports event-based logging it shall support data threshold-based data availability indication.~~ 7. ~~RAN2 will not introduce separate CSI resource capability for logged NW-side data collection. Legacy capability will be used for logged NW-side data collection. Check with RAN1 on whether this assumption is ok.~~ 8. ~~Data threshold-based data availability indication is an optional per UE capability with signaling. A UE supporting this feature shall also indicate support of the basic logged NW-side data collection.~~ |

**RAN2#129bis Meeting：**

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| =>Availability indication can be triggered due to:   * + Full buffer being reached (if configured)   + Buffer threshold being reached (if configured).   + Low power (if configured) * The UE send a UAI that indicates:   + Data is available   + Reason for trigger (full buffer, threshold)   + Low power indication |

**RAN2#129 Meeting:**

**All agreements for NW side data collection**

1. Support the use of L3 measurement event triggered (i.e. L3 serving cell measurements becoming worse/better than a threshold for TTT) to determine whether the UE performs logging or not. L1 measurement event triggered will not be supported. FFS what to log
2. Low power bit indication is supported
3. Data availability indication is supported. FFS when this would be triggered

**RAN2#128 Meeting:**

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| * Focus on the following three radio condition event based logging  1. L3 serving cell measurement based (e.g. X1/X2 similar to A1/A2) 2. Beam based events (e.g. beam becomes top-1 beam and number of measurements is less than configured value) 3. L1 beam level measurement  * Measurements on aperiodic CSI resources are not reported for NW sided data collection. * Duration is not supported |

**Agreements on NW side data collection**

1. Data collection is controlled by the network. The UE will not autonomously stop when low power state is detected.
2. The UE reports to the network when the power state is low. We will not specify how the UE determines low power state. The network should de-configure the data collection (this can be captured in stage 2).
3. The UE reports to the network when buffer is or may become full. FFS when it reports (before and/or after).
4. The UE can report the reason for triggering of indication for the status (e.g. low power state, low memory). FFS how this is signalled and if the reporting can be part of availability indication.

**RAN2#127bis Meeting:**

* **UEInformationRequest/UEInformationResponse is used for on-demand reporting of AI/ML training data collection. FFS of details of the message**

**RAN2#127 Meeting:**

**Agreements**

1. As the baseline approach, the UE receives the measurement configuration for AI/ML-enabled features/FGs for data collection and logging of measurements. The network can explicitly configure the UE whether the corresponding data collection and logging (if supported) should be immediately started. FFS if multiple configurations can be provided to the UE. FFS if dynamic activation/deactivation is support.
2. UE stores the logged training data at AS layer with a minimum AS layer memory size supported by the UE. FFS on the memory size. This is across all use cases
3. When UE reaches its buffer limitation the UE stops measurement for data collection purposes and logging.
4. Measurements for data collection purposes and logging based can be controlled based on power state of the UE. It is up to UE implementation how the UE determines power state. FFS whether the UE stops autonomously or if it reports to the network .
5. FFS whether AS buffer event based reporting is supported. FFS if we send availability indication or full report if it is supported
6. FFS on event based data collection/logging
7. On-demand request from the network is supported. FFS details on signalling