**3GPP TSG RAN WG1 #118bis R1-240xxxx**

**Hefei, China, October 14th – 18th, 2024**

**Agenda item:** **9.1.1**

**Source: Samsung (Moderator)**

**Title: Discussion on the reply for LS R1-2407604**

**Document for: Discussion and Decision**

# Draft reply for LS

On General

Q1: In Step 2, what is the granularity of functionality? For example, whether it is a use case (e.g. beam management), whether it is a sub-use case (e.g. beam management Case 1), or others?

Draft Reply:

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| In Step 2, RAN1 expects that UE reports its UE-capability information/parameters, i.e., Rel-19 AI/ML-specific FGs (including components and corresponding value ranges). These AI/ML-specific UE capability information/parameters will depend on how FGs are defined including the granularity, that will be discussed in RAN1 later igranularity of **Applicable functionalities** and **Activated functionalities** may or may not be the same as **Supported functionalities .**Note2: RAN 1 hasn’t dicussed or used the term of “functionality“ in Release 19 agreement yet. |

On NW-side additional condition and configuration

Q2: What is the content of NW-side additional condition, i.e. is it correct the RAN2 assumption of a NW-side additional condition assumed as associated ID?

Reply to Q2

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| RAN 1 did not have agreement on the content of NW-side additional condition. RAN1 agreed to support associated ID and it can be used to ensure the consistency of NW-side additional condition across training and inference for UE-sided model for BM-Case 1 and BM Case 2. UE may assume the similar properties of a DL Tx beam or beam set/list associated with the same associated ID, while FFS whether/how to define similar properties of a DL Tx beam or beam set/list. |

Q3: Is NW-side additional condition functionality specific?

Draft reply for Q3

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| Please also refer to the answer for Q2 to understand the ongoing discussion about the associated ID for NW-side additional condition. Beside, RAN1 also made working assumption that associated ID at least can be configured within CSI framework. In addition, RAN1 have not outlined any restrictions in indicating the same associated ID for inference results reporting, configured via *CSI-ReportConfig*. RAN 1 is discussing the details on where to configure the associated ID in CSI framework.Please refer to the following RAN 1 agreement:AgreementFor UE-sided model at least for BM Case-1, *CSI-ReportConfig* is used for the configuration of inference results reporting* FFS on the details in the *CSI-ReportConfig*, at least considering:
	+ Alt 1: one *CSI-ResourceConfigId* is configured for Set B
		- FFS: how UE can determine the information about set A
	+ Alt 2: one *CSI-ResourceConfigId* is configured for both Set A and Set B
		- FFS: How to configure resource set(s) for Set A and Set B in *CSI-ResourceConfig*
	+ Alt 3: two *CSI-ResourceConfigId* s are configured for Set A and Set B separately
	+ Alt 4: one *CSI-ResourceConfigId* is configured for Set B, Set A is configured using separate resource set(s) other than that represented by *CSI-ResourceConfigId*
		- FFS: how to configure/indicate separate resource set(s) for Set A
	+ Note: separate *CSI-ReportConfig* for Set A and Set B are not precluded.
	+ Note: Not perform measurement for Set A and only perform measurement for Set B subject to the *CSI-ReportConfig*
	+ FFS on the association between Set A and Set B with or without additional IE
	+ Other necessary configuration are not precluded.
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Q4: RAN2 wonders what information is needed in Step 3 for UE to decide whether a functionality is applicable before Step 4. More specifically, RAN2 would like to ask the following questions (Q4-1 to Q4-5):

Draft reply for Q4

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| RAN 1 made the following conclusion regarding on the content in Step 3/4/5. Proposed conclusion: RAN 1 further consider the following options for the content in Step 3/4/5:* **Option 1:** Support [candidate] configuration(s) for CSI report (as inference configuration) in Step 3, where the associated ID can be configured in CSI framework as working assumption applied.
	+ In this case, UE reports applicable functionality(ies) in Step 4
	+ FFS on activation (including when/how) of inference report after obtaining the applicable functionality(ies) from UE Step 4
	+ FFS on whether some IEs in the CSI report configuration can be removed.
		- FFS on whether to configure full CSI report configuration in Step 5
* **Option 2:**
	+ In Step 3, NW enable the UE to report the applicable functionalities, wherein a list of associated ID(s) may be provided to UE.
	+ In Step 4, UE reports the applicable functionalities, and may include associated ID(s) in Step 4
		- FFS on how to define the applicable configurations, including:
			* Size of Set A
			* Set B related information, e.g., type of RS, Set B pattern,
			* Whether support to report predicted L1-RSRP or not
			* Max number of K for Top-K
			* For BM-Case 2:
				+ Time instances information for measurements
				+ Time instances information for prediction
	+ In Step 5, inference configuration is configured.
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* + Q4-1: In RAN2, it is FFS whether NW-side additional condition is mandatory or optional. In order to discuss further, RAN2 would like to understand whether it is feasible for UE to decide the applicable functionalities without NW-side additional condition?

Draft reply for Q4-1

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| Please also refer to the answer for Q2 to understand the ongoing discussion about the associated ID for NW-side additional condition. Beside, RAN1 also made working assumption that associated ID at least can be configured within CSI framework. In addition, RAN1 have not outlined any restrictions in indicating the same associated ID for inference results reporting, configured via *CSI-ReportConfig*. RAN 1 is discussing the details on where to configure the associated ID in CSI framework. |

* + Q4-2: In RAN2, it is FFS whether configuration (e.g. inference configuration) other than NW-side additional condition can be included in Step 3. RAN2 would like to understand whether it is feasible and required for gNB to provide configuration (e.g. inference configuration) other than NW-side additional condition in Step 3 for UE to determine applicable functionalities?
	+ Q4-3: For UE evaluating applicable functionality reporting, if the answer to Q4-2 is Yes, what is the relationship between NW-side additional condition and configuration (e.g. inference configuration)? For example, is NW-side additional condition part of inference configuration, or is inference configuration part of NW-side additional condition, or is NW-side additional condition separate from inference configuration, etc?
	+ Q4-4: If the answer to Q4-2 is Yes, what is the content of configuration (e.g. inference configuration) for UE to determine applicable functionalities?
* Q5: What is the content of applicable functionality reporting in Step 4?
* Q6: What is the content of inference configuration in Step 5?

Draft reply for Q4-2~Q4-4 and Q5, Q6

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| Please refer the reply to Q4. |

On Functionality Activation

Q7: If inference configuration is provided in Step 3, does it activate the functionality immediately upon receiving Step 3?

Draft reply for Q7

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| Please refer the reply to Q4.For **Option 1,** RAN 1 will furher study on when/how to activate the inference report after obtaining the applicable functionality(ies) from UE Step 4. |

Q8: If inference configuration is not provided in Step 3, does configuration in Step 5 activate the functionality immediately upon receiving Step 5?

Draft reply for Q8

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| Please refer the reply to Q4. For **Option 2,** legacy CSI report mechanism is expected to be reused.  |

Q9: If more than one functionality are configured in Step 3 or Step 5, whether multiple/all applicable functionalities can be activated?

Draft reply for Q9

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| It is possible to configure/activate multiple CSI reports for infernece results reporting, which may be up to UE capability.  |

Q10: Is L1/L2 signaling for functionality activation/deactivation needed?

Draft reply for Q10

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| Please refer the reply to Q4. For **Option 1,** RAN 1 will furher study on when/how to activate the inference report after obtaining the applicable functionality(ies) from UE Step 4At least for **Option 2,** legacy CSI report mechanism is expected to be reused.  |

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| Companies | Comments |
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