



3GPP TSG RAN Meeting #99
Rotterdam, Netherlands, March 20-23, 2023

RP-230333

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Motivation of WID revision for R18 eFeRRM

Justification for R18 eFeRRM WI scope expansion (1/2)

- New scope: BWP operation without bandwidth restriction
 - The conclusions from RAN4 #104-bis-e and #105 were summarized in approved LS R4-2220437
 - In the RAN4#105 meeting, RAN4 agreed to deprioritize some of the options and the final candidate options for high-level analysis and for RAN decision are as below.
 - **Candidate options**
 - Option A) Perform BM/RLM/BFD based on CSI-RS within active BWP
 - Option B) Perform BM/RLM/BFD based on SSB outside active BWP
 - Option B-1) UE's capability not requiring additional measurement gap for BM/RLM/BFD
 - Option B-1-1) Using larger BW covering SSB outside active BWP without interruptions
 - Option B-1-2) Using larger BW covering SSB outside active BWP with interruptions
 - Option B-2) BM/RLM/BFD on SSB outside BWP within measurement gaps
 - Option B-2-2) Dedicated MG or NCSG for RLM/BFD/BM measurements
 - Option C) NCD-SSB approach which would work with existing UE hardware architectures (FG6-1) and be compatible with existing RAN4 specifications for BM/RLM/BFD
 - In our view, which candidate options in above RAN4 LS will be adopted is up to RAN #99e decision.
- In RAN #97e meeting minutes, it was captured that,
 - conclusion: The following is endorsed:
 - **No new solution for FG 6-1a shall be added to Rel-17**
 - If CSI-RS based RLM/BM/BFD are supported by a UE, FG6-1a can work without any issue. FG1-7 (CSI-RS based RLM) and FG 2-24 (SSB/CSI-RS for beam measurement) are mandatory with capability signalling features.
 - No change to TU allocation for current RAN4 work in Q4 2022.
 - RAN asks RAN4 to do a high level analysis of the options (copied below) in RAN4's answer to Q2 in RP-221911 and report it to RAN#98 for RAN decision.



Justification for R18 eFeRRM WI scope expansion (2/2)

- Current time plan for R18 eFeRRM WI (RP-223558):
 - The completion target of core part is Dec 2023
 - Before the completion target, there are 5 RAN4 meetings for core part discussion
 - RAN4 #106bis-e/107 has 1TU budget per meeting for core part, and RAN4 #108/108bis/109 have 0.5TU budget for core part.

Title	RAN #99 Mar.23	RAN4 #106bis- e	RAN4 #107	RAN #100 Jun.23	RAN4 #108	RAN #101 Sep.23	RAN4 #108bis	RAN4 #109	RAN #102 Dec.23
Core part: Even Further RRM enhancement for NR and MR-DC		1 TU	1 TU		0.5 TU		0.5 TU	0.5 TU	
Perf. part: Even Further RRM enhancement for NR and MR-DC							0.25 TU	0.5 TU	

- The progress of R18 eFeRRM WI:
 - Completion ratio for this WI is **65%**, for the existing scope of (1)FR2 SCell activation enhancement and (2)FR1+FR1 NR-DC RRM
 - All key technical parts are concluded for FR1+FR1 NR-DC RRM only except one remaining issues (according to WF R4-2303229)
 - TU for FR1+FR1 NR-DC discussion can be released for other new scope
- eFeRRM is an umbrella WI, and it's the most appropriate WI to contain the BWP without restriction work which is a kind of mixed RRM enhancement associated with different aspects(e.g., NCD-SSB, RF adjustment, NCSG and etc)



Observations and proposals to expand the eFeRRM WI scope

- **Observations from above slides**

- New solutions for BWP operation without bandwidth restriction, i.e., the adopted ones among option A/B/C based on this RAN #99 meeting decision, can be specified from R18
- FR1+FR1 NR-DC RRM in eFeRRM WI has good progress, and the TU for this topic can be release partially
- eFeRRM is an umbrella WI, and it's the most appropriate WI to contain the BWP without restriction work which is a kind of mixed RRM enhancement associated with different aspects(e.g., NCD-SSB, RF adjustment, NCSG and etc)

Title	RAN #99 Mar.23	RAN4 #106bis	RAN4 #107	RAN #100 Jun.23	RAN4 #108	RAN #101 Sep.23	RAN4 #108bis	RAN4 #109	RAN #102 Dec.23
FR2 SCell activation		0.5 TU	0.5 TU		0.25 TU		0.25 TU	0.25 TU	
FR1+FR1 NR-DC RRM		0.5 TU → 0.25 TU	0.5 TU → 0.25 TU		0.25 TU → 0 TU		0.25 TU — > 0 TU	0.25 TU — > 0 TU	
BWP without restriction (new scope if added)		0.5 TU	0.5 TU		1 TU		1TU	1 TU	
Total TU		1TU → 1.25TU	1TU→ 1.25TU		1TU→ 1.25TU		1TU→ 1.25TU	1TU→ 1.25TU	

- **Proposal:**

- **The R18 eFeRRM WI is expanded to contain the work scope of adopted R18 solutions for BWP operation without bandwidth restriction.**



